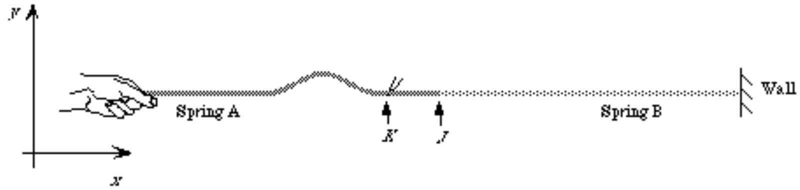
Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. the velocity will only be in the y-direction. the pulse is moving horizontally, but the yarn will only move up and down at a constant x distance.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. the velocity will only be in the y-direction. the pulse is moving horizontally, but the yarn will only move up and down at a constant x distance.

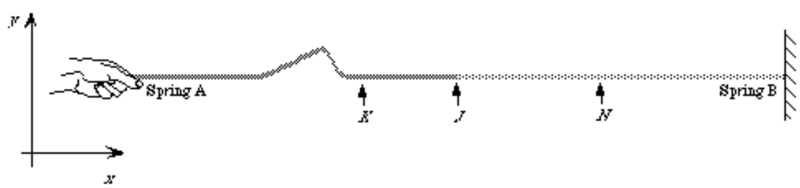
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. the tension in a is larger because the restoring force is larger, and by F=ma, is F is larger a must also be larger. if a is larger, the wave will move faster.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. from F=ma, we can see that for the same force, if the mass is larger, the acceleration is smaller, so the slower pulse will be on the heavier spring.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

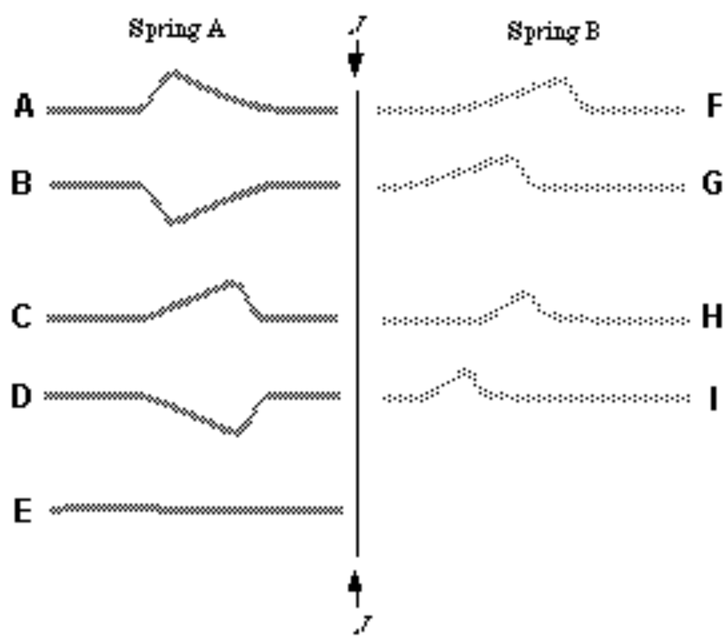
Q13. Explain. the pulse will hold its shape through transmittance, but since B is heavier than A, the amplitude will decrease when the pulse gets past J.

Q14. Which option best represents the pulse in spring A? E

Q15. Explain. once the pulse has passed J, none of it will be reflected, so A will remain without a pulse.

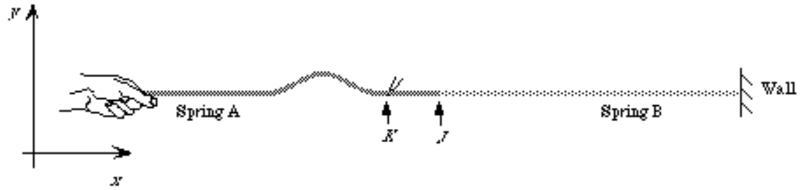
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Not Answered

Q17. Explain.



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The pulse is a transverse pulse, so the direction of motion of the yarn is perpendicular to the direction of the pulse, and therefore only has a y-direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Again, the pulse is still transverse, so the point J only has velocity in the y-direction.

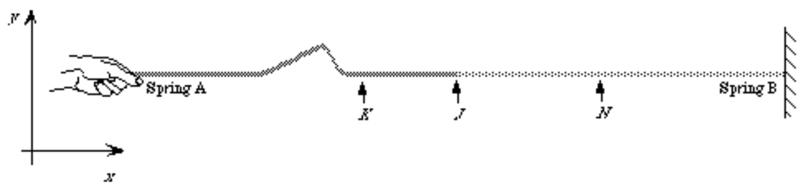
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Unable to Tell

Q9. Explain. v=(tension/linear mass density)^(1/2). Since you don't know the relative tensions or linear mass densities, you can't know for sure.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. v=(tension/linear mass density)^(1/2). Since you don't know the relative tensions or linear mass densities, you can't say what is causing the greater velocity in A.

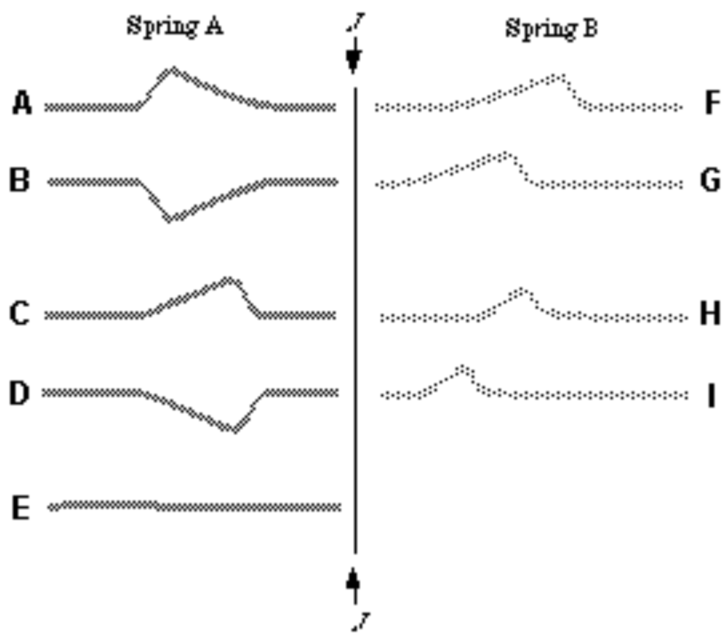
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. The pulse will continue to go along the springs as before, but at a slower velocity.



Q14. Which option best represents the pulse in spring A? E

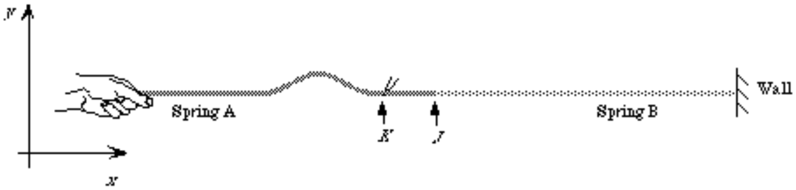
Q15. Explain. The pulse will keep going to spring B instead of reflecting, so there will be no pulse in spring A after the pulse passes the junction point.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. The velocity of the pulse on spring A is greater than the velocity of the pulse on spring B, so the time to pass a point on A is less than the time to pass a point on B.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. the only motion on the spring is in the Y direction, therefore the yarn also will only have vertical motion.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. the force is in the Y direction so there will only be vertical motion.

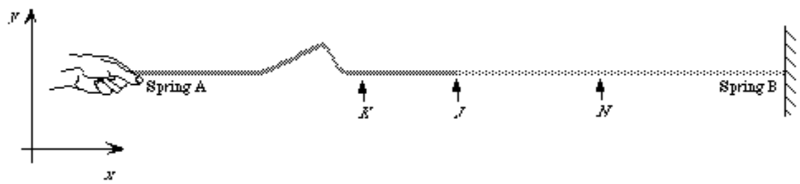
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. Spring A is more stretched since the pulse moves through it faster.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. If the two materials are the same, then B has more mass per unit length since A is stretched further.

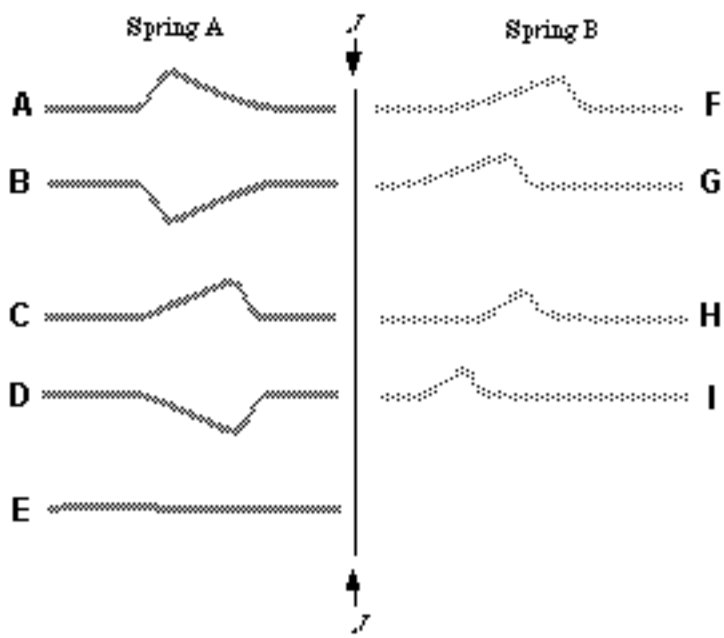
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. Since the medium changes, there will be some reflection, but some of the pulse will carry on in the same manner as before.



Q14. Which option best represents the pulse in spring A? B

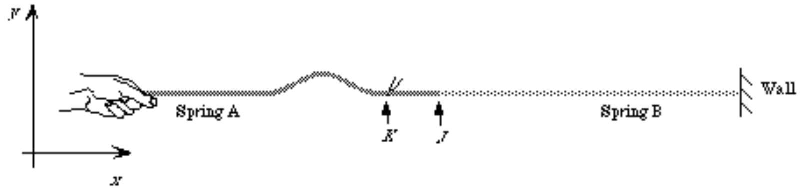
Q15. Explain. The portion of the pulse that reflects will be inverted, and backwards.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. Since the velocity of the pulse of spring A is greater than the velocity of the pulse of spring B, the time it takes for the pulse to reach K is less than the time it takes for the other pulse to reach N.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The transverse pulse only causes motion in the y direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Same as before, the only difference is that the pulse is changing mediums.

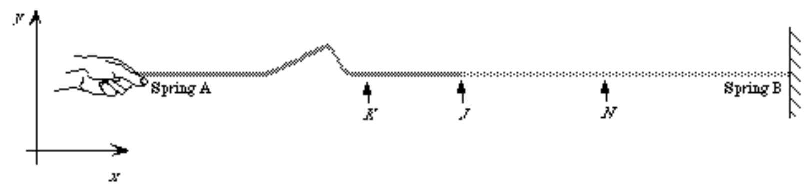
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. since the springs are attached, then they must have the same tension acting on them.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. Since it is observed that the pulse travels faster in spring A, then the mass per a unit length of A must be less in order for this to be the case.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

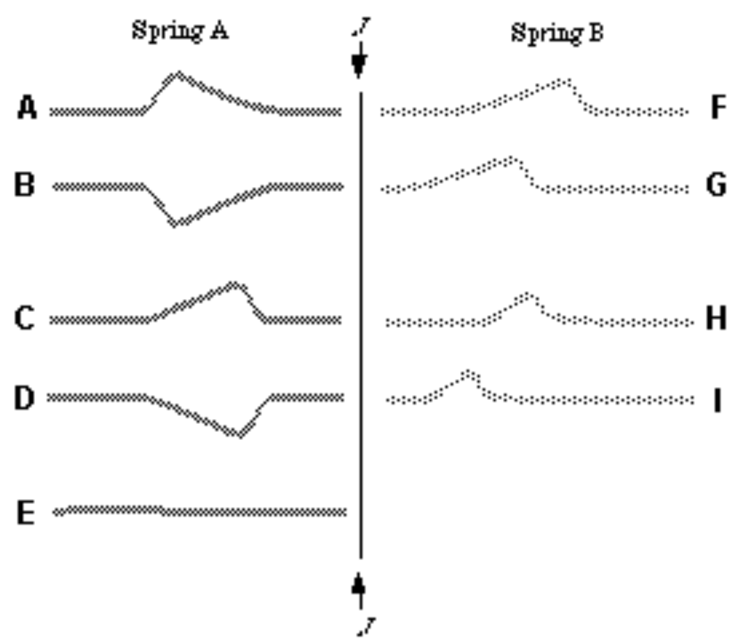
Q13. Explain. The shape of the transmitted wave through B will be the same as it was through A, but since the springs are different, B being more having greater density, the amplitude will be less than the original pulse.

Q14. Which option best represents the pulse in spring A? B

Q15. Explain. the reflected pulse will be inverted, but will have the same shape

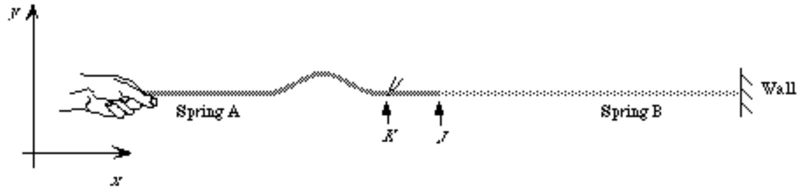
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. since spring A has the greater intrinsic velocity, then it will take less time for the pulse to reach K than it does to reach N.



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. the particle only moves in the y direction. it is a transverse wave. the particles in the medium don't move along with the wave in the x direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. the components are still only in the y direction. it is still a transverse wave.

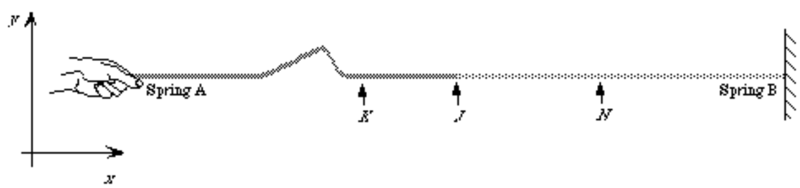
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. the springs are continuous (hooked together) the same force is acting on both of them.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. the mass is greater than spring a. this is why the velocity decreases. there is greater inertia per unit legnth in spring b thatn in spring a.

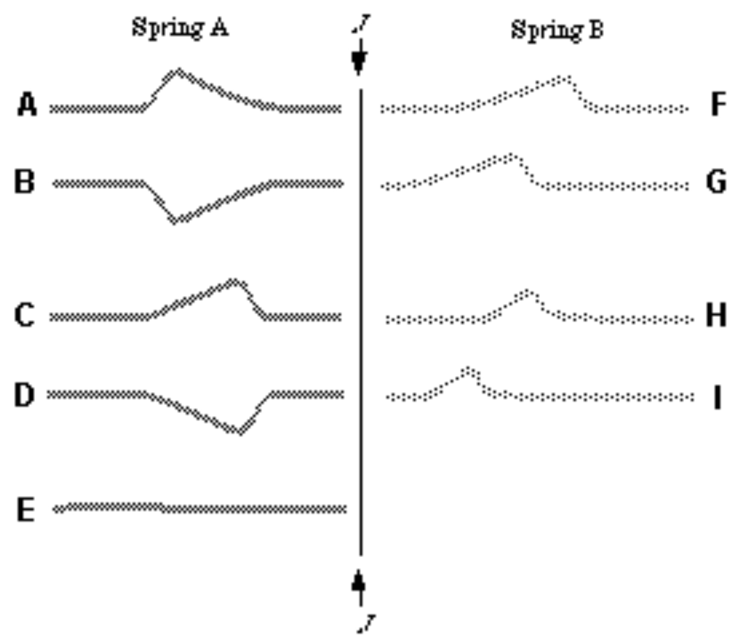
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. the wave slows down and loses some amplitude/strength



Q14. Which option best represents the pulse in spring A? None of the choices above

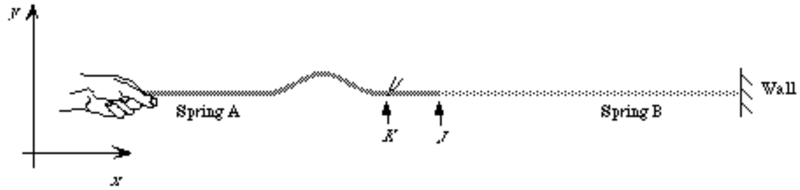
Q15. Explain. there may be a slight reflection because the wave is entering a new medium.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. the wave retains the same frequency

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. Each 'particle' of the spring has only movement perpendicular to the direction of the velocity of the actual transverse wave.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. For the same reason as above, for transverse waves, each particle of the spring has movement perpendicular to the waves' direction of velocity

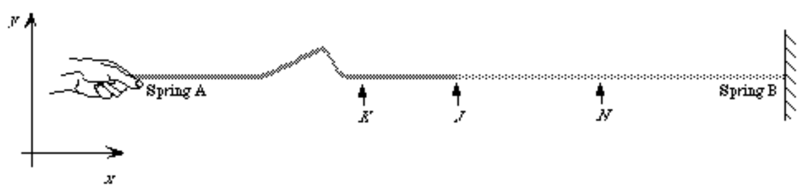
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. As the tension increases, the velocity of the waves increase through the media. So since it is slower in B, it must have a lower tension

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. As the mass increases, the velocity of the waves decrease through the media. Since the velocity has decreased, the mass per unit length must have increased.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

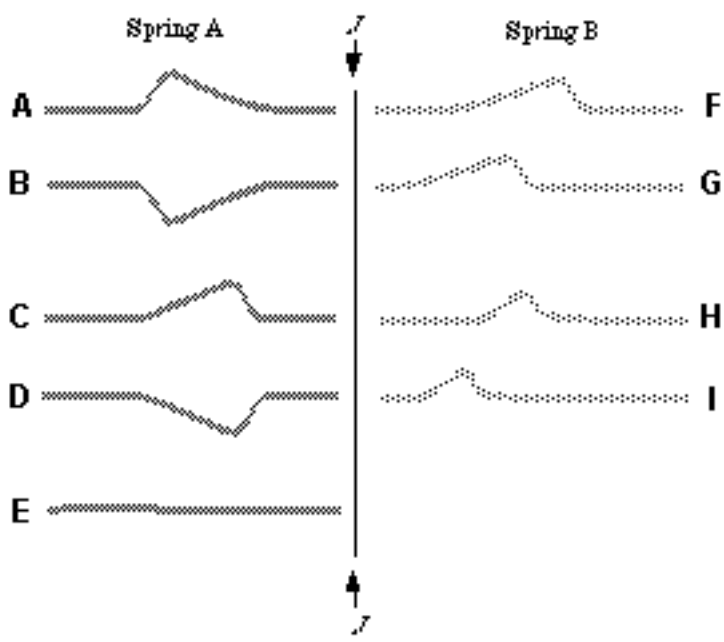
Q13. Explain. Since the mass per unit length is greater in B, the acceleration of each point is less, and thus each point spring takes a longer time to change speed and direction (F= ma if m goes up, a goes down).

Q14. Which option best represents the pulse in spring A? E

Q15. Explain. Once the pulse passed, point J, this section of the spring has returned to its initial y-coordinate position.

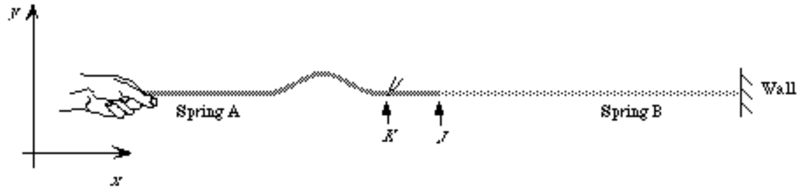
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. Since the wave moves faster on spring A than B, the wave will pass through point k in less time than it will pass through point n.



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. it only moves up/down, no compression

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. it only moves up/down, no compressionI think

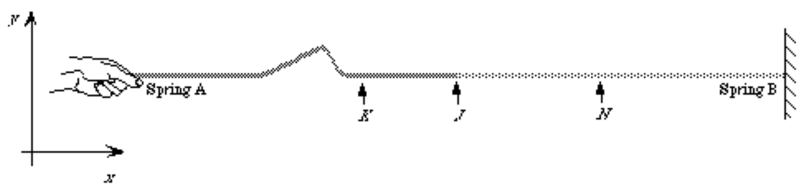
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. if attached, the tension in both springs must be equal

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. if the pulse moves slower, there is more mass per unit length

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

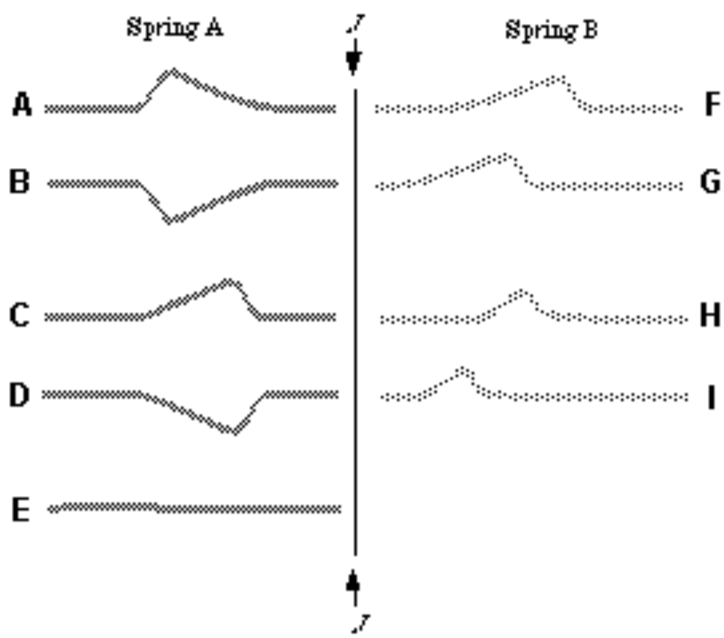
Q13. Explain. a short time after, the pulse will be further along the rope, and it will be dampened comparably to pulses of A.

Q14. Which option best represents the pulse in spring A? B

Q15. Explain. it will come back reversed

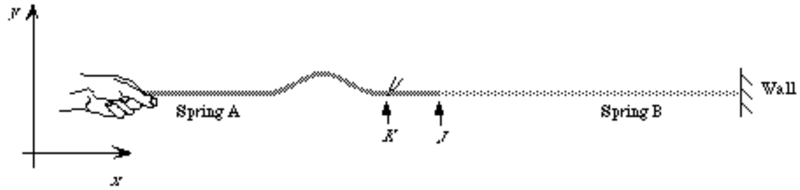
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. velocity will be slower, but wavelength will decrease on B



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. In a transverse traveling wave particles only move up and down.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. In a transverse traveling wave particles only move up and down.

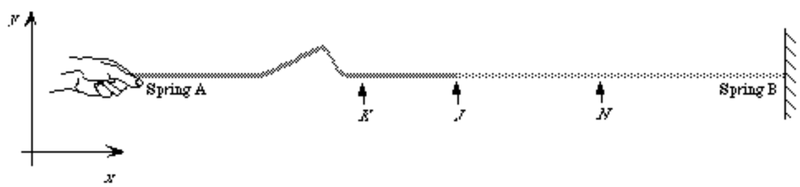
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Unable to Tell

Q9. Explain. Cant tell without knowing spring constant?

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. Didnt give enough information.

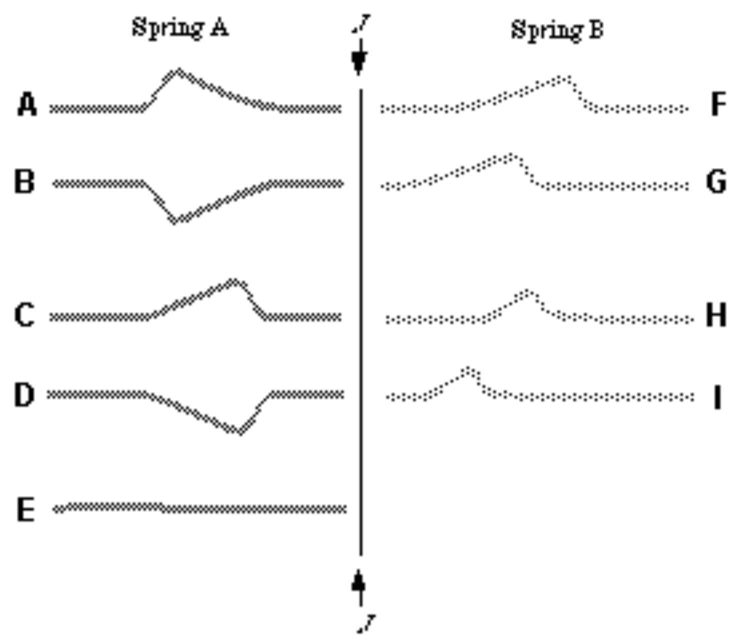
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. This is a guess. Dont we need to know more about the second spring?



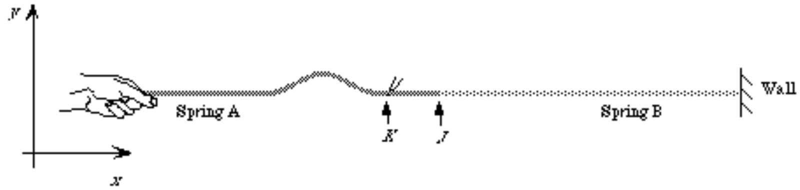
Q14. Which option best represents the pulse in spring A? B

Q15. Explain. Again another guess.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. Another guess.

End of response



Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.

Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The wave has an x component for velocity. Point K only moves up and then down, so its velocity is only in the y direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

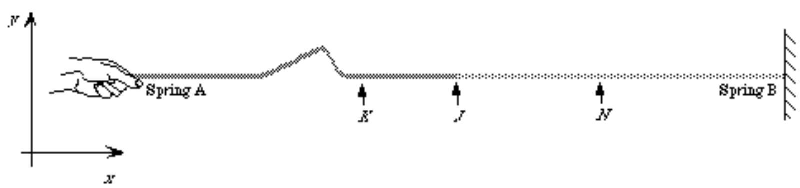
Q7. Explain. The junction point still only moves up and down, so it will only have a y component for velocity.

Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Greater Than

Q9. Explain. The speed of the wave is greater in spring B, which means that the tension has to be greater for spring B.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Less Than

Q11. Explain. Spring B is stretched out more than A is, so for a certain length, Spring A will have more mass than spring B will for the same length.

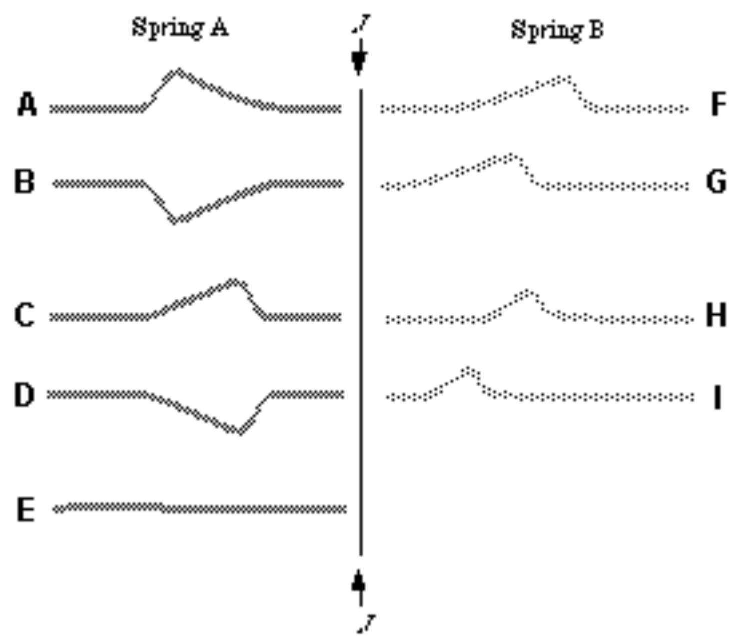


The student generates an asymmetric pulse in spring A that moves to the right as shown below.

After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. The shape and amplitude of the wave does not change, the speed will though.



Q14. Which option best represents the pulse in spring A? E

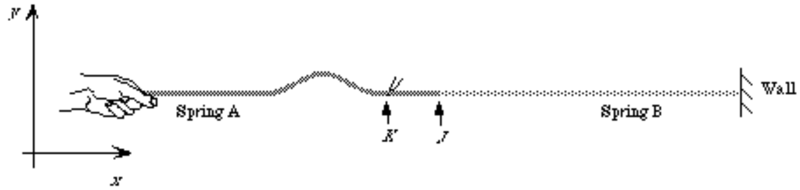
Q15. Explain. The wave is no longer passing through spring A, so there is no disturbance in it, so it just lies straight.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Not Answered

Q17. Explain. Greater than because K is on spring A which has less tension and therefore has waves travel slower. Point N is on spring B, which is more tense and therefore waves travel faster there.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. Only in the y-direction, because if you watch the movement of the piece of string closely, you will see that it only moves up/down.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Since this is a transverse wave, the only movement in the string is perpendicular to the direction the pulse is moving in. The string only moves up and down, never left or right.

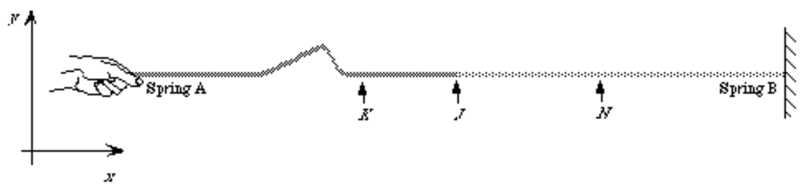
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. The tension in B is less than the tension in A because the pulse travels faster in A. The higher the tension, the faster the wave will travel.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. The mass per unit length in spring B is greater because a larger number in the denominator will cause the velocity to be lower.

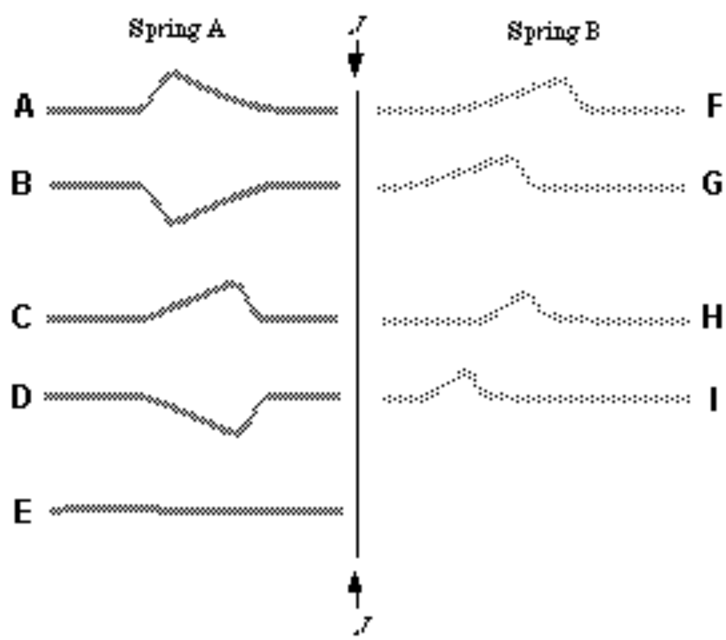
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? I

Q13. Explain. The pulse in B is less wide and does not travel as fast as the pulse did while in A.



Q14. Which option best represents the pulse in spring A? B

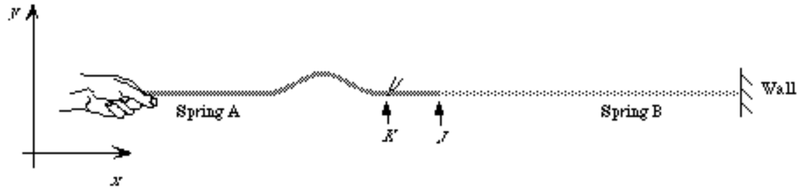
Q15. Explain. The junction is considered a fixed end since B is heavier than A; this means that the reflected pulse in A will be inverted and a reflection of the initial pulse in A.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. It is greater than because the width of the pulse in A is greater than the width in B. Once the pulse crosses J, the front end of the pulse slows down while the back end (the part that hasn't crossed J yet) is still traveling in A (it has a faster speed). This allows the back end of the pulse to 'catch up' to the slower front end.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. this is b/c particles in media do not move with the wave. They only move up and down. the wave propagates through the media.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. this is b/c particles in media do not move with the wave. They only move up and down. the wave propagates through the media.

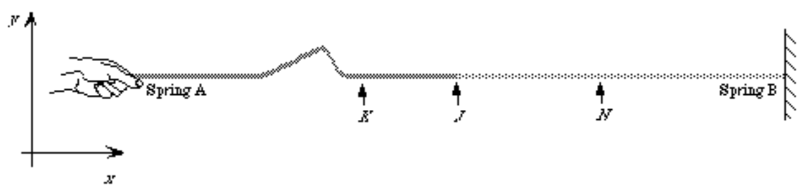
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. the larger the tension, the faster the propagation of the pulse.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. heavier media, slower wave

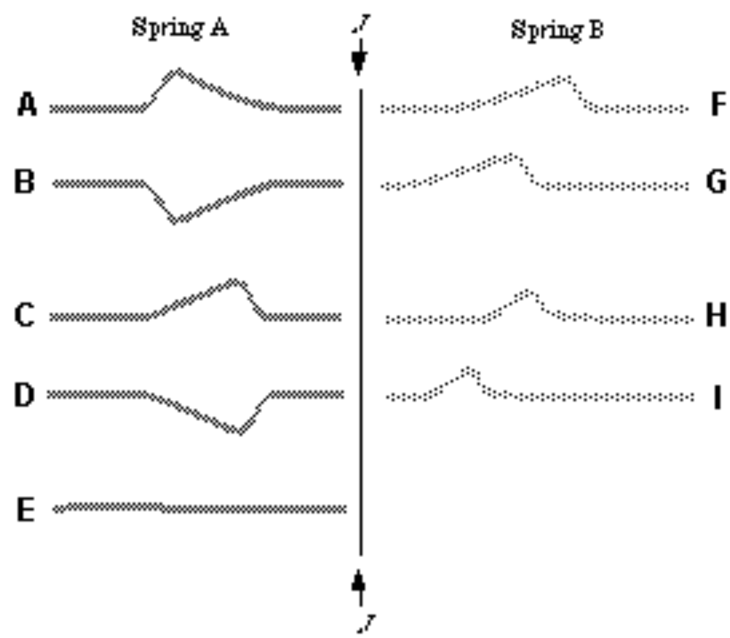
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? I

Q13. Explain. the pulse will have a smaller amplitude b/c there is the same energy and E=.5kA^2



Q14. Which option best represents the pulse in spring A? E

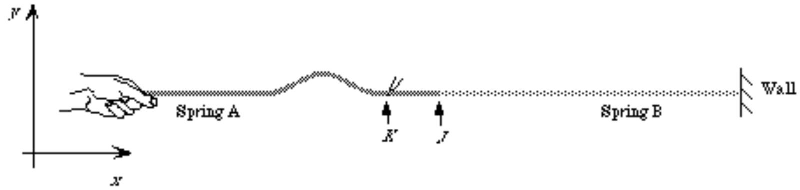
Q15. Explain. there is no longer a pulse in spring a b/c the pulse is now in spring b

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. pulses travel faster in spring a than in spring b

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. Because this is a transverse wave, the particle (piece of yarn) does not move in the direction of the wave but perpendicular to it.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. It is still a transverse wave so the only component of velocity is in the y direction.

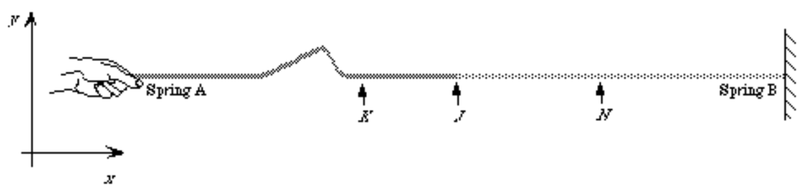
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. Tension force comes from the hand and it exerts the same amount to both springs.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. The wave travels faster in the first spring so with the same tension force, the mass on the secong spring must be greater since it travels slower there.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? I

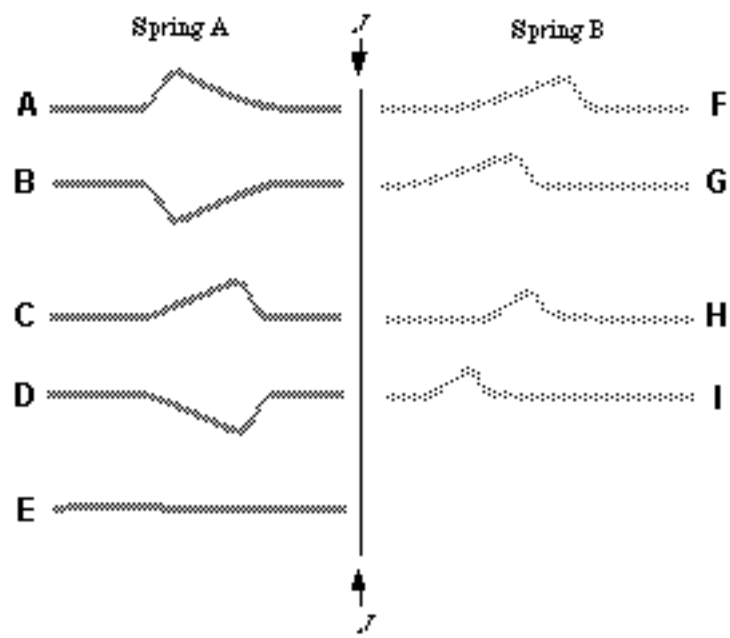
Q13. Explain. Because spring B is heavier, less of the wave or pulse is transmitted so it must be smaller than the first, original pulse.

Q14. Which option best represents the pulse in spring A? D

Q15. Explain. The reflected pulse must be on the opposite side because spring B can kind of be thought of as a wall but not as strong as a wall.

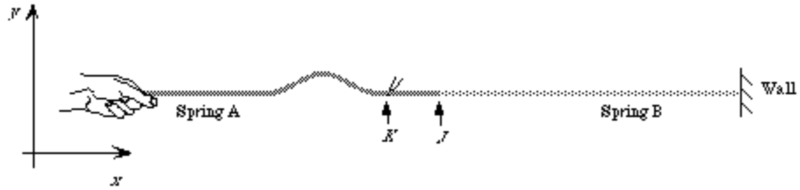
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. Since spring B has a greater mass per unit length, the wave velocity is less in spring B so it will take a longer time for B to reach N than for the pulse in spring A to reach K.



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The string will travel perpendicular to the direction of the traveling wave because point K is still on spring A.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. Point J is at the junction of the two springs, and so there will be a new velocity when the wave travels between the two types of springs. This difference will cause the velocity of the junction to be in both the x and y directions.

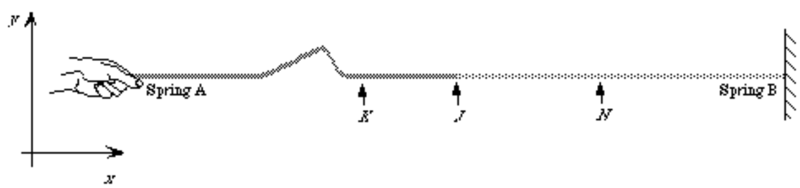
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Greater Than

Q9. Explain. It is greater than if the wave travels slower in B than in A, mainly due to F=ma, or the downward force on the wave.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. The mass per unit length of B is greater than if the wave travels slower through B than through A due to F=ma (the downward force on the wave.)

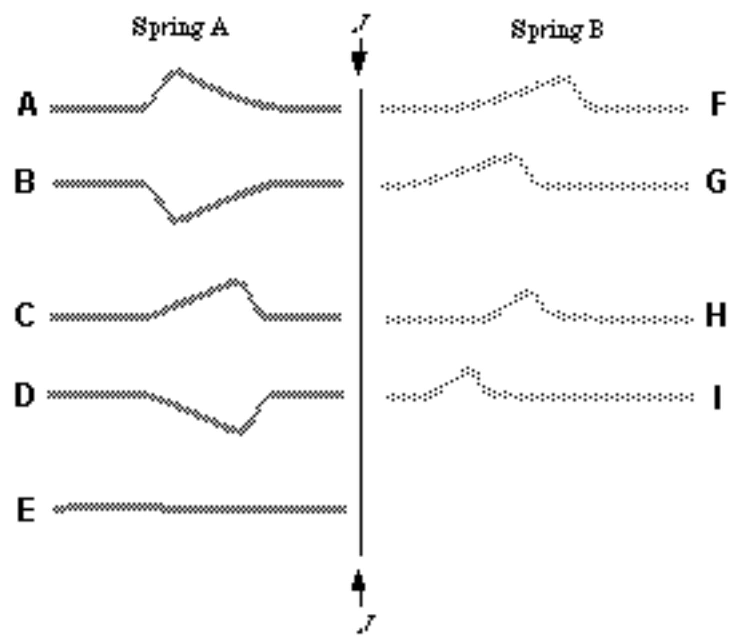
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? I

Q13. Explain. It will closer to J because it is traveling at a slower spped than before. It is still on the same side as before because it is just a continuation from before.



Q14. Which option best represents the pulse in spring A? B

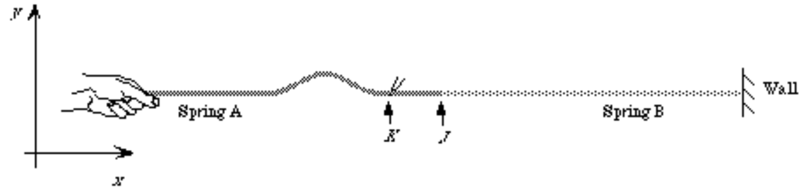
Q15. Explain. It is going to be inverted and traveling in the opposite direction that it came from.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. Since the wave travels slower in Spring B, it will take more time traveling from J to N, than if from J to K.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. it is a traverse wave

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. it is a traverse wave

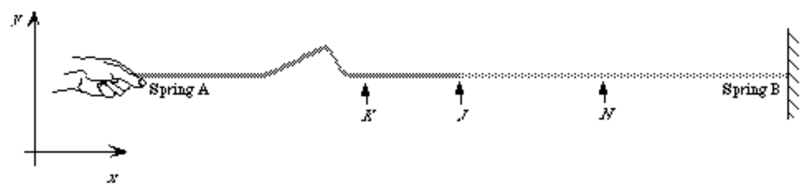
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. velocity is proportional to the square root of force

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. not enough information

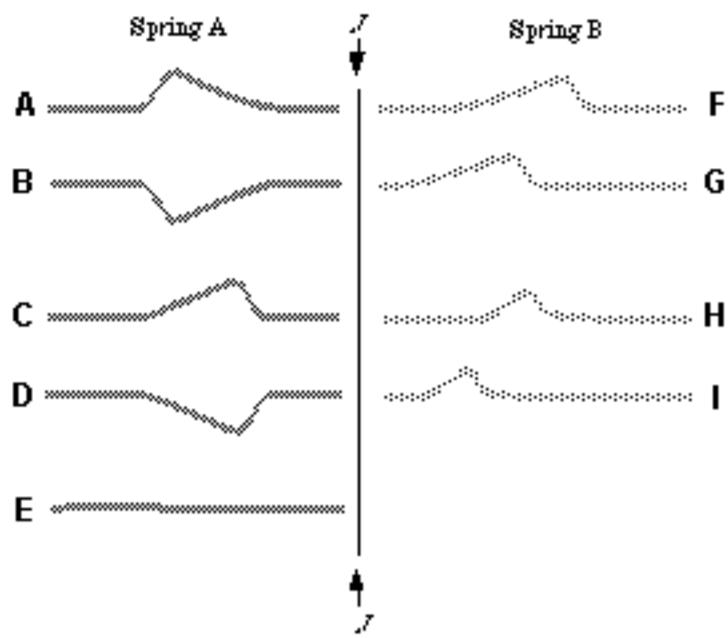
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. the shape does not change



Q14. Which option best represents the pulse in spring A? A

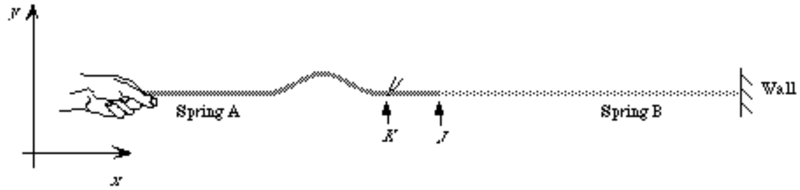
Q15. Explain. it is the same wave

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. it is the same wave

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. at that point, it only moves vertically

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. same as above

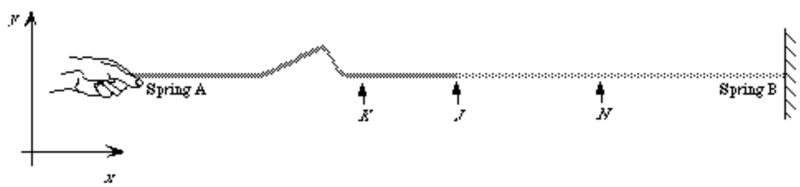
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. because higher tension has higher velocity, tension in B must be less than tension in A

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. don't know

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

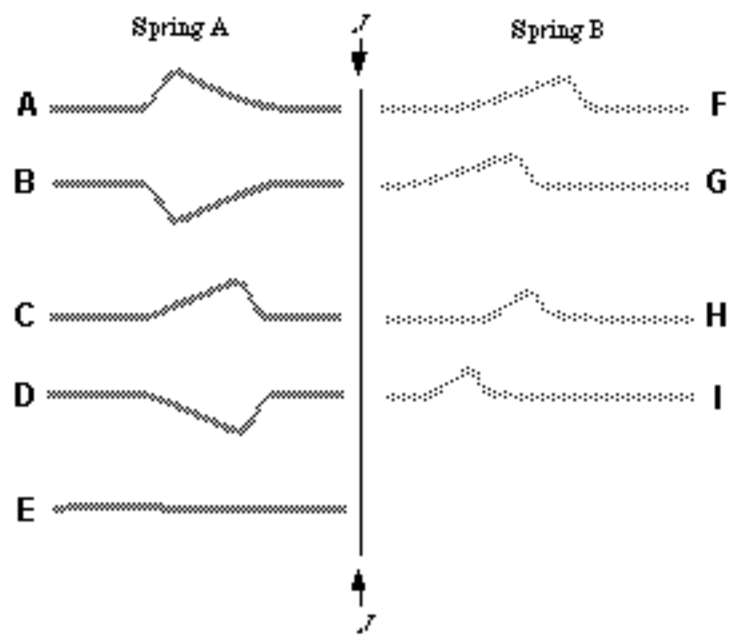
Q13. Explain. should be the same as spring A

Q14. Which option best represents the pulse in spring A? E

Q15. Explain. it's not in spring A anymore

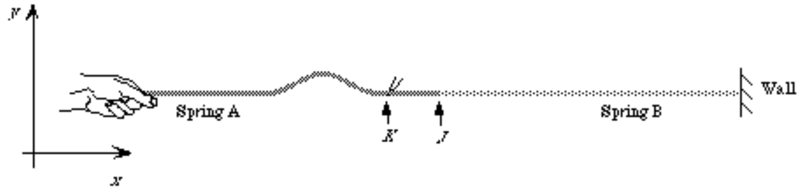
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. velocity of wave in spring A is greater than the velocity of wave in spring B, therefore less time to pass by point K, than N.



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. Each portion of the spring only moves up and down, even though the wave propogates left to right.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Still, the spring only moves up and down.

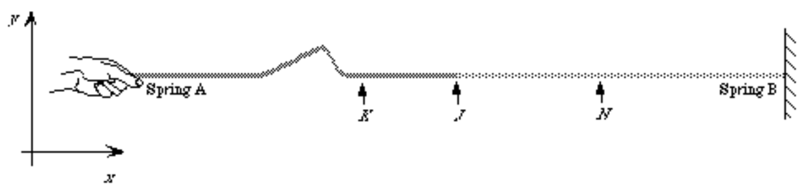
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. The tension in each of the strings should be equal since they pull on each other.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. The mass per unit length must be greater for the speed of the wave to be less.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. The pulse transmitted has the same shape and is on the same side.

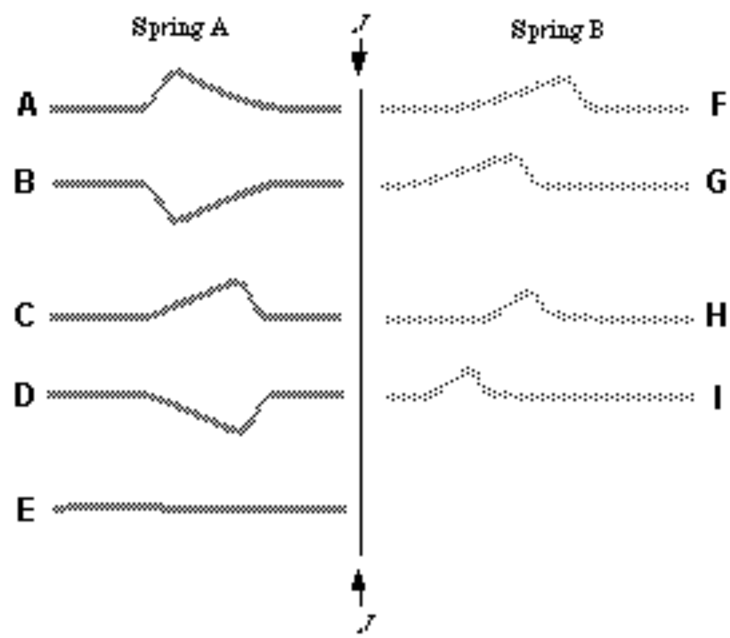
Q14. Which option best represents the pulse in spring A? B

Q15. Explain. The reflected pulse is on the opposite side.

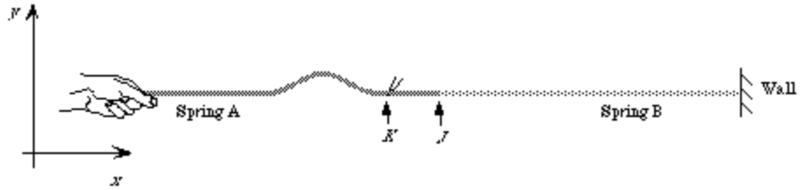
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. The pulse travels slower in spring B than in spring A.

End of response



Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. in a transverse wave the particals move perpendicular to velocity.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. the wave is moving in the x direction but the junction moves perpendicular to that.

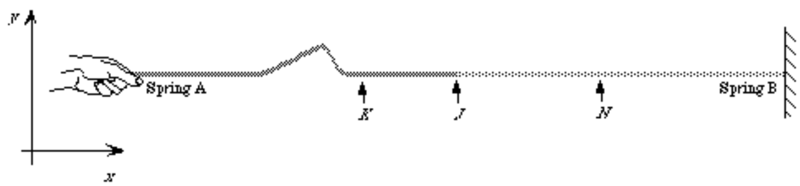
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. waves travels faster in higher tension.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. all we know is that the tension is different but not what material composes B nor do we know they are or are not the same material.

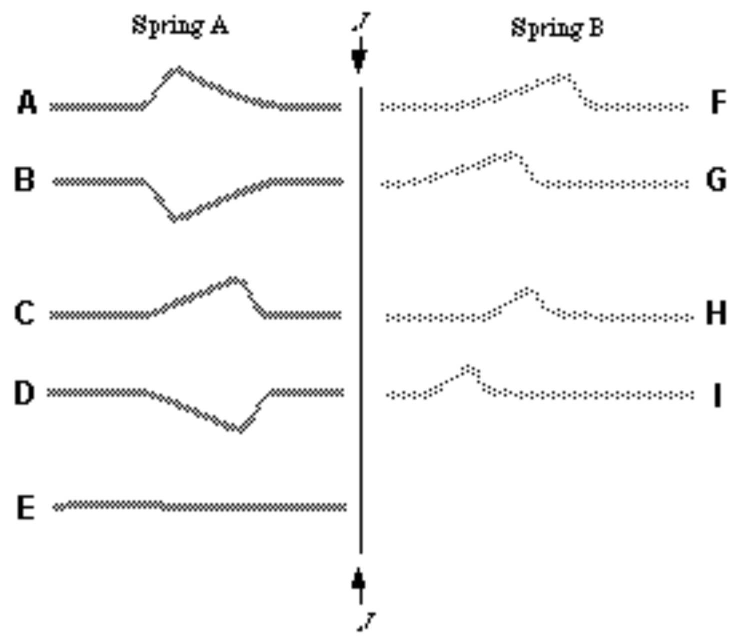
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. even though is a different material and tension, there is nothing to change the direction of the wave.



Q14. Which option best represents the pulse in spring A? E

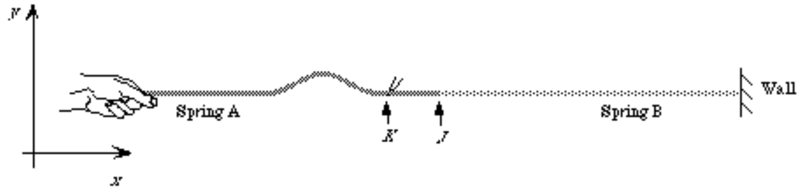
Q15. Explain. the energy is transmitted to spring B

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. it has been stated that the wave travels faster in A than B

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q5. Explain. it moves up and down.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. it moves up and down as well as to the right.

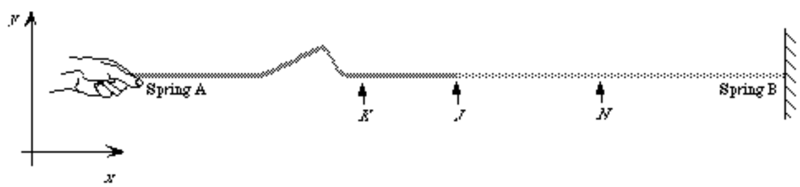
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. they sould have the same tention.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. the greater the mass the slower the wave.

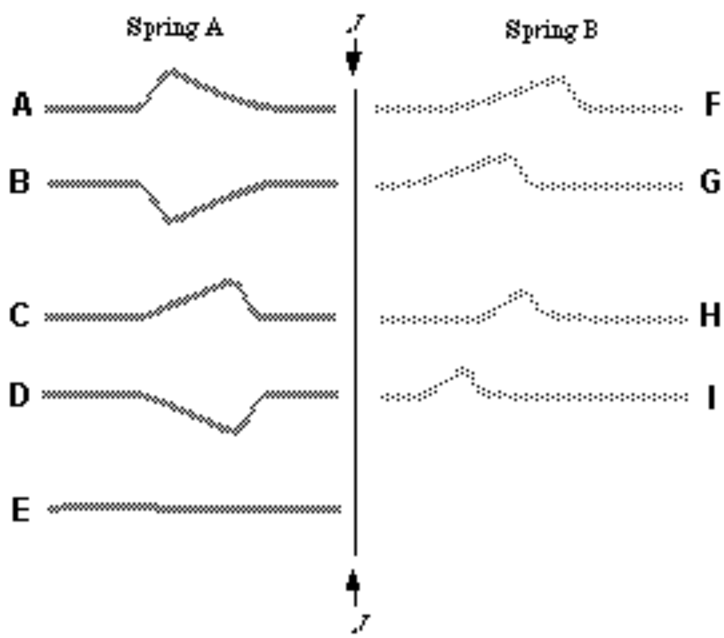
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. it makes sence.



Q14. Which option best represents the pulse in spring A? B

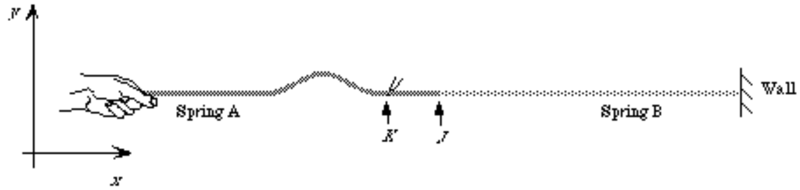
Q15. Explain. it makes sence.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. a guess.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. the mass only moves up and down but not left to right

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. velocity is the same

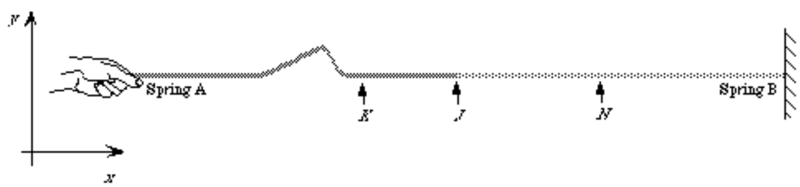
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. tension is the same just k is diffrent

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. becasue its harder to move the pluse in b then a

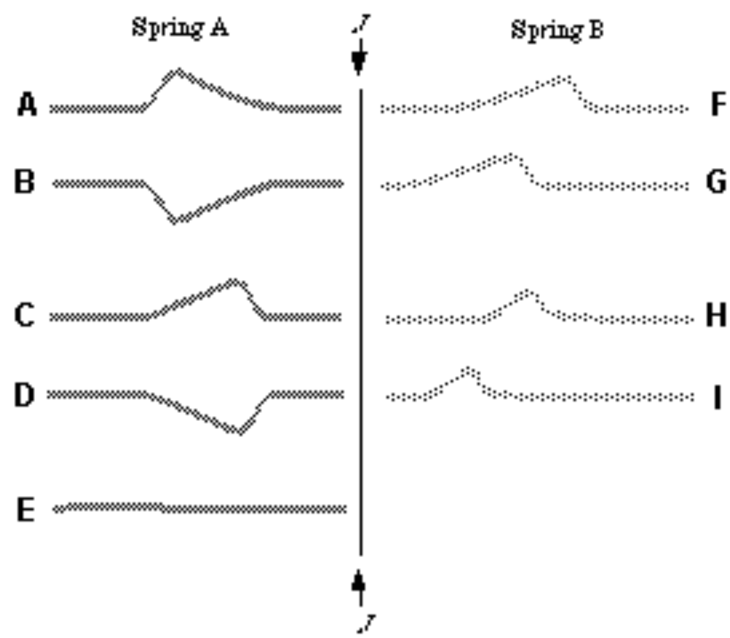
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. since v is lambda*freq then the freq should be the same



Q14. Which option best represents the pulse in spring A? C

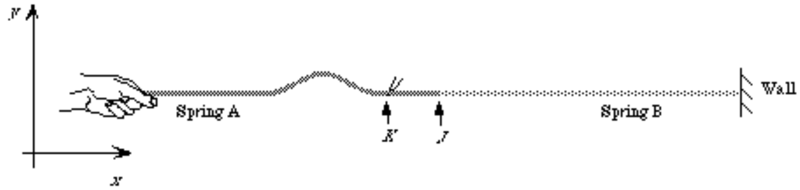
Q15. Explain. .....im confused ....

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. since the pulse travels faster in a then b then it would spend less time on a then in b

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. the rope, and therefore the yarn, do not move in the x direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. same-o same-o

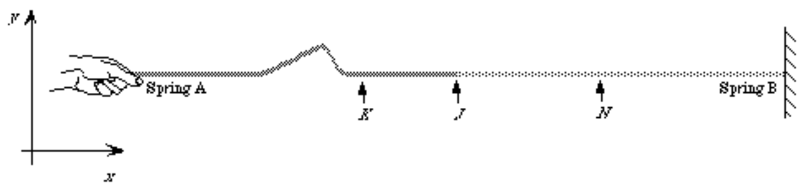
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. If the pulse travels at a different rate in a than in b, either the tension or the frequency have to be different between a and b. since the frequency was determined by the act of creating the pulse, the tension must be greater in a.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. If the pulse travels at a different rate in a than in b, either the tension or the frequency have to be different between a and b. since the frequency was determined by the act of creating the pulse, I would suppose that the mass density would be different. Since a greater mass density slows down the propagation of a wave, the part with a slower speed must be morre massive.

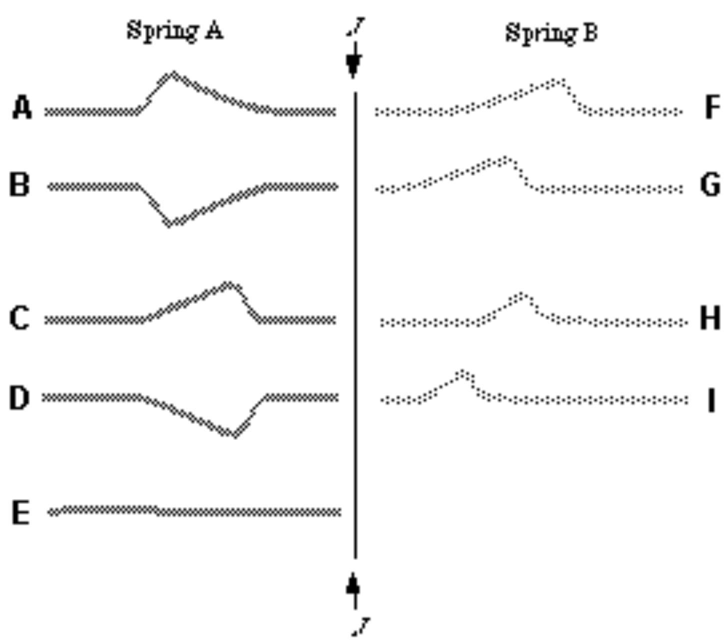
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. Either H or I look reasonable. The pulse would have the same orientation as the pulse in A, but would be smaller in all spatial dimensions.



Q14. Which option best represents the pulse in spring A? A

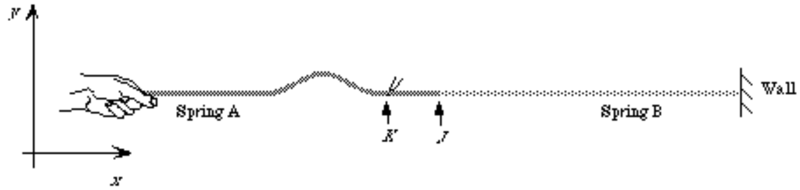
Q15. Explain. it will be reflected on the same side of the spring, but only partially. I didn't see aclear representation of this so I picked the closest.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Not Answered

Q17. Explain. I think I may have missed something in this exercise, and in the above. I'll thik about it later.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The yarn really isn't moving sideways, only the wave is. As the wave moves, the yarn moves in the y direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Same answer as above; the wave moves sideways, not the spring.

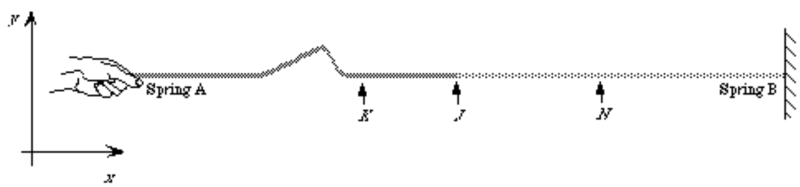
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Unable to Tell

Q9. Explain. Although there is a difference in wave velocity, there is no way to tell what causes the difference.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. Again, there is no way to tell why the wave velocity is different.

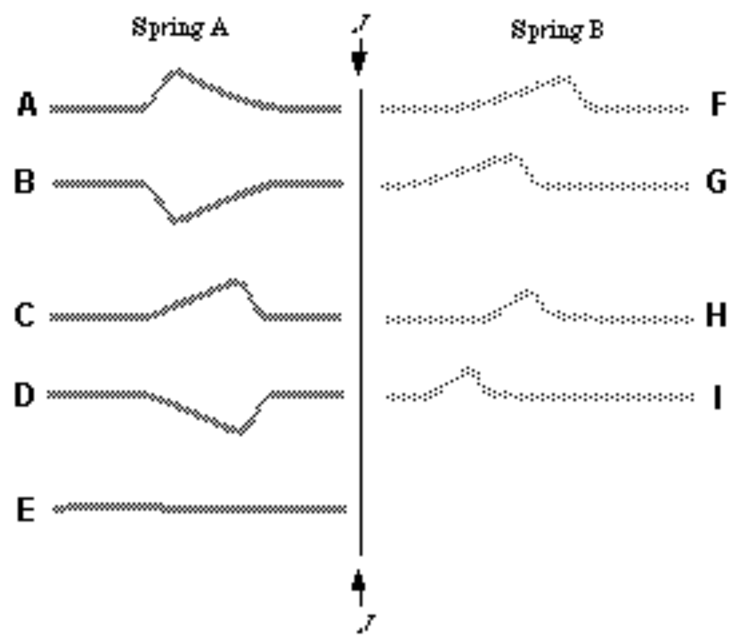
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. I don't think the pulse would change shape.



Q14. Which option best represents the pulse in spring A? E

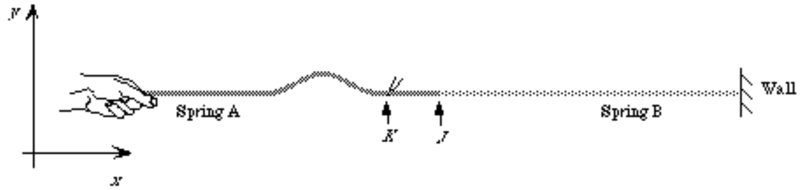
Q15. Explain. The pulse is no longer in Spring A.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. The wave moves faster in A, right?

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. here the wave is transverse and in transverse waves the medium only moves up and down while the wave move in the x direcion. the piece of year is part of the medium so it only moves in the y direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. here j is also part of the medium so it only moves in the y direction.

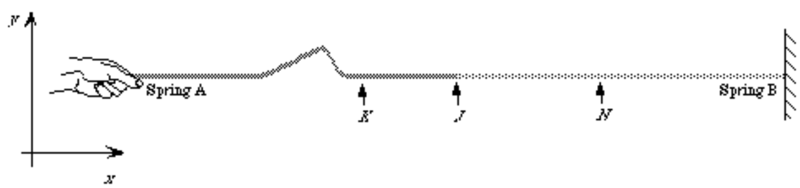
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Greater Than

Q9. Explain. Because velocity of wave in spring B is less that velocity of wave in spring A then the tension msut be greater in B than A.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. velocity in B is less than velocity in A so mass must be greater in B in order for v to be small. V is inversley proportional to the square root of mass per unit lenght.

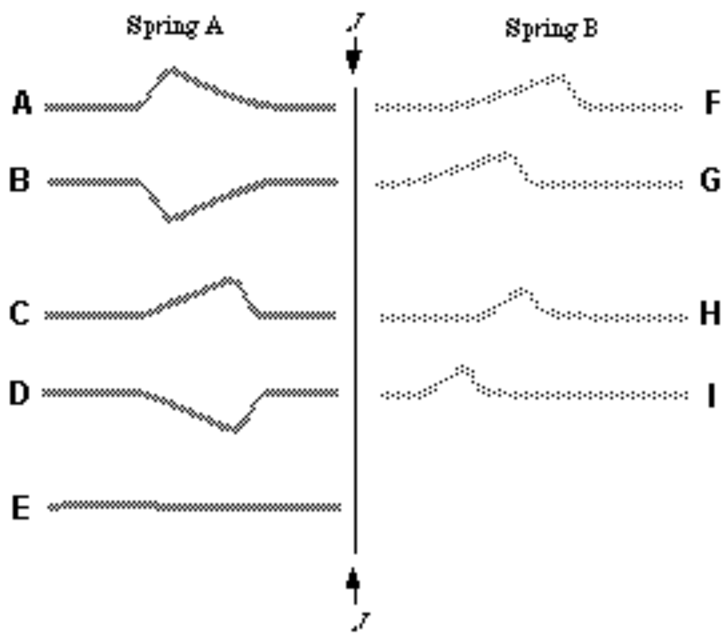
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? I

Q13. Explain. Spring B is heavier so transmitted pulse in it must be slower that incident pule and its with is smaller.



Q14. Which option best represents the pulse in spring A? B

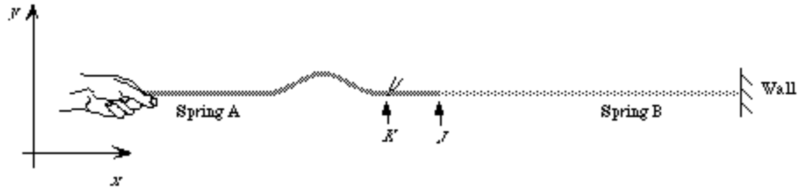
Q15. Explain. reflected pulse must on on opposite side of spring becasue incident pulse moves from light to heavy spring. also the reflected pulse must have larger width than trasmitted pulse.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. speed of pulse in spring A is greater than in spring B.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q5. Explain. As the wave passes through, the Y position obviously changes, so it must have a y velocity.As the section of spring the string is on changes from being straight to being curved, the x component of the length changes (since its length is fixed and the y is changing), and the string, fixed along it, must move some in the x direction to maintain its place. So there must be some x velocity.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. The behavior in this regard should be the same regardless of whether the spring on each side of a point is of the same type, so the same reasoning as above applies (nothing in that argument depended on the spring being the same on each side).

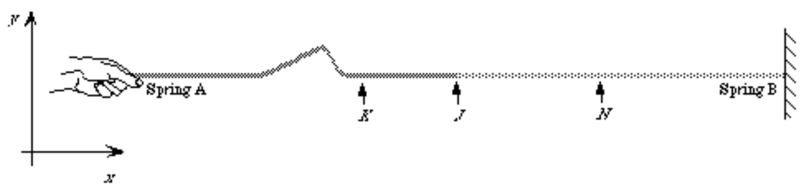
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. If the tensions were not equal one spring would exert an acceleration on the other until an equilibrium is reached -- since the spring itself isnt moving (except for the localized wave) the tension cannot be different.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. Given that the tensions of both springs are the same, the difference in speed is due to a difference in linear mass density. Wave speed depends on the inverse square root of the linear mass density, so for a lower speed to result, the mass per unit length of B must be greater.

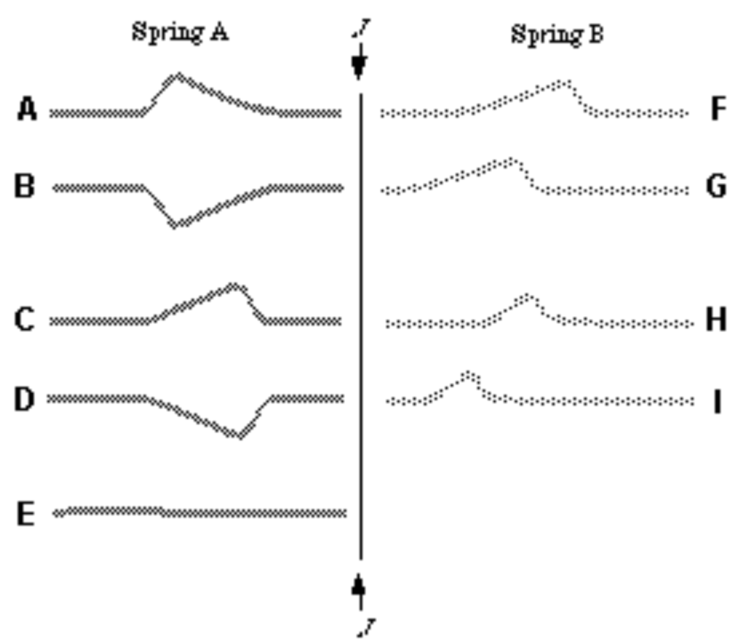
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. Since the y amplitude of the beginning of spring B and the end of spring A as the wave moves through is the same, the height of the wave in B should be the same. But since it moves more slowly in B, and was transferred to B in the amount of time it took the original wave to move through the point at the speed it was moving in A, the length must be shorter.



Q14. Which option best represents the pulse in spring A? C

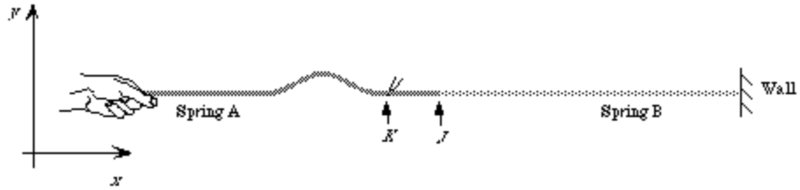
Q15. Explain. The situtation is analogous to a spring with a non-fixed end, except that some energy is lost transferring the wave to the other spring, so the amplitude decreases.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. The time through K must be the same as the time through J -- anything else would require the speed of the wave in A to change, and there is nothing which would affect this change since its physical characteristics (tension and mass density) don't change.For the same reason, the time through N has to be the same as the time through J. Therefore, the time through K equals the time through N.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The pulse travels in the x direction but the mass of the spring itself does not.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Same as above

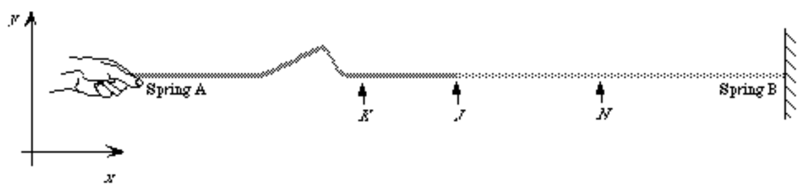
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Greater Than

Q9. Explain. If the pulse travel slower in spring b than in spring a, then it probably has greater tension than spring a.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. There is no way of knowing this from the information given.

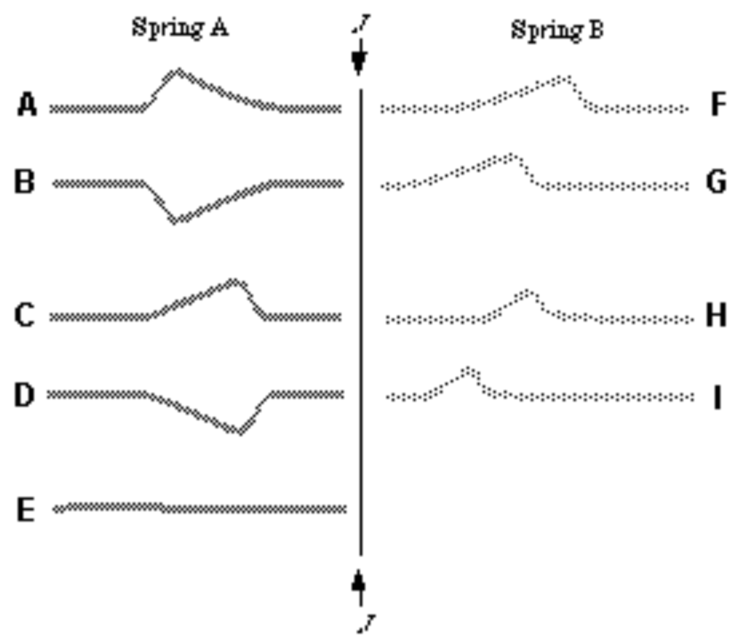
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. The pulse is not going to switch to the other side of the spring. It will however become smaller as we said because the tension in spring b is greater than spring a.



Q14. Which option best represents the pulse in spring A? E

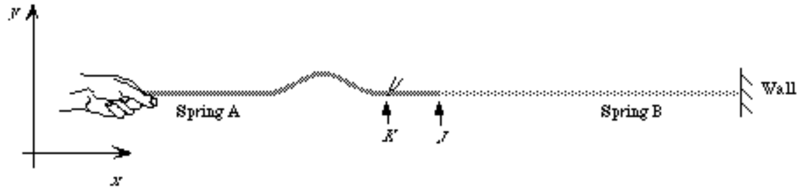
Q15. Explain. After the pulse has traveled out of spring a it is going to enter spring b.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Unable to tell

Q17. Explain. We need to know distances!

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. for a tranverse wave, the particles in the springs (and so, the string), move perpendicularly to the wave. so, the y.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Same as 2

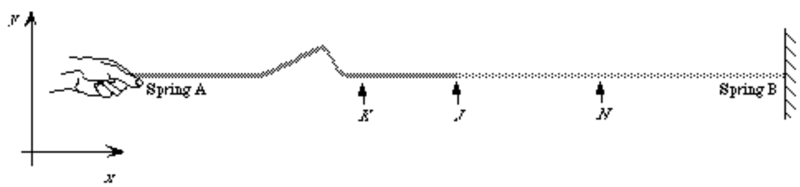
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. It traveled faster in A, so A must have greater tension than B.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. I don't remember> :)

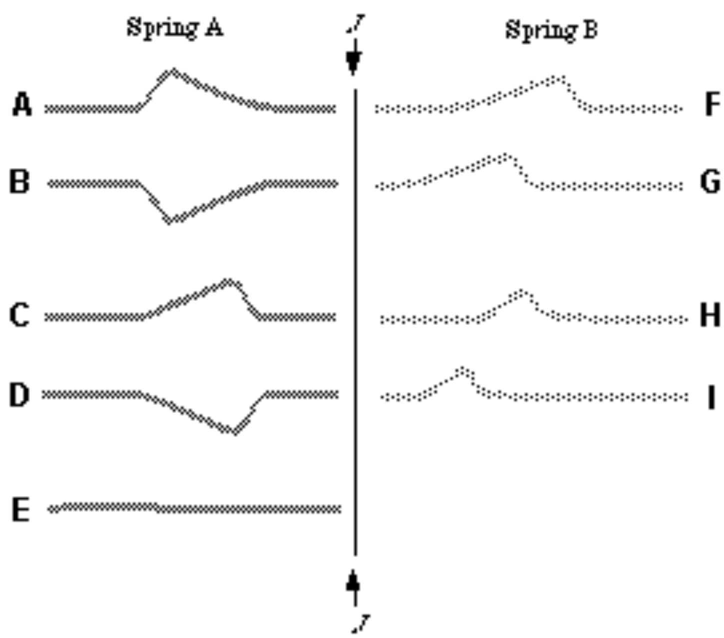
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. Same shape as A, but smaller.



Q14. Which option best represents the pulse in spring A? A

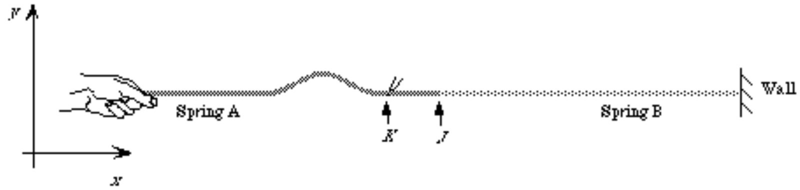
Q15. Explain. J is like the free end of a spring, so the reflected pulse will be on the same side as A.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. The pulse is moving faster in A, and the distances to K and to N are about the same, so D=RT means that A must be faster!

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The string will move up and down as the pulse passes, but is fixed in that position so will not travel horizontally.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. The decrease in velocity indicates a changing spring constant. This will cause some compression of the second spring as it receives the pulse and will result in horizontal movement, in addition to the vertical movement imposed by the pulse.

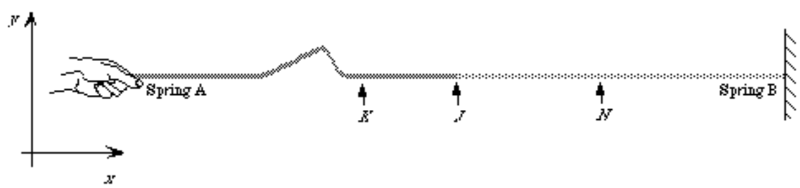
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Greater Than

Q9. Explain. Speed decreased. Therefore, the pulse has greater difficulty travelling through the spring. Therefore, the tension must be greater.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. No information is provided with regard to the masses of the objects.

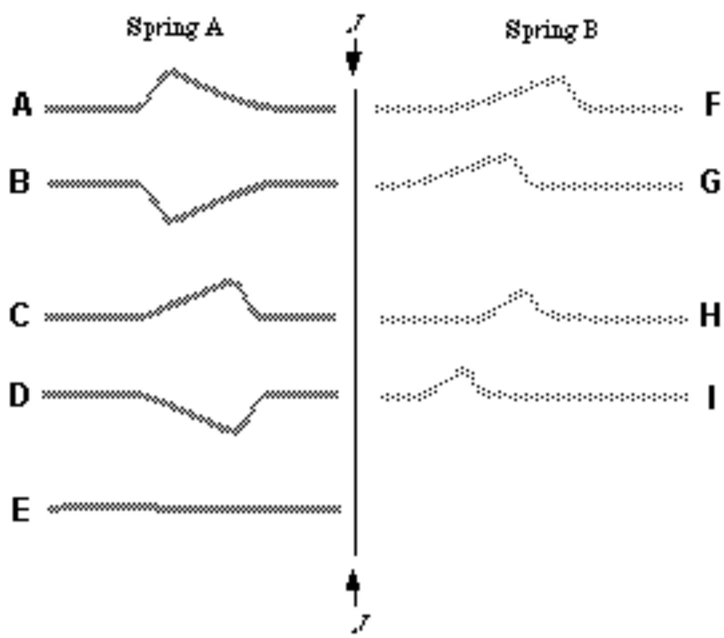
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. There will be a decrease in amplitude in accordance with the decrease in speed.



Q14. Which option best represents the pulse in spring A? A

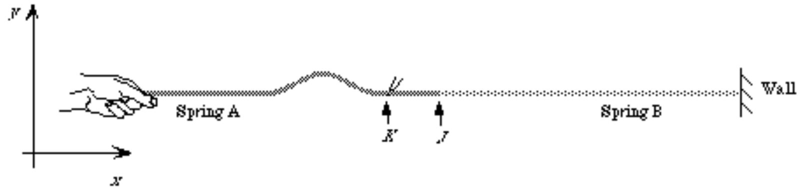
Q15. Explain. The effect of changing tensions will have effects similar to hitting a fixed end. Therefore, there will be a reflected pulse mirroring the image of the original pulse. However, the reflected pulse will have a smaller amplitude.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Not Answered

Q17. Explain. There is no way to ascertain the time it takes to travel a given distance with the information provided.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The spring does not stretch or compress for transverse motion- so therefore there is no x-componen of movement.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. The spring does not stretch or compress for transverse motion- so therefore there is no x-componen of movement.

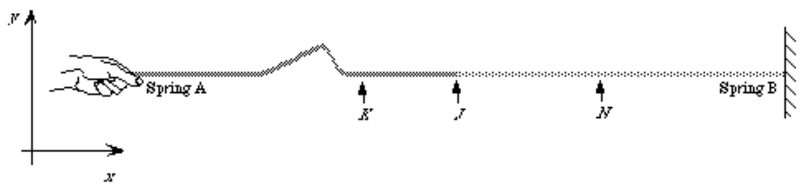
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. Since it moves more slowly in B- it has a higher mass/length density and so it has less tension (the spring coils are closer together)

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. Since it has less tension then its coils are closer together

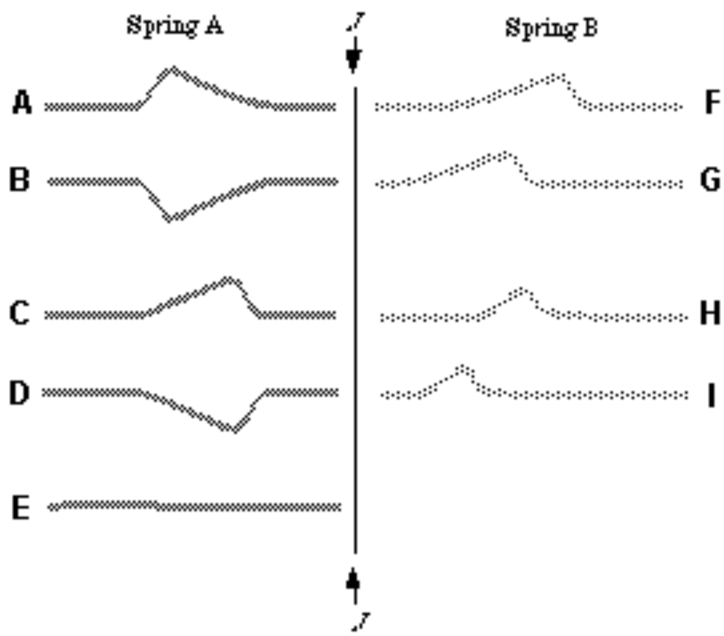
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. it has less amplitude because it travels slower but has the same shape and size.



Q14. Which option best represents the pulse in spring A? E

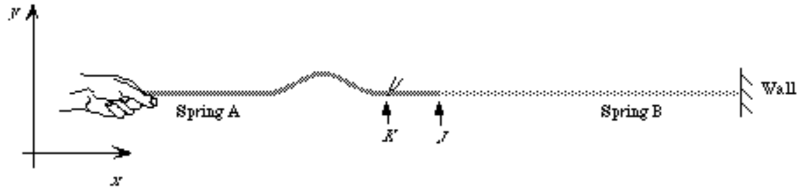
Q15. Explain. the pulse has moved past A and into B so A is stationary again

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. Less than because it travels faster in A than in B.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The particles only move up and down

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. The particles only move up and down

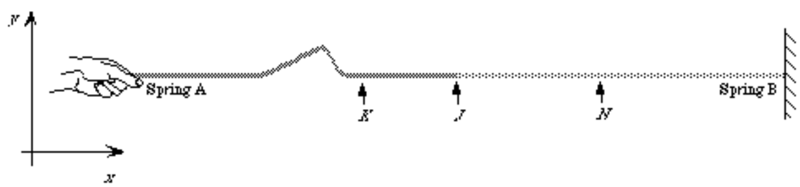
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Unable to Tell

Q9. Explain. You cannot tell based on how far each is stretched in the diagram.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Equal To

Q11. Explain. same springs have same mass per unit length

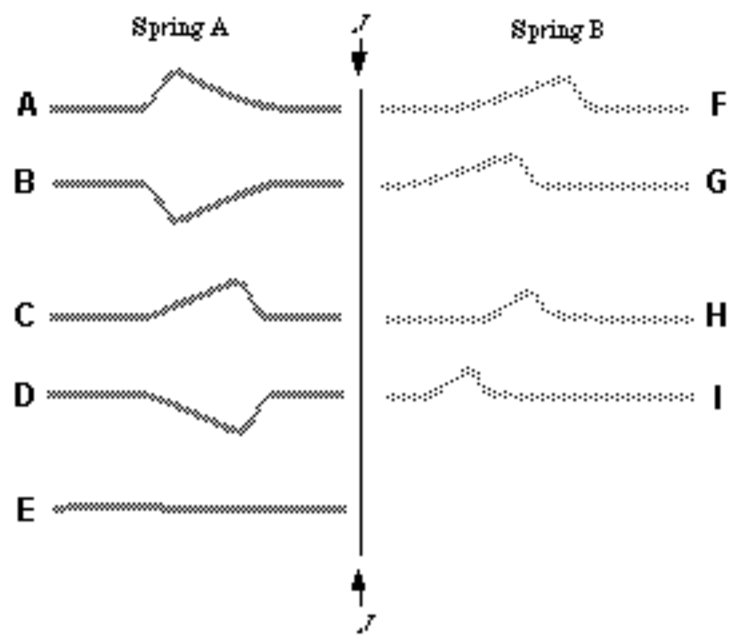
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. Pulse travels down spring



Q14. Which option best represents the pulse in spring A? C

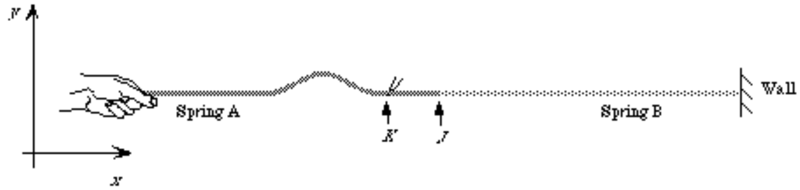
Q15. Explain. Pulse continues down string

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. This value would be less than the other value.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. the yarn only moves up and down since the string doesnt move left and right, its the wave that moves through the spring

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. just like the yarn, that point only moves up and down since the string doesnt move left and right, its the wave that moves through the spring

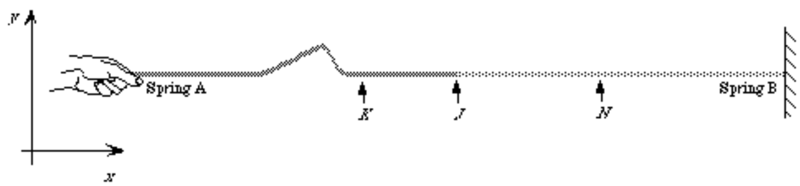
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. if velocity is lesser and tension has to be lesser since they velocity is directly proportional to the square root of the tension.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. velocity is proportional to the inverse square root of the mass of the medium. so mass may be highter.

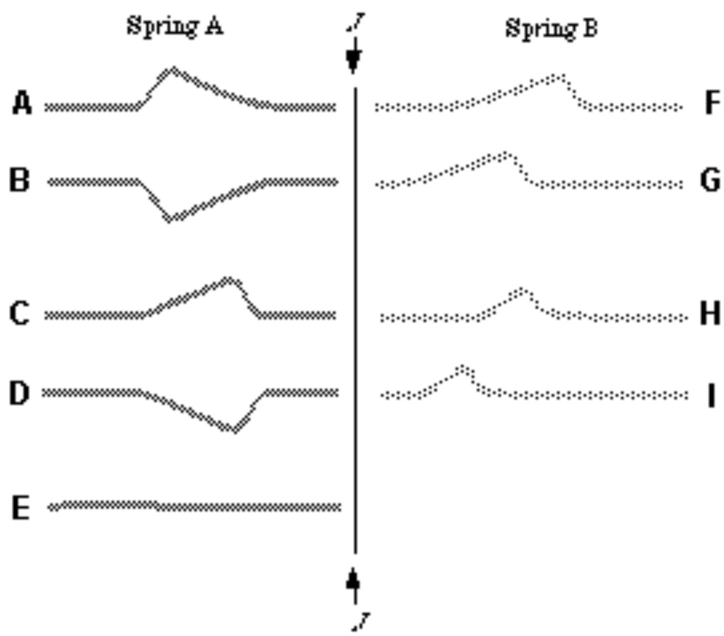
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? I

Q13. Explain. the freqency remains constant. since its slower that means the wavel length has to smaller. and some energy is lost so the amplitude is also smaller.



Q14. Which option best represents the pulse in spring A? D

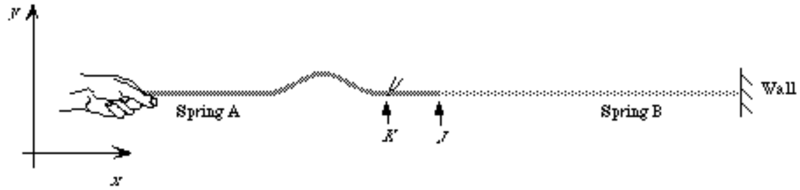
Q15. Explain. some of the wave relects back into the string a and some continues onto string b.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. the time should be the same. since the velocity of the wave on string b has decreased its wavelength has also decreased. the frequency remains the same so does the period.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q5. Explain. Since the string at each point has an amplitude and travel parallel to the string.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. Since the string still has an amplitude and travels parallel to the string.

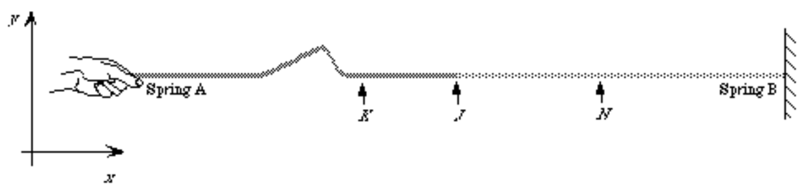
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. Since the pulse travels faster in string A than string B.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. We do not know whether or not the amplitude or the wavelength of the pulse is the same or not.

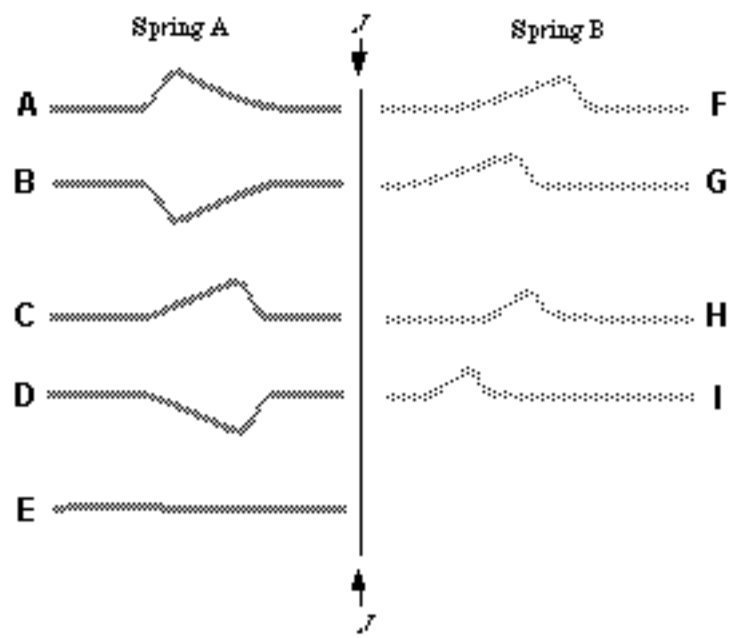
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. Since the pulse continues to string B as it was in string A.



Q14. Which option best represents the pulse in spring A? E

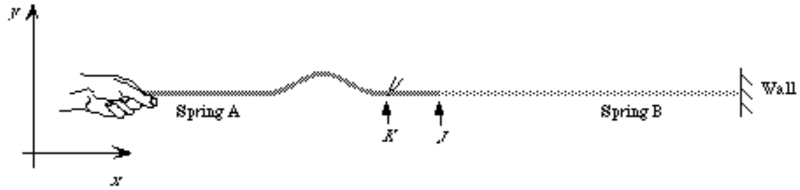
Q15. Explain. Since the pulse has not left string A and is now on string B.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. Since the tension in string A is greater the pulse travels faster.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. It goes up and down only.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. This type of wave only has a y componant

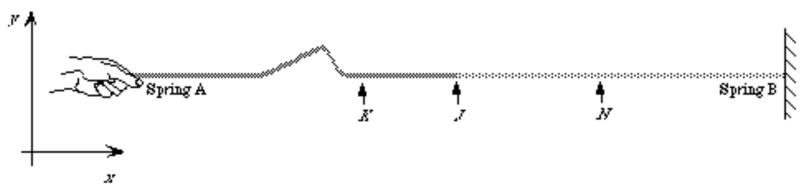
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. They are both being pulled on with the same force.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. we would need more information about the two springs

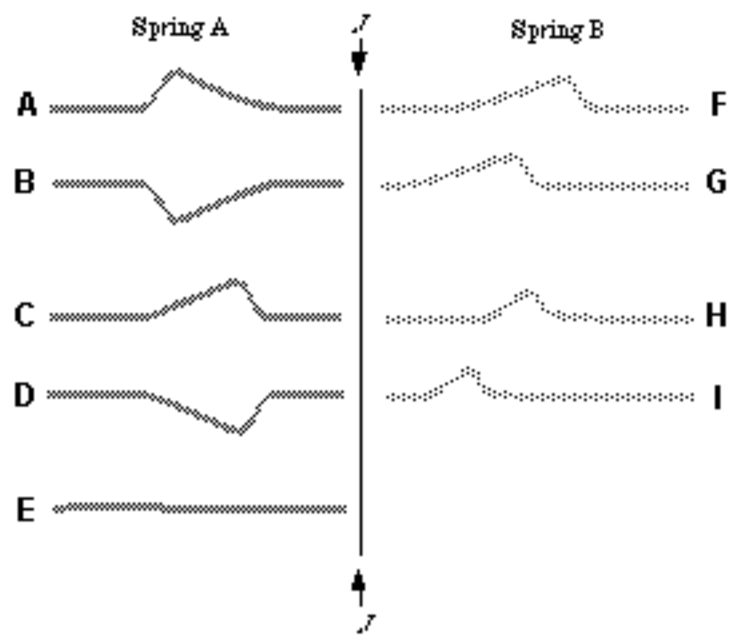
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. Its smaller and the same shpe/orientation.



Q14. Which option best represents the pulse in spring A? E

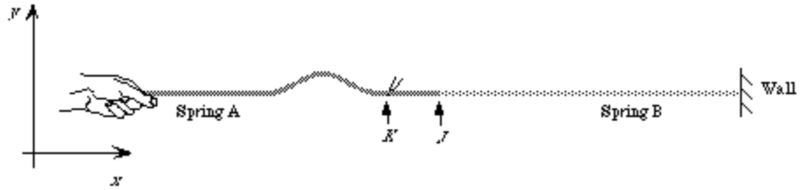
Q15. Explain. Its greatly reduced because alot of its energy was transfered into spring B, only some was reflected.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Unable to tell

Q17. Explain. We are given no constraints on how far those points are from point J.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q5. Explain. Since the strings have stretch but the string does not the system will move horizontally as the wave passes into the spring. The wave creates the vertical velocity.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q7. Explain. Since there is no spring involved yet there is no Y direction.

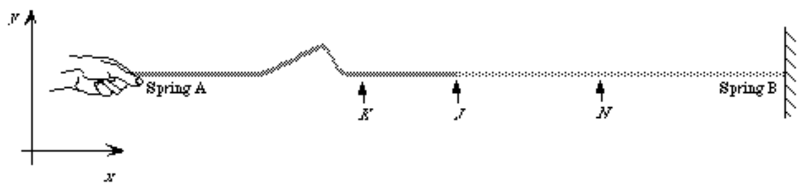
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. Equal, since the forces must cancel.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. Greater than since the velocity is greater.

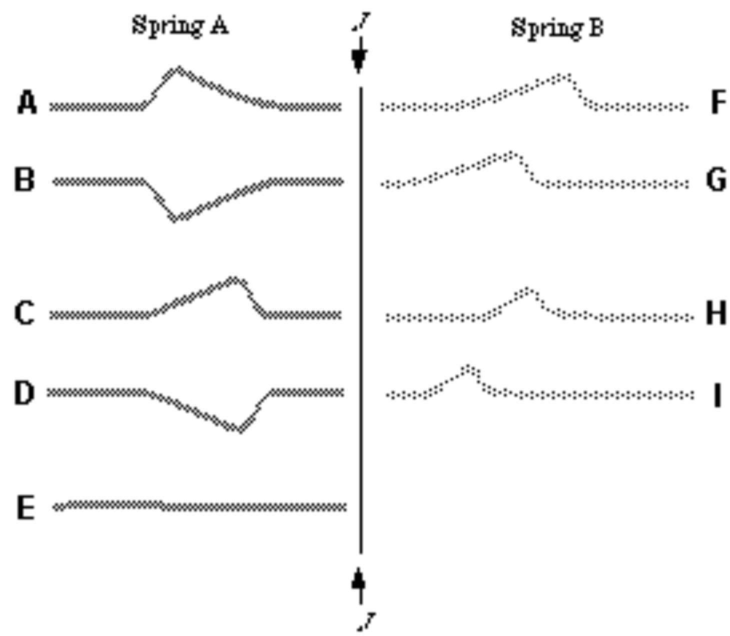
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. The pulse should look the same since these are all open nodes.



Q14. Which option best represents the pulse in spring A? E

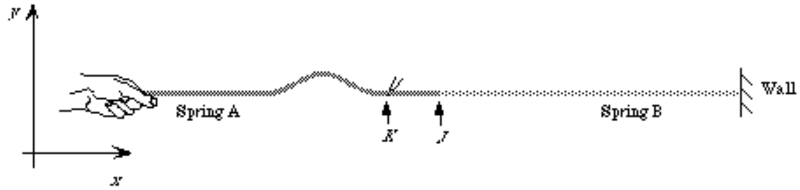
Q15. Explain. There should be very small reflection.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. Greater than since velocity is less.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. it is a transversal wave

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. it is a transversal wave

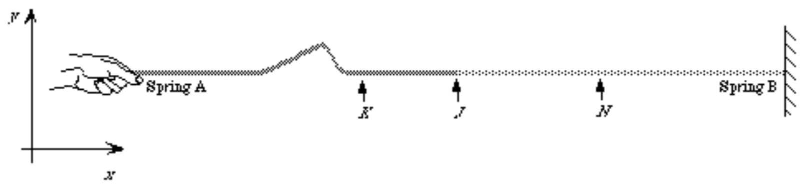
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Greater Than

Q9. Explain. it is slower in b

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. it is slower in b

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. same wave with less velocity

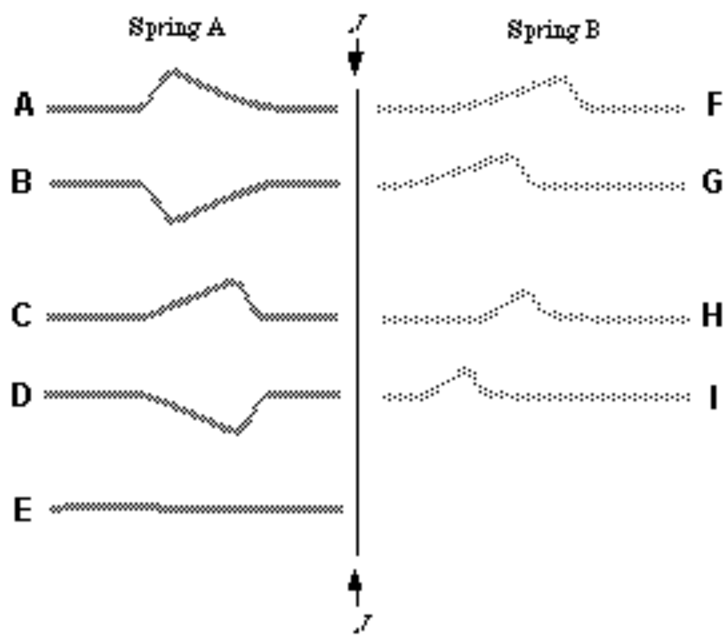
Q14. Which option best represents the pulse in spring A? B

Q15. Explain. it is reflected off the wall and comes back

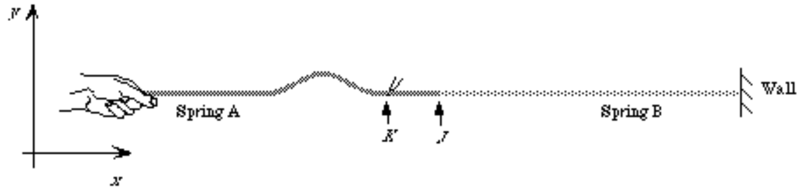
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. the velocity in a is faster than in b

End of response



Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q5. Explain. pulling in the x direction

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q7. Explain. moving in the x direction

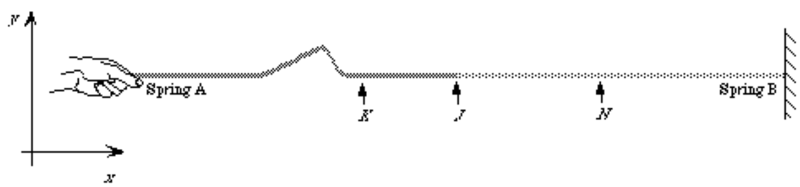
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. pulling the same for both cases

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. a moves faster

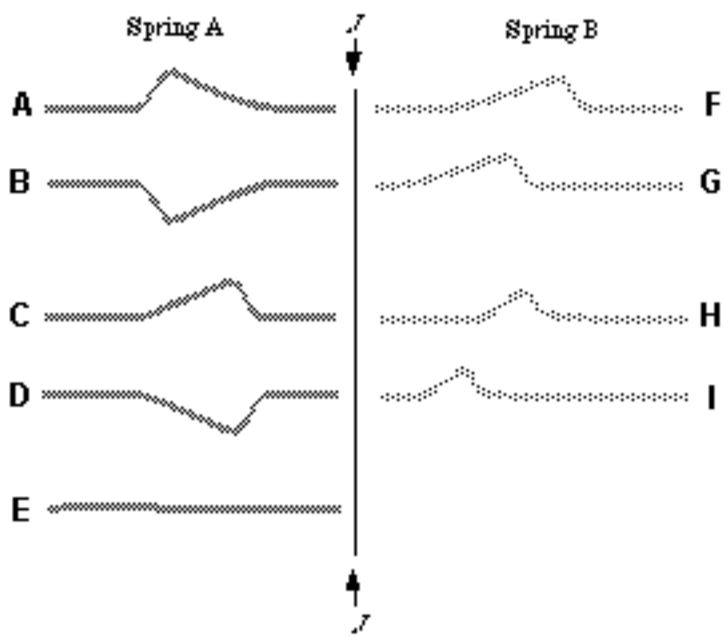
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. still the same



Q14. Which option best represents the pulse in spring A? A

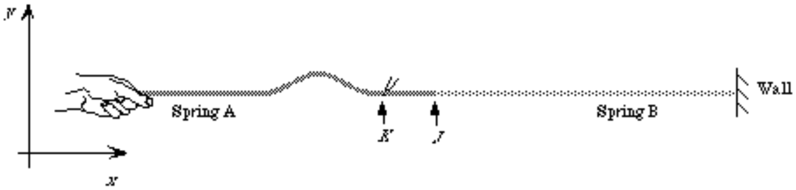
Q15. Explain. reverse

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. because spring a is faster

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. the entire string doesn't have any horizontal component of force.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q7. Explain. there is no horisontal force

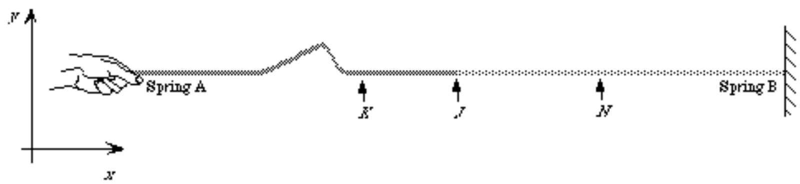
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. they are in line so they have the same tension

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Less Than

Q11. Explain. the equation says the more the mass the less the speed

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

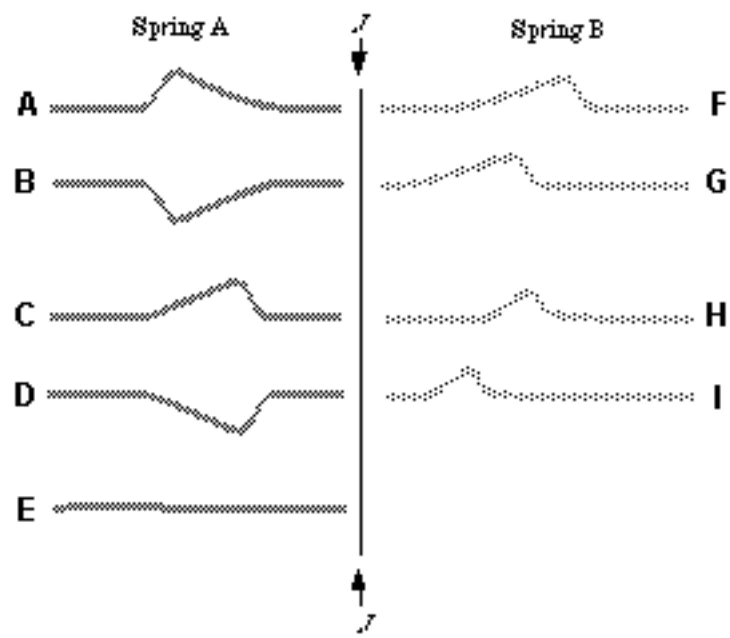
Q13. Explain. it will be the same shape and close becasue it is after the transition

Q14. Which option best represents the pulse in spring A? E

Q15. Explain. all the energy is transfered to the other spring

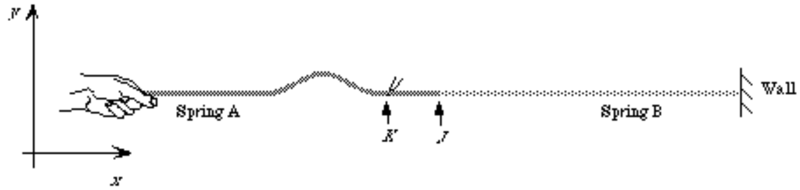
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. the pulse is sloweer in A than B so it takes more time



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. It moves only up and down, therefore having a velocity in only the y-direction

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. The velocity at the junction point j is a up and down motion. There exist no x direction vector of motion.

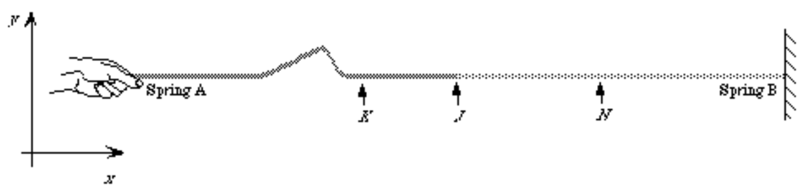
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. The pulse moves faster in the spring A. Since higher velocity is acheived in springs with higher tension, then we can say that A is greater than B.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. Because we are saying there is more tension in A, it is stretched out over the same amount of length, so it has less mass per unit length.

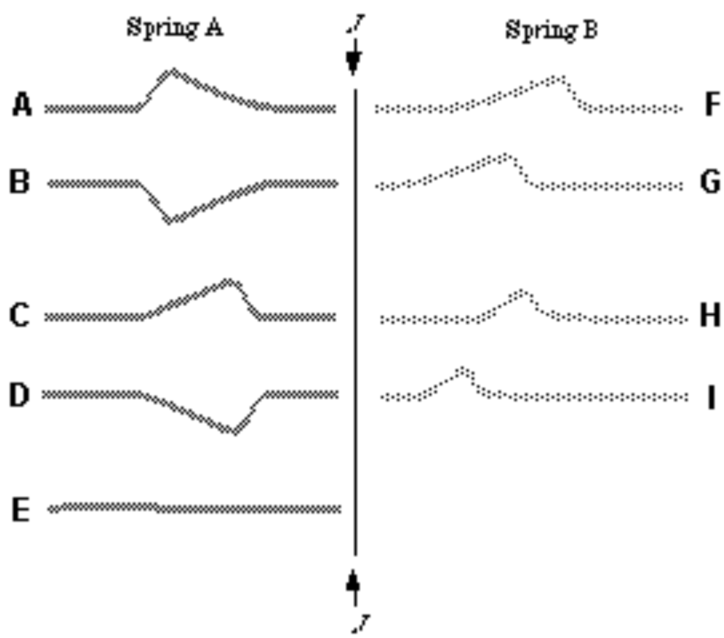
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? I

Q13. Explain. The energy will be transfered from the pulse in A. The wave will slow down because it is in a different median that is not as tense.



Q14. Which option best represents the pulse in spring A? E

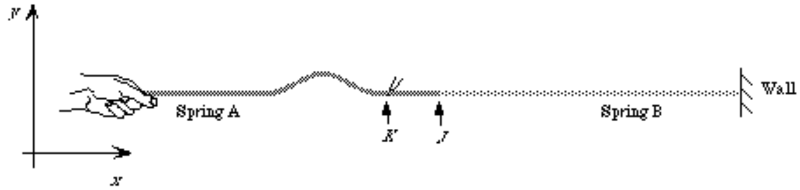
Q15. Explain. The pulse may be is completely transfered to Spring B

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. Since the pulse at K is in median A the traveling time it takes to pass through it is the same time it takes for a pulse to pass through N because the wavelength of the pulse is much less.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. it's a longitudial wave

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. same as above

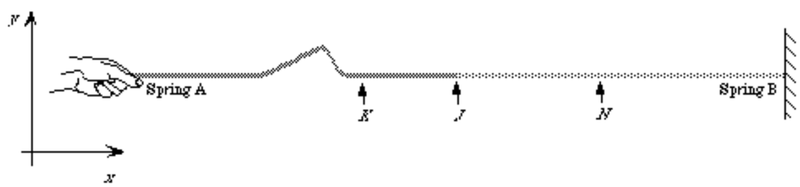
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. velocity doesn't depend on tension.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. greater mass per unit length slower the velocity.

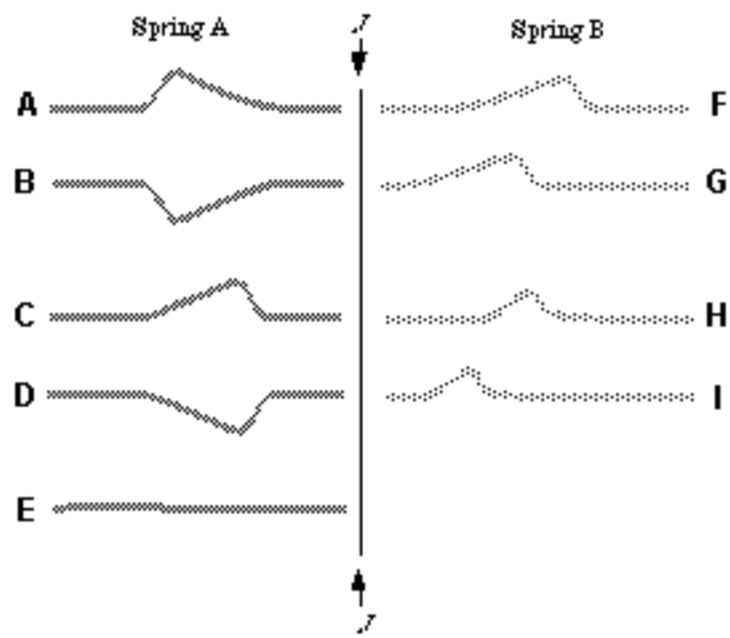
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. same direction as original but the amplitude is smaller because the wave is also reflected.



Q14. Which option best represents the pulse in spring A? A

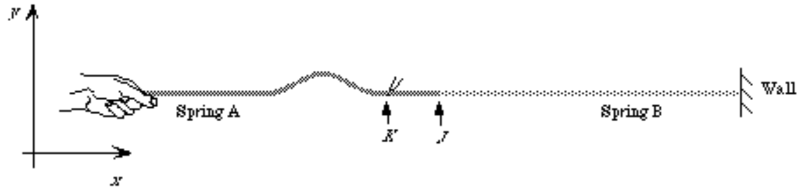
Q15. Explain. Imagine this is at free end spring, so the relected wave is on the same side of the incident wave,

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. spring B has more mass per unit length. It therefore slower in velocity.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The pulse is a transverse wave, so particles in the wave move only perpendicular to the wave motion (in the y direction).

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. The same reasoning as the above question was used.

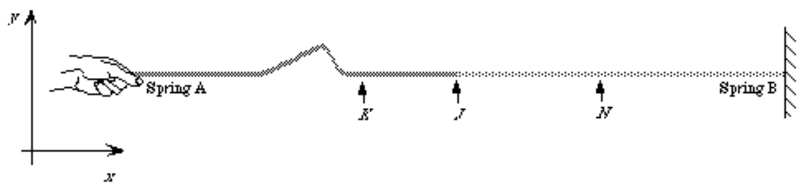
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. The springs are connected end to end, so the tension must be the same.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. The pulse travels faster through spring A, so the restoring force must accelerate the spring more than in spring B. If this is true, then by F = ma, B has more mass per unit length to get a smaller acceleration.

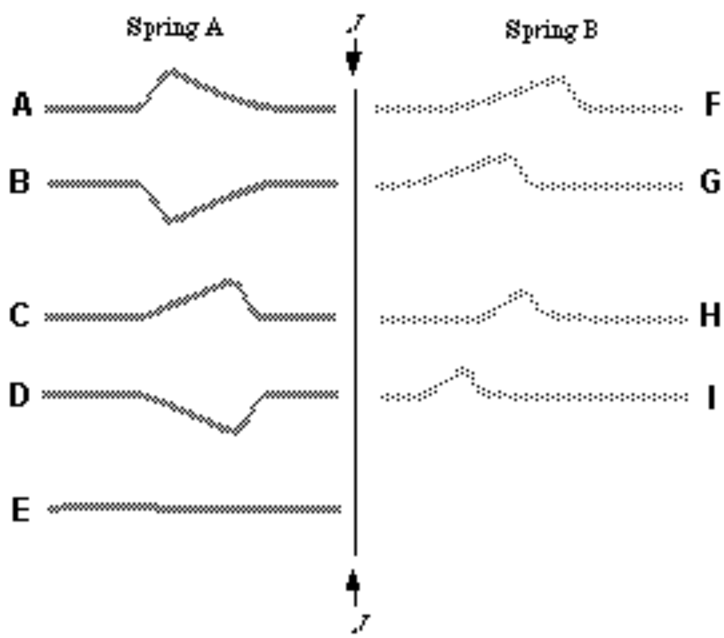
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. Since the pulse has just passed the junction, the back end of it must still be at the junction. Furthermore, the pulse must be smaller since B is a more massive spring per unit length. Picture G is the only option that has both of these properties.



Q14. Which option best represents the pulse in spring A? E

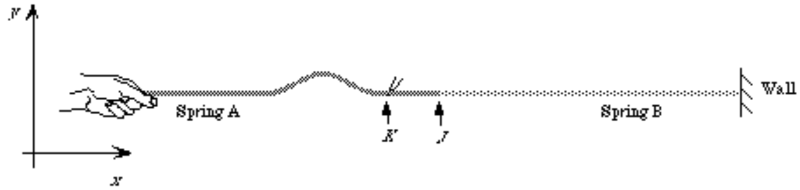
Q15. Explain. The entire pulse is transmitted to spring B, so none of it is reflected back to spring A. The spring is stationary.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. The pulse will slow down, but the wavelength will also decrease. The combined effect will be to keep the period the same as it was before.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. Assuming there's no compression in the wave

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Assuming purely transverse wave

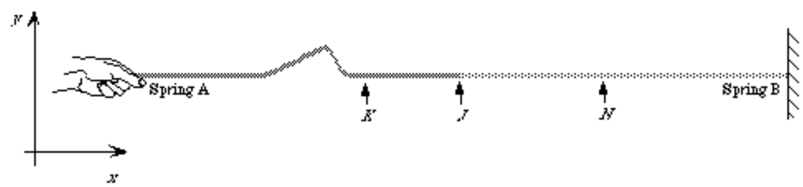
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. a = 0 => net force = 0, equal force on sides of junction, everywhere else therefore

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. v depends only on tension and mu

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

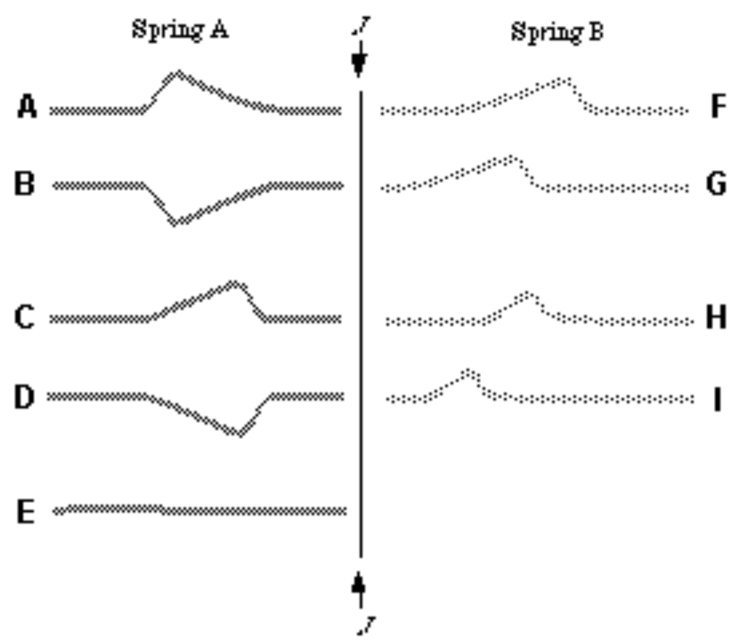
Q13. Explain. squashed together because it has the same energy as before

Q14. Which option best represents the pulse in spring A? E

Q15. Explain. no pulse left in a

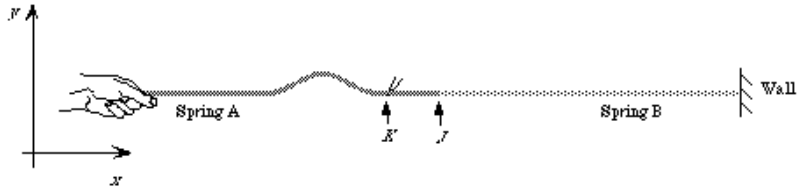
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. v a faster than v b



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. Yarn moves up and down.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Spring moves up and down, so only in the y direction.

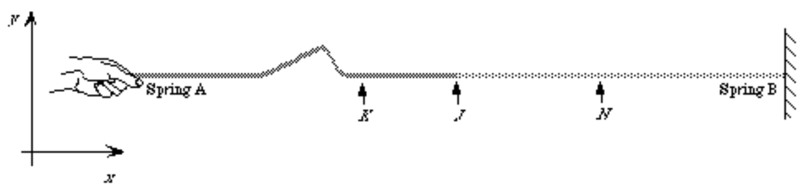
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. Velocity of pulse is faster in spring A.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. Greater mass/unit leads to slower pulse speeds.

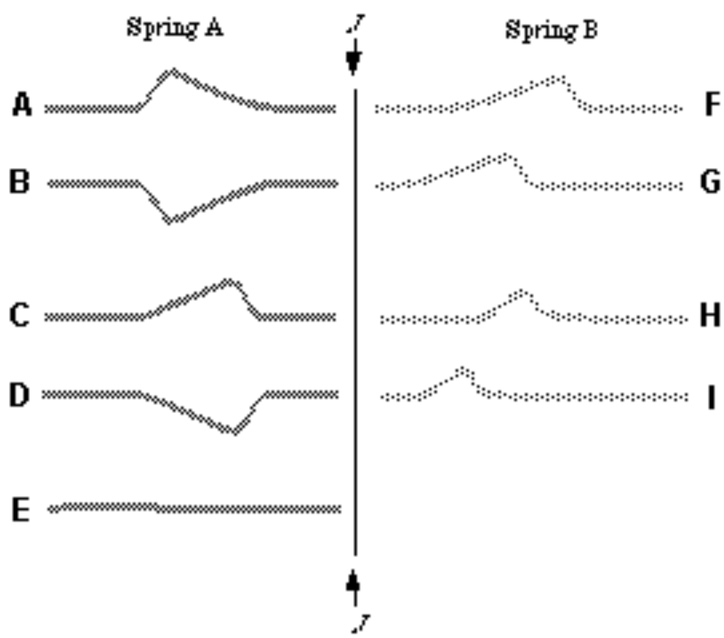
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. Pulse will probably be smaller and slower as spring B has a higher mass/length and lower tension.



Q14. Which option best represents the pulse in spring A? None of the choices above

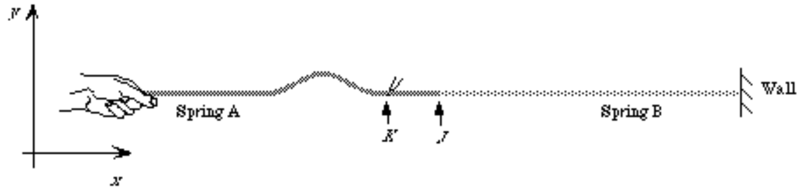
Q15. Explain. I'm confused as to what the question is asking. what does it mean to have the pulse reach junction J? The middle point? the front?

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. The pulse will reach point K first because point K is before point N. However I am not sure if I understand the question completely.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. Because the single points of SHO always go up and down, they never move left to right.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. total velocity of the pulse is determined by the indivudal velocity of each of the parts/points of the strings.

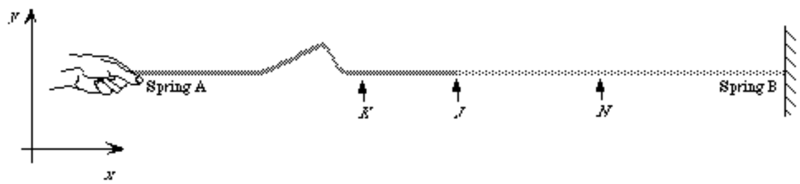
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. since the pulse travels faster at spring A that shows that there is a greater tension, since greater the tension than greater is the force that puls each point downwards.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. We are unable to tell, because the mass plays no role when you compare the velocity of two springs, and since the velocity is the only thing given we can't know what the mass per unit length of each string is.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? I

Q13. Explain. Well we know that the tension in B is les than in A which means that forces become lower to, thus creating a lower pulse.

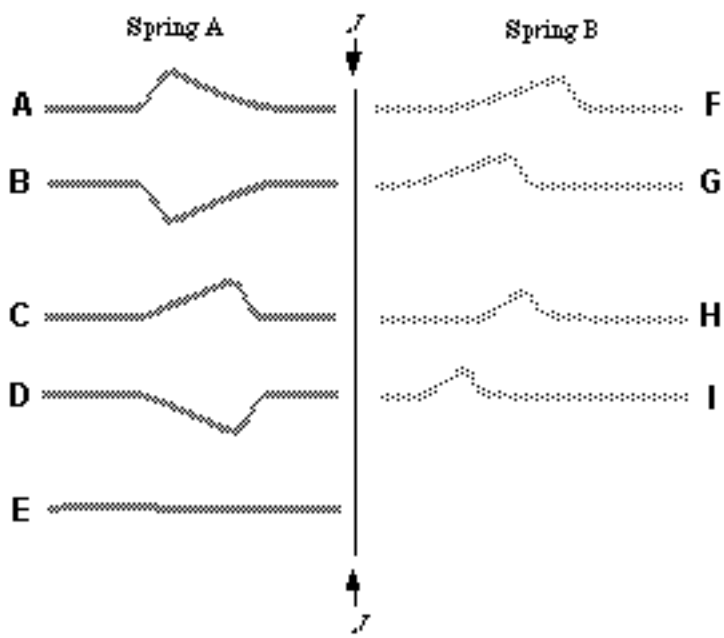
Q14. Which option best represents the pulse in spring A? E

Q15. Explain. because most of the pulse starts to get absorbed by B we get almost no pulse in the spring A.

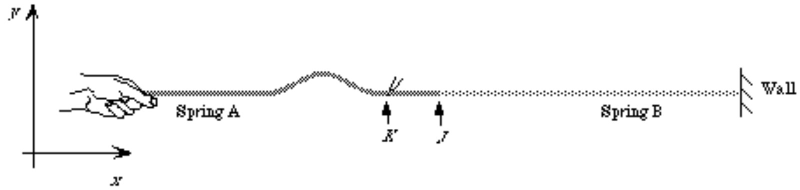
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. since we know that the pulse is traveling faster in spring A and slower in spring B, which means that it will take less time for the pulse in spring A to cover the same distance as it is in spring B.

End of response



Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. Because the wave is a transverse wave, the individual parts ('particles') of the wave only move along the y-axis while the wave propagates down the spring.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Again, the wave at this point only gives its particles velocity along the y-axis. In spite of the change in medium, the junction is still affected the same way.

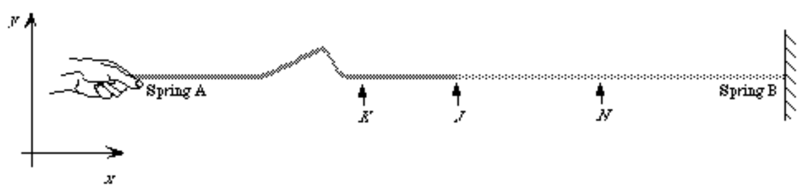
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Unable to Tell

Q9. Explain. Since the pulse travels faster in spring A, this could mean that the tension of sping A is greater than that of spring B. However, this is not the only possible scenario.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. Once again, it is possible that the mass per unit area of the springs is different; however, since there are two possible factors in this case, it is impossible to tell.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

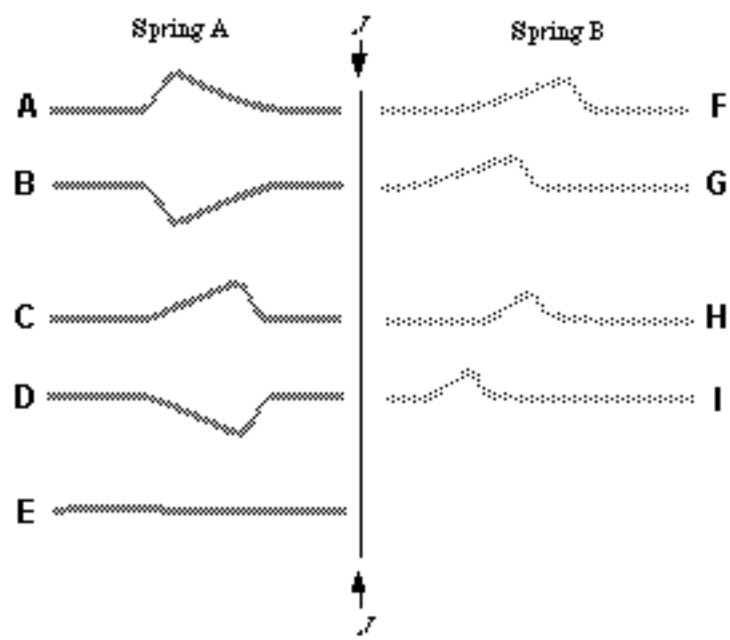
Q13. Explain. The shape of the pulse should stay the same regardless of the change in spring medium.

Q14. Which option best represents the pulse in spring A? B

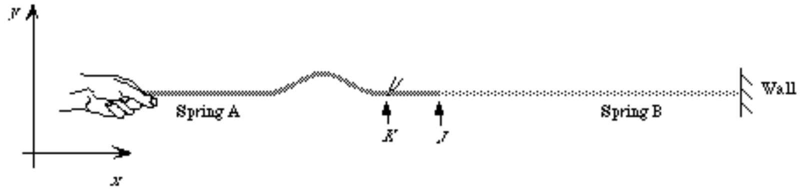
Q15. Explain. Because the pulse is traveling into a different medium, there will be a slight reflection of pulse back down spring A. It is opposite the original pulse.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. Since both pulses (the pulse on A and B) are the same in shape (and the same length), it takes the pulse across N longer to get across. The pulse travels faster in spring A, so it takes less time to travel the same distance.



End of response



Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.

Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. it is a transverse wave

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

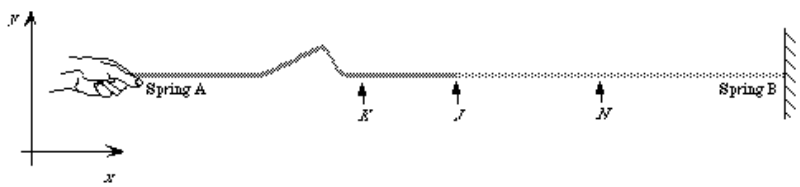
Q7. Explain. only up and down through this point.

Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Unable to Tell

Q9. Explain. not enough information provided

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. not enough information provided



The student generates an asymmetric pulse in spring A that moves to the right as shown below.

After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. it is transmitted without deformation

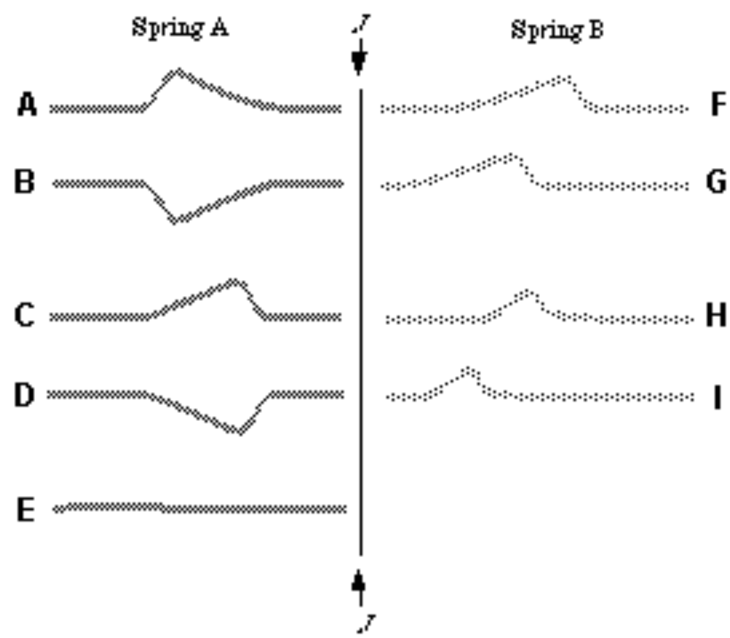
Q14. Which option best represents the pulse in spring A? B

Q15. Explain. it is reflected underneath and opposite

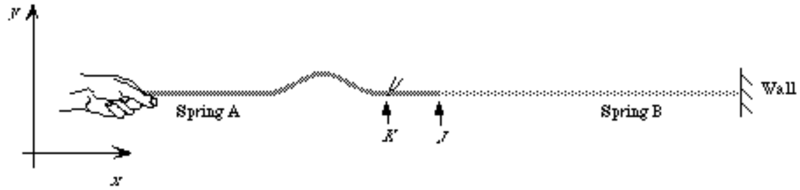
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Unable to tell

Q17. Explain. I don't see how you could tell.

End of response



Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. Only in the Y direction because the string itself doesn't move at all.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. The junction point will move up and down, but will not move in the X direction.

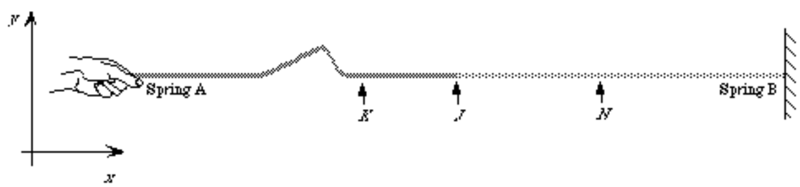
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. The tension must be the same because the springs will stretch until the tensions are the same.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. B must be heavier because the waves travel faster in A.

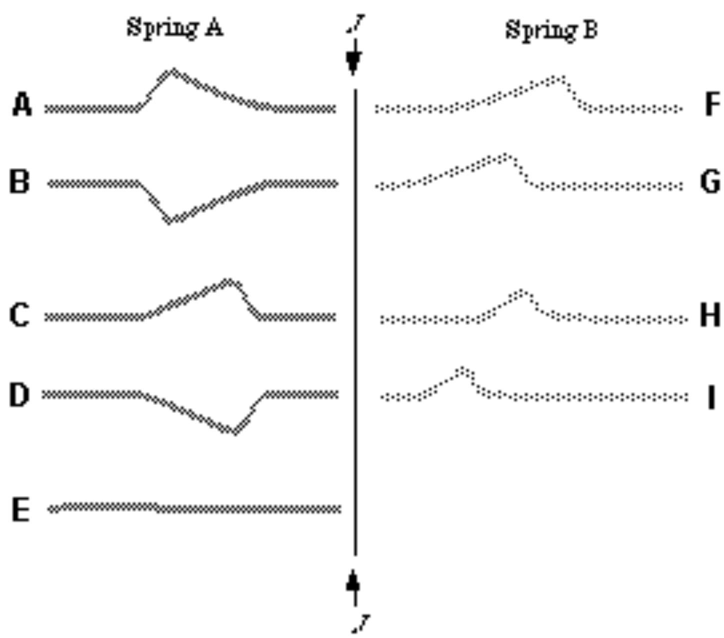
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. It must be F because the wave will continue.



Q14. Which option best represents the pulse in spring A? B

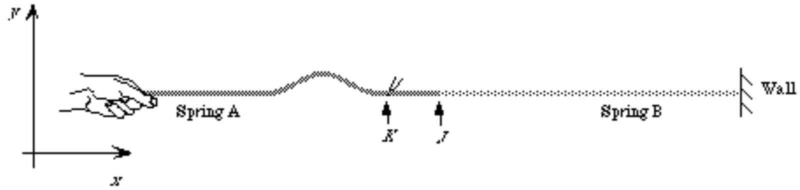
Q15. Explain. It will look like B because it will flip sides of the spring and bounce back.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. The waves travel slower in spring B as it's given in the problem so it will take longer for the wave to pass by a point.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain.

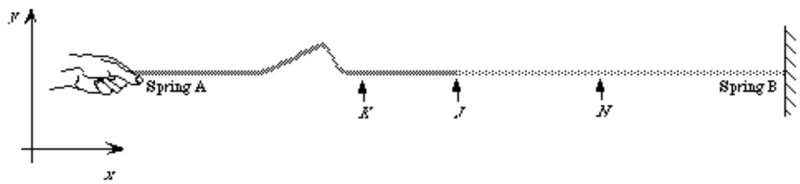
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. the tension must be equal in both springs if they are connected, however the k value or the linear density of the spring can be different

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. as it travels slower and the tension is equal the mass must be more in the second one to account for the smaller acceleration in the wave

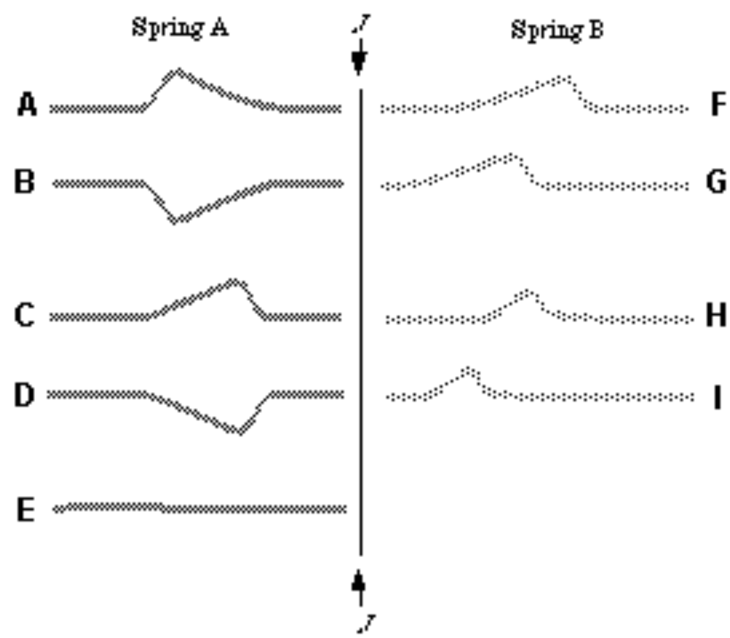
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? I

Q13. Explain. i would guess this as it is what we might get if we say that point j is sort of a 'wall' like what we had in tutorial



Q14. Which option best represents the pulse in spring A? D

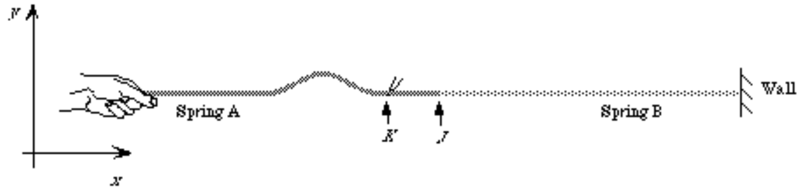
Q15. Explain. it only makes sense if that if the spring is more dense in the second part that there would be some sort of refelction back on the less dense spring

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. well you said it traveled slower in spring b so that's what I'm guessing

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q5. Explain. As it gets to the yarn it has it in both, then at the top it is just y direction, but then after that it's both again.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. As it approaches j, it is in both directions, because it goes up, but also goes along the spring too.

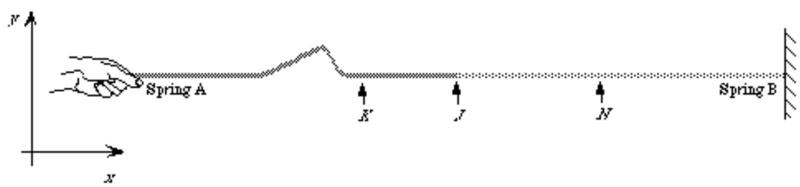
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. Because it travels slower through B, so it isn't as tense.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Equal To

Q11. Explain. The mass of the springs is the same, so the mass per length is also the same.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

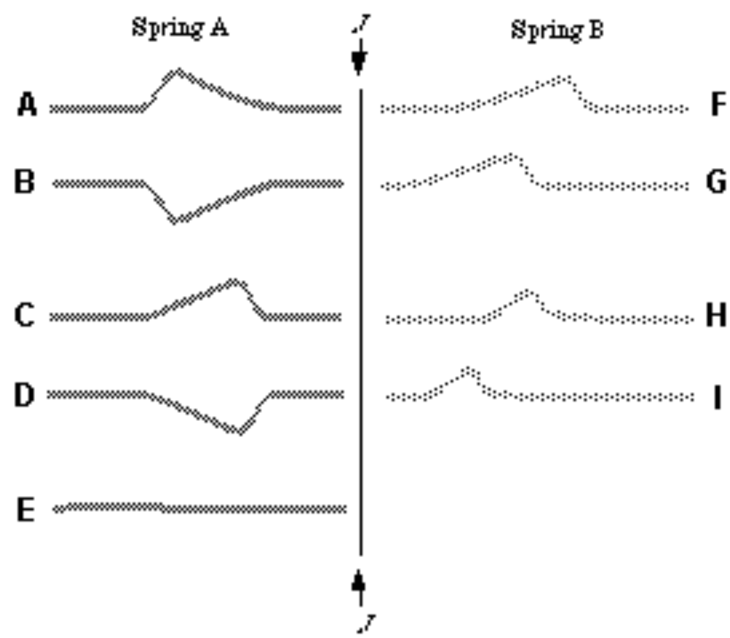
Q13. Explain. It won't change much, just a little smaller.

Q14. Which option best represents the pulse in spring A? E

Q15. Explain. The pulse has gone by, when it is all past j.

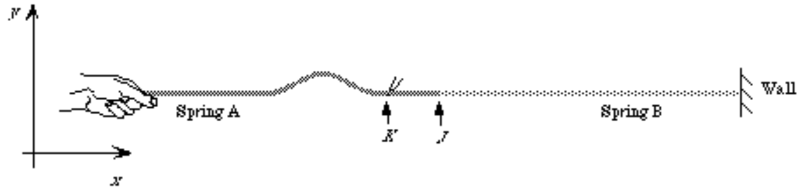
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. Since K is farther, it will reach N at the same time, since it travels slower in spring B.



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. points on this type of wave move perpendicularly to the medium.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Same reason as before

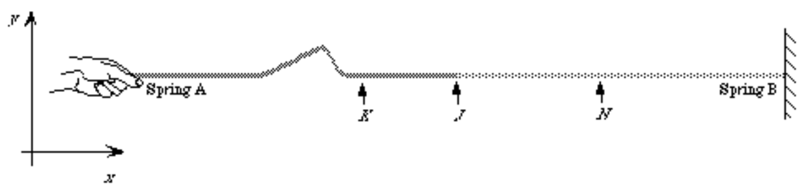
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. The greater the tension, the faster the wave.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. No idea

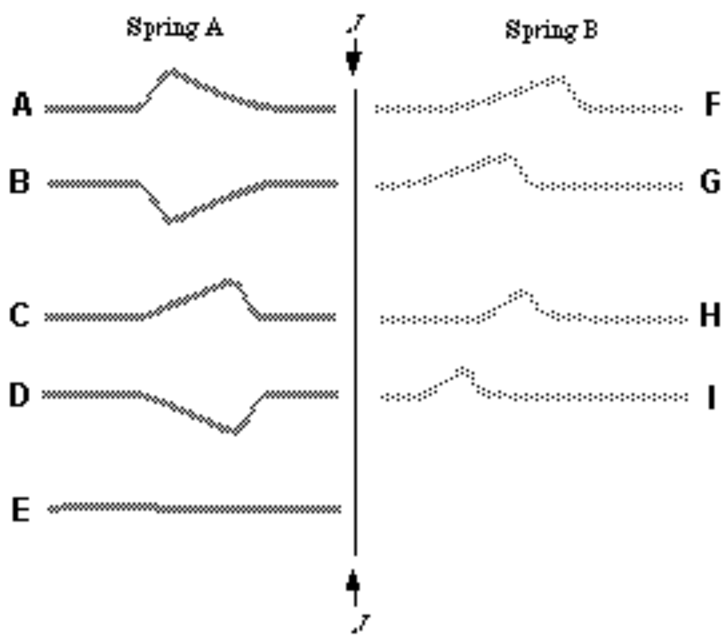
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. Should be a wave of similar appearance along the springs...that shouldn't change between the springs



Q14. Which option best represents the pulse in spring A? E

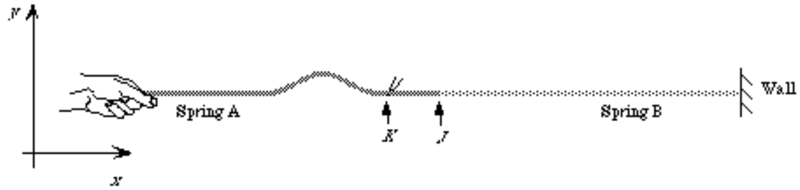
Q15. Explain. After the wave has moved to spring B, spring A should be flat.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. The wave on A is travelling faster than the wave on B.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. it moves up and down even though the vibration is going in the x-direction. it was done in a diagram in class, that is why we know the results.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q7. Explain. the pulse is still moving side to side and does not have velocity in the y-direction.

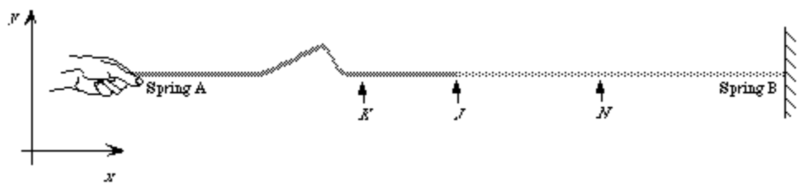
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Greater Than

Q9. Explain. because the pulse is coming from spring a to b therefore there is a higher tension in the first spring rather than the second spring.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. I am not sure how you are suppose to tell the mass per unit length because the mass is unknown and we do not know the length of the

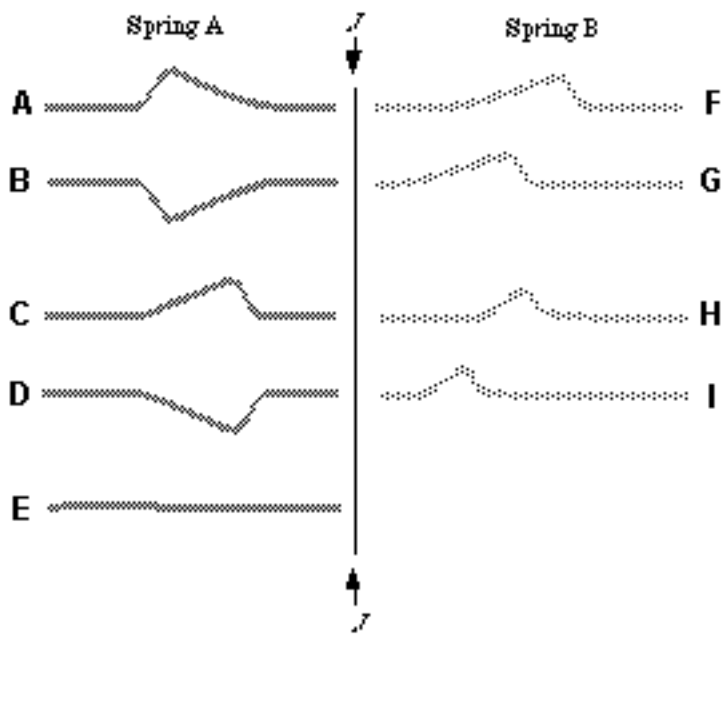
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. They pulse will be the exact same shape in the opposite direction which is represented by figure F.



Q14. Which option best represents the pulse in spring A? B

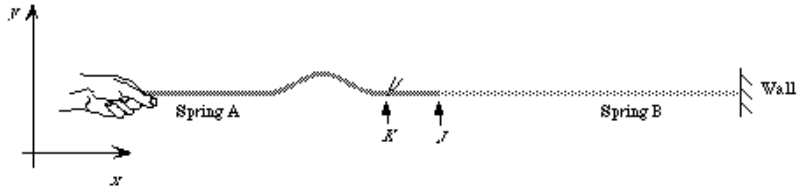
Q15. Explain. It will be a reflection of the original spring A going in one direction.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Unable to tell

Q17. Explain. You dont know the distance of the points from the spring. therefore in order to find the time you would need to know if the distances are equal.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q5. Explain. The string travels in the direction of X. There is also a velocity of the string moving upward at different sections.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. The pulse still moves in the string J and has the same properties as before.

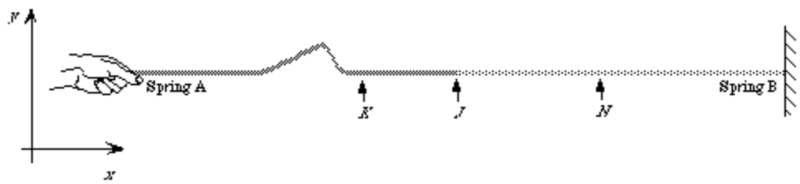
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Unable to Tell

Q9. Explain. you cannot tell. Amplitude is independent of wavelength and frequency.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. Greater than since the amplitude decreases. The spring must be heavier.

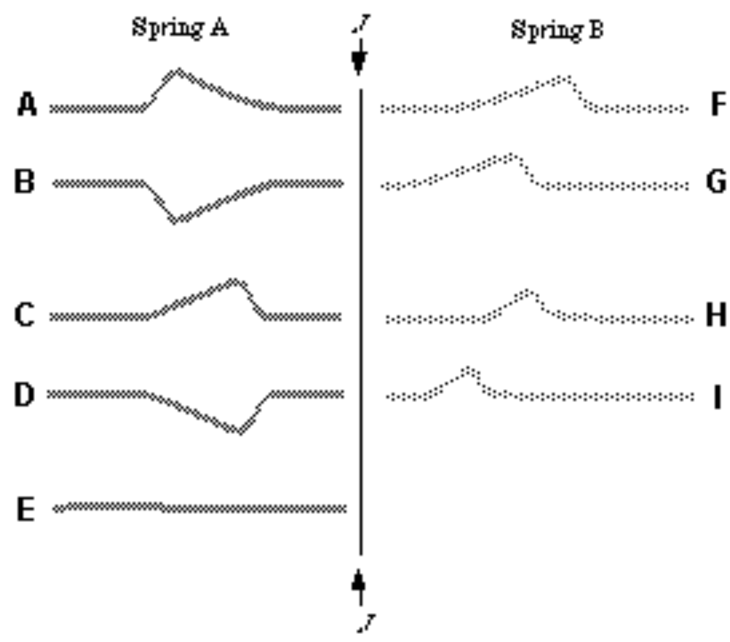
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. The spring maintains the same wave going along B.



Q14. Which option best represents the pulse in spring A? Not Answered

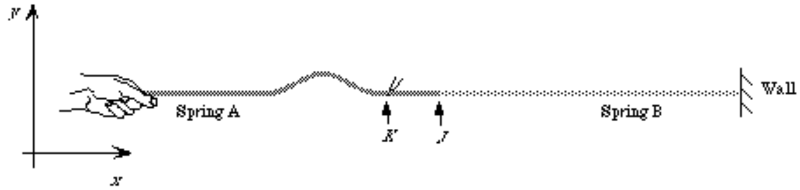
Q15. Explain.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Not Answered

Q17. Explain.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. It is a transverse wave so all particles travel perpendicular to direction of motion of the wave.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Particles in the spring only move up and down, not side to side.

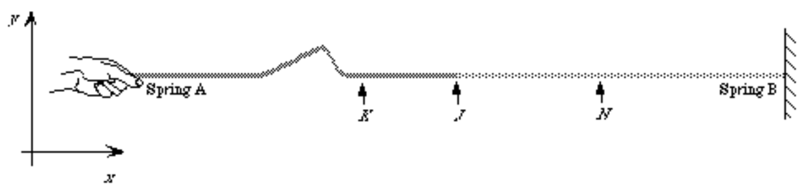
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Unable to Tell

Q9. Explain. Wave speed does not affect speed.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. It requires more force to move each particle so it travels slower.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

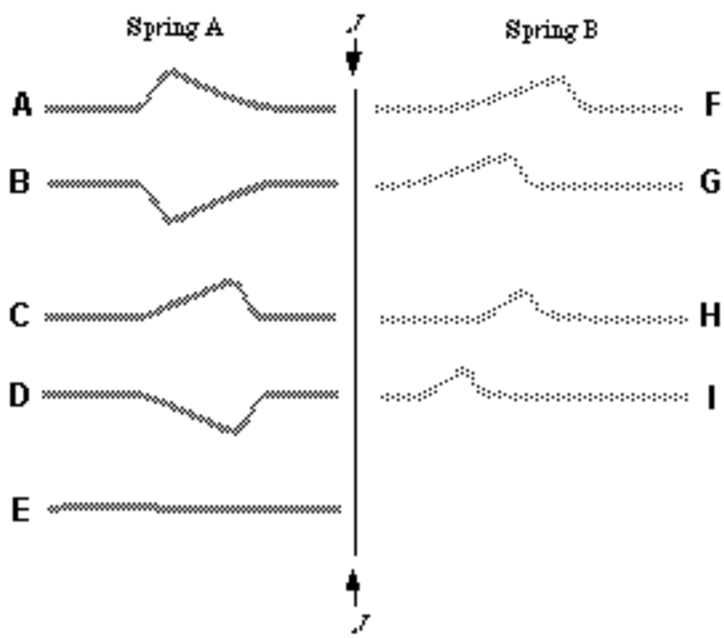
Q13. Explain. It is the same wave in every respect except it is traveling slower.

Q14. Which option best represents the pulse in spring A? E

Q15. Explain. All energy is transmitted. None is reflected.

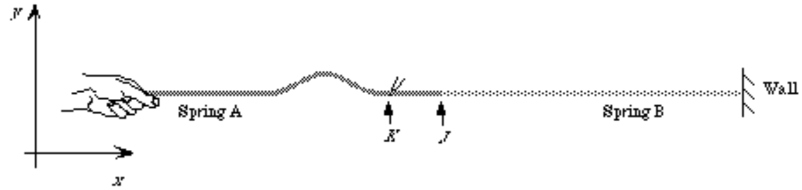
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. The pulse travels faster in part A so it will take less time than in part B where it is traveling slower.



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. Each piece of the spring, only oscillates up and down thus has only a y component of velocity. So the yarn will only move up and down.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Again point J will only move up and down.

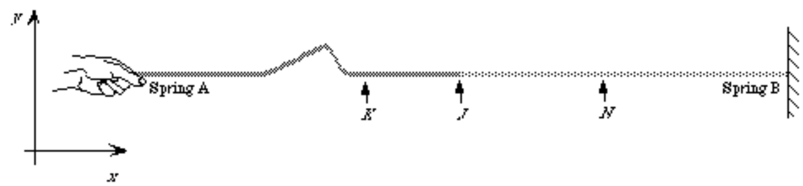
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Unable to Tell

Q9. Explain. We would have to know the spring constants or some other information.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. Not enough info.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

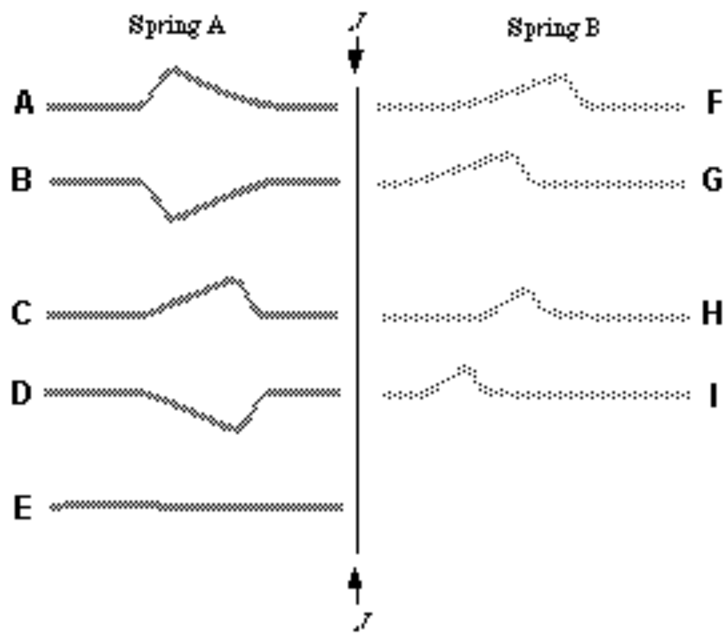
Q13. Explain. F looks most like the intial pulse in A.

Q14. Which option best represents the pulse in spring A? B

Q15. Explain. The pulse will continue onto spring B and small reflection will go back along A.

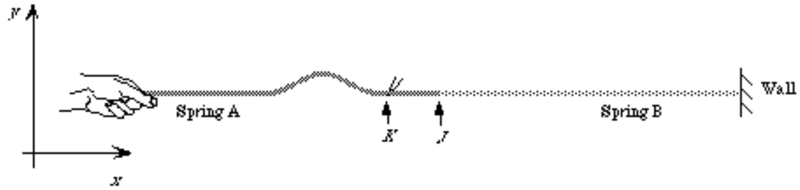
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Unable to tell

Q17. Explain. Without know tension or the spring constants we can't tell.



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. It is a transverse wave and like the demos in tutorial showed the strings movement is perpendicular with transverse waves; the string starts at rest so the velocity is upward

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. The spring is gaining height at that point but is still propelling the junction forward I think

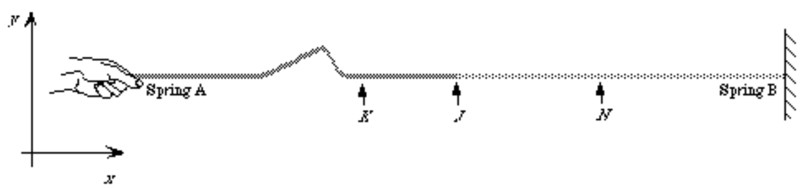
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Greater Than

Q9. Explain. I am assuming the density of the color on the picture indicates that spring b is more dense

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. I think more info is needed, however the picture color must indicate either the tension or the mass per unit length, I am not sure

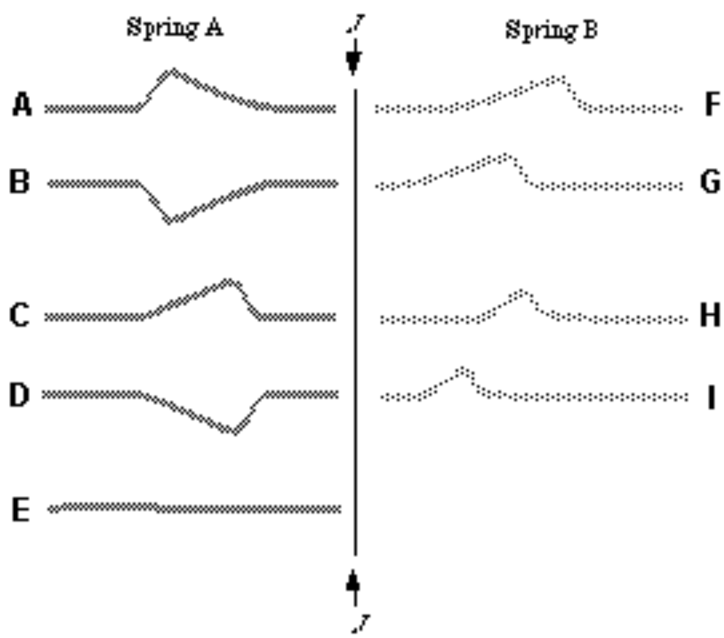
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. The speed of movement will change, but not the shape



Q14. Which option best represents the pulse in spring A? E

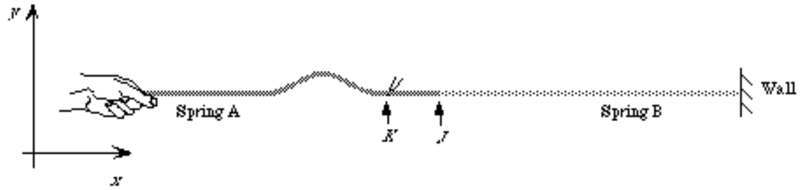
Q15. Explain. There will not be a pulse in A until the pulse recrosses the junction I think

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. The higher tension in B allows for faster velocity

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. That point of the yarn is only moving up and down is the y direction, not back and forth in the x direction

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. The same as question 2, it is only moving vertically.

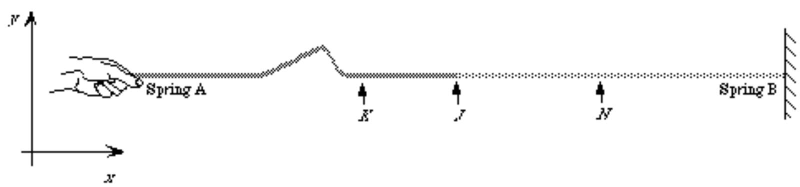
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. since the pulse moves slower through b, it is less tense than section a.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. depending on the circumstances, the spring could be greater or less and still provide the same results.

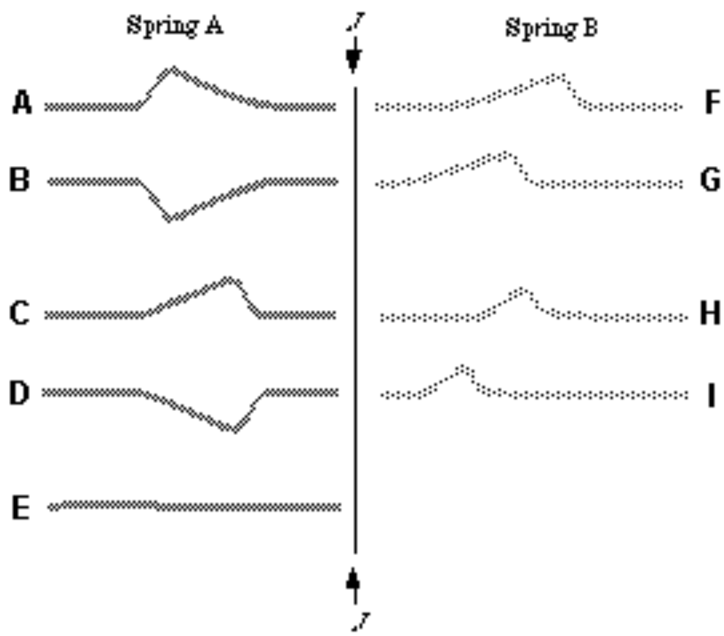
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. Since b is more tense, the spring will move faster, but it will still keep the same shape since it isnt reflected off of anything.



Q14. Which option best represents the pulse in spring A? E

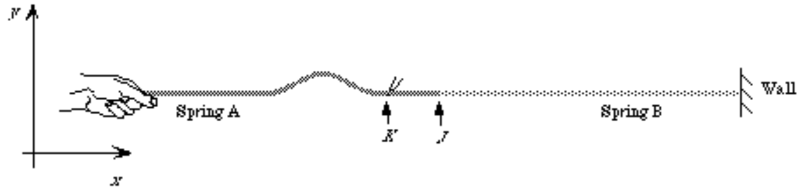
Q15. Explain. The pulse is transmitted through the spring to spring B, and thus has nothing.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. The pulse is moving faster at point N, so it will pass by it much quicker. Due to that the time through point K is greater than point N

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. since it is a transverse wave it is perpendicular to the spring.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. since the wave is going through this point it will be going up and down at this point.

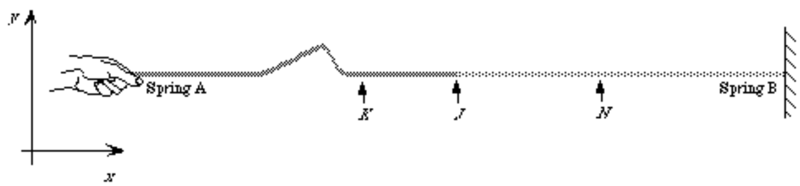
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. there is nothing in the problem that indicates that the springs are differnet. other than the wall but i dont think the wall will do anything to the tension.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Equal To

Q11. Explain. since the tensions are the same and the lengths are the same then there mass per unit length is the same.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? None of the choices above

Q13. Explain. when it hits the junction it will not go through

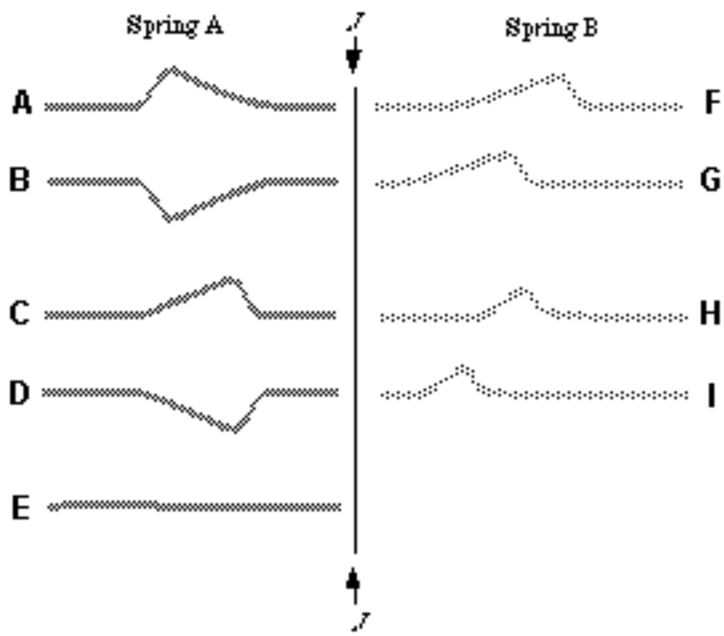
Q14. Which option best represents the pulse in spring A? A

Q15. Explain. treat as if the it was attached to a fixed end

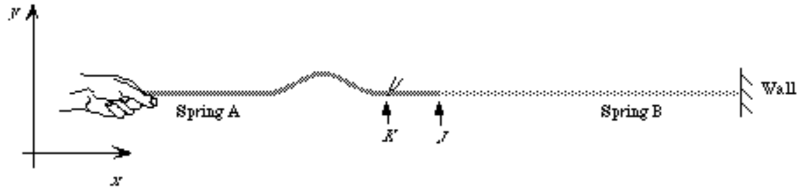
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. it loses velocity when it hits the wall. and the distance is shorter from a to point k than the other distance.

End of response



Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The spring doesn't move in the x direction, so the point k on the spring can't move in the x direction. We did this in tutorial.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. same as above

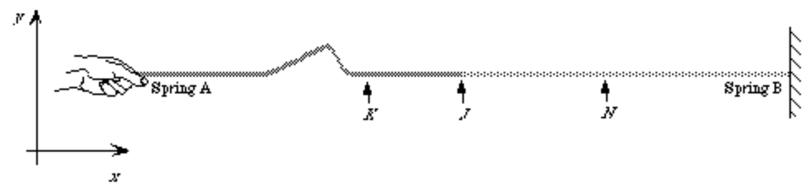
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. the higher the tension, the faster the wave travels.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. depends on the spring constant and how much it's streched, etc.

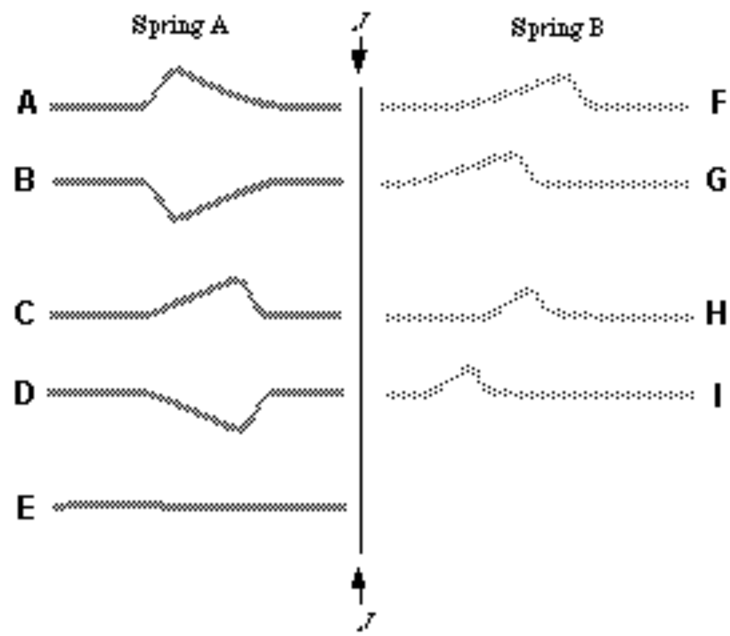
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. there is no reason for anything to happen to the shape or orietation of the wave.



Q14. Which option best represents the pulse in spring A? E

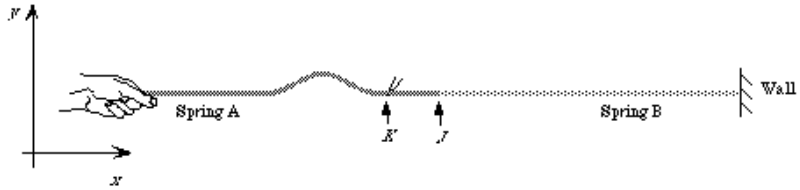
Q15. Explain. the wave continues in the other spring, there is no wave in A when the entire wave is in b.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. though in spring a it is moving faster, in spring b it is smaller, the two factor cancel each other out.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. in a transverse wave, the medium only moves in the y direction

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. in a transverse wave, the medium only moves in the y direction, even when the medium changes

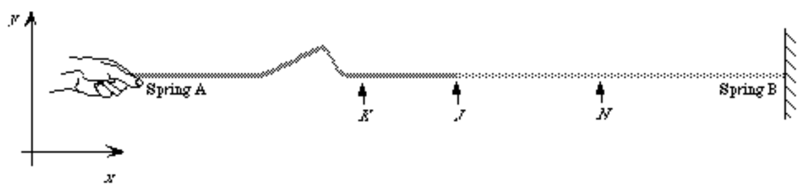
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. the tension has to be the same because they are part of the same string, it is just that the material changes

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. v=(f/u)^.5 , so when v is decreased u is increased.

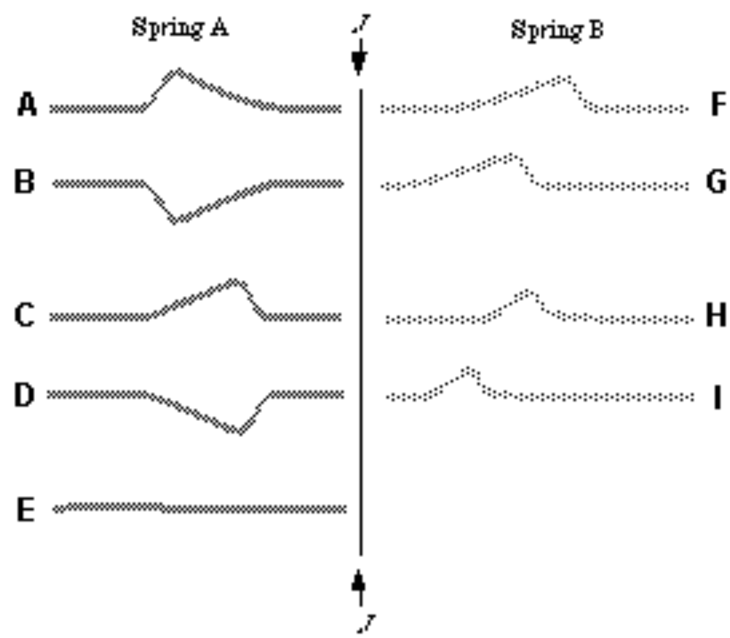
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B?
I

Q13. Explain. the velocity is decreased, so the wavelength is decreased. v = frequency * wavelength. It moves slower in the new medium so the distance travelled isn't very far.



Q14. Which option best represents the pulse in spring A? D

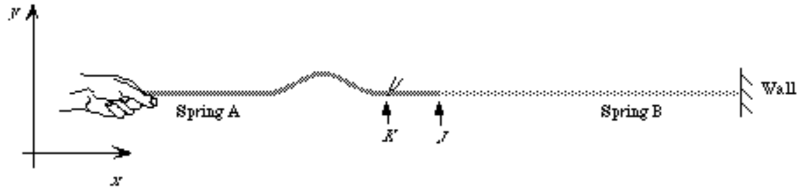
Q15. Explain. the new medium, since it is heavier, reflects some of the wave back into spring A, similar to how a wall would.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. it moves perpendicular to the pulse

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. it changes perpendicular and makes up for the change in spring constant.

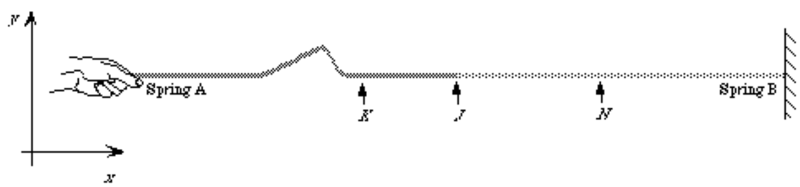
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Greater Than

Q9. Explain. pulses move slower in high tensions

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. more tension is more spring.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

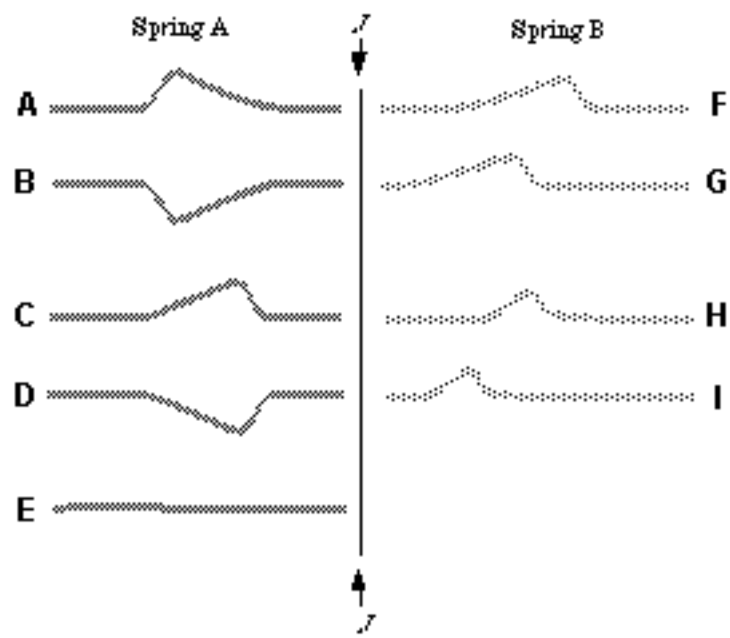
Q13. Explain. smaller and slower

Q14. Which option best represents the pulse in spring A? E

Q15. Explain. the whole pulse it transferred.

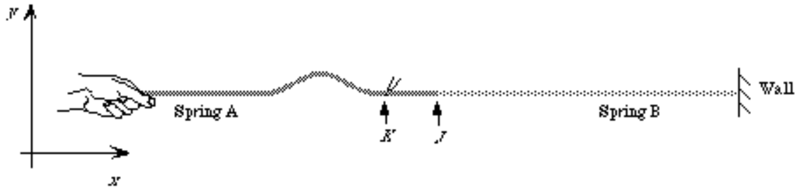
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. B is transferring slower so a is faster.



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q5. Explain. pieces of the string move up, and the wave moves in the x direction

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. the same reasons as in 2

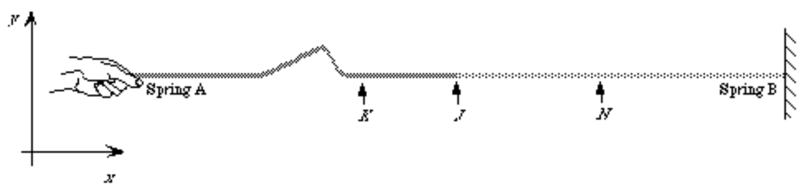
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. has to be equality of forces

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Less Than

Q11. Explain. it moves faster when is less than

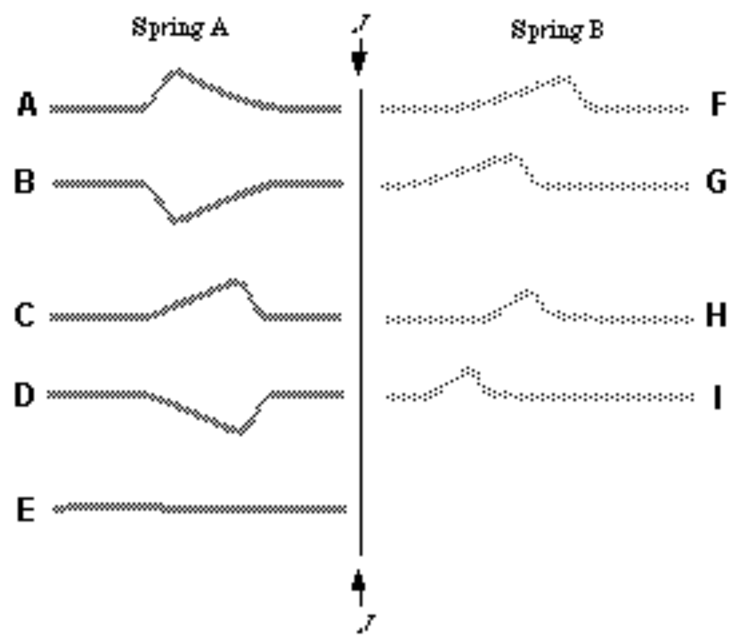
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. the wave should be smaller than at first



Q14. Which option best represents the pulse in spring A? E

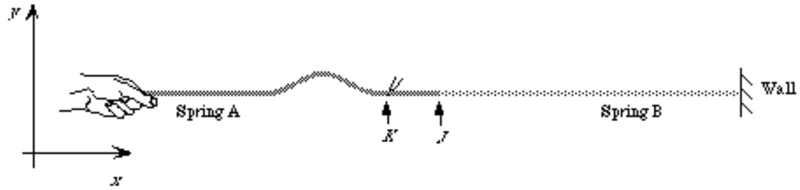
Q15. Explain. the wave is transmitted to b

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. the period is the same

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The yarn will move up as the pulse moves past it.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. The pulse may be moving in the x direction, but each part of the spring it moves through moves only in the y direction.

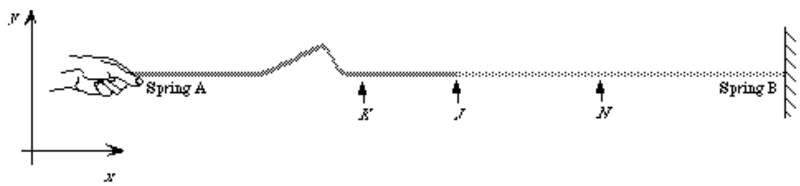
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. It is traveling slower in spring B, so the tension must be less in spring B.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. The mass/length must be greater.

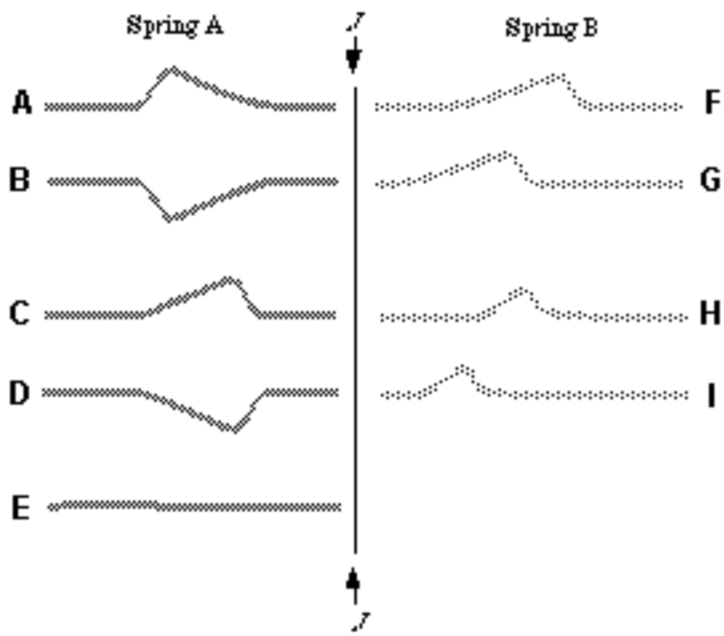
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. It should be more or less the same, but less in amplitude because part of the pulse reflects back in spring a, and there is less energy for the pulse in spring b.



Q14. Which option best represents the pulse in spring A? A

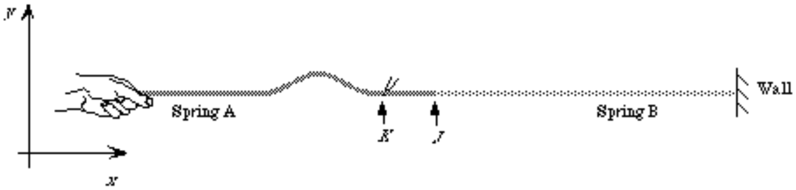
Q15. Explain. It reflects at the junction.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. The tensions are different.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q5. Explain. travels to the right

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q7. Explain. same reasoning

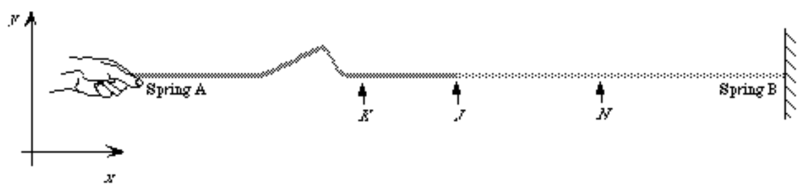
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Greater Than

Q9. Explain. because there is velocity

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Equal To

Q11. Explain. same string

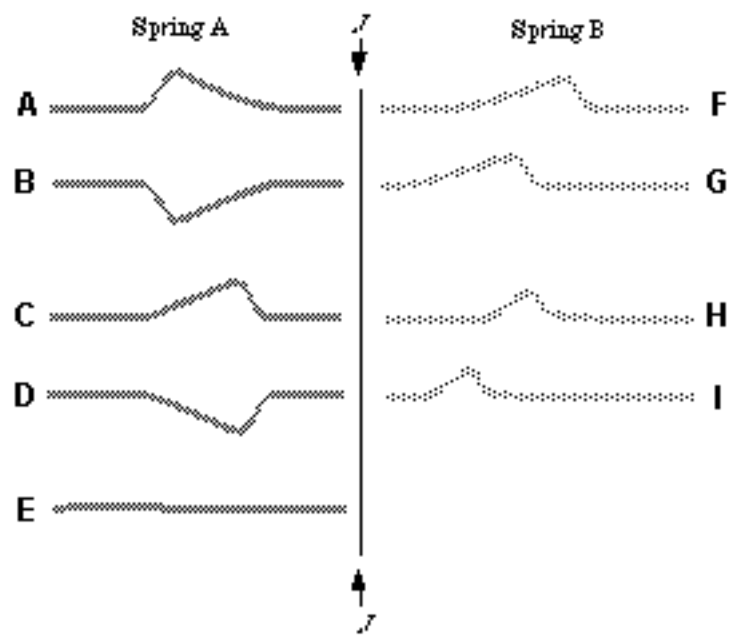
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. they are identical



Q14. Which option best represents the pulse in spring A? C

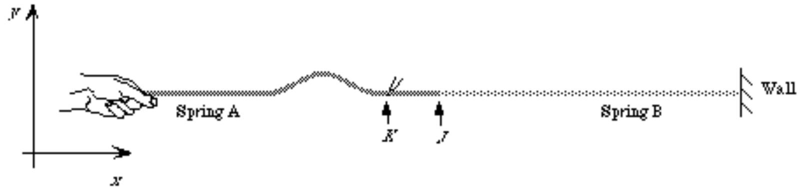
Q15. Explain. same reasoning b/c they are identical

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. refriction of the air

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. for a wave that in longitudal the velocity is perpendicular to the direction of motion.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Same as question #2

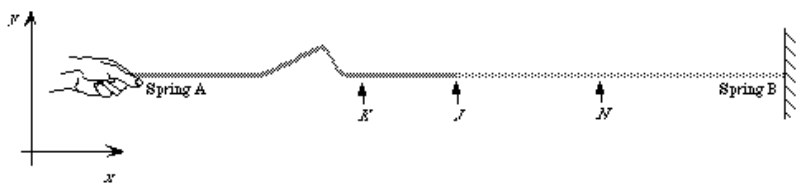
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. The same force is being applied to both springs

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Less Than

Q11. Explain. The mass of string B must be less then that of spring A if the pulse travels faster in spring B

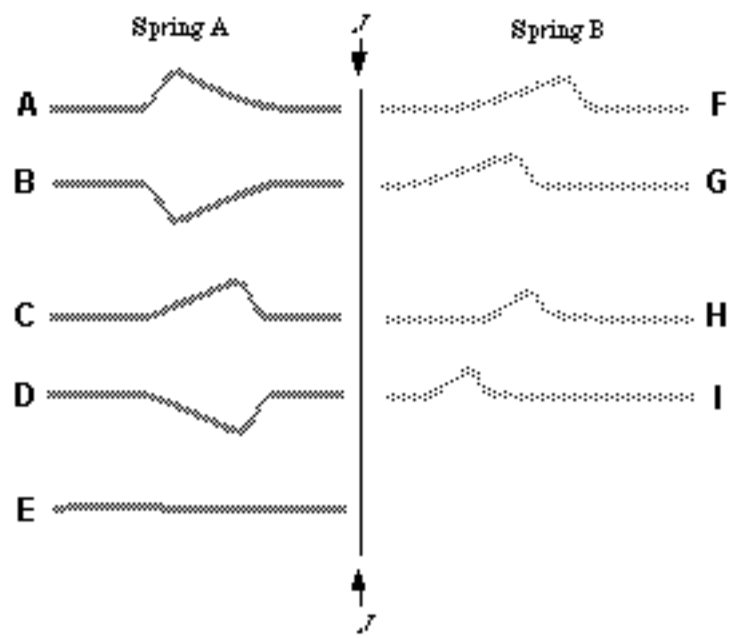
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. The pulse simply continues to travel through point J



Q14. Which option best represents the pulse in spring A? E

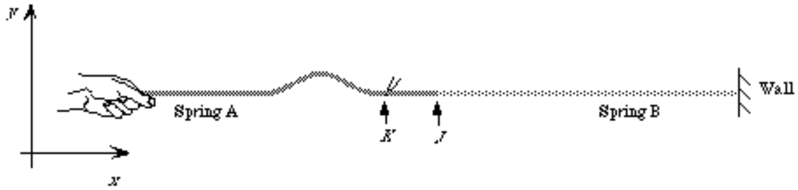
Q15. Explain. The pulse is gone; there is no pulse.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. Assuming that the point K and N are equal distances from J. Then the time for the pulse to travel from K to J will be less then the time for it to travel from J to N, because we are told that pulse travel faster in spring B.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. it goes up and down

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. it goes up and down by the pulse and since it said that the velocity between the two spings change, it changes in the x direction too

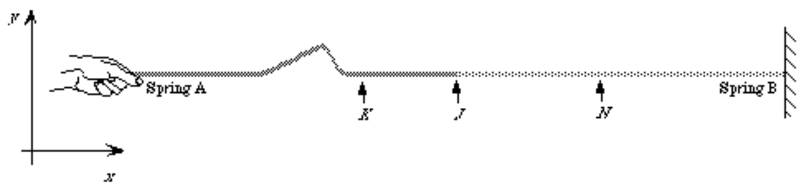
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. the pulse moves faster

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Less Than

Q11. Explain. less sping coils for the pulse to travel through

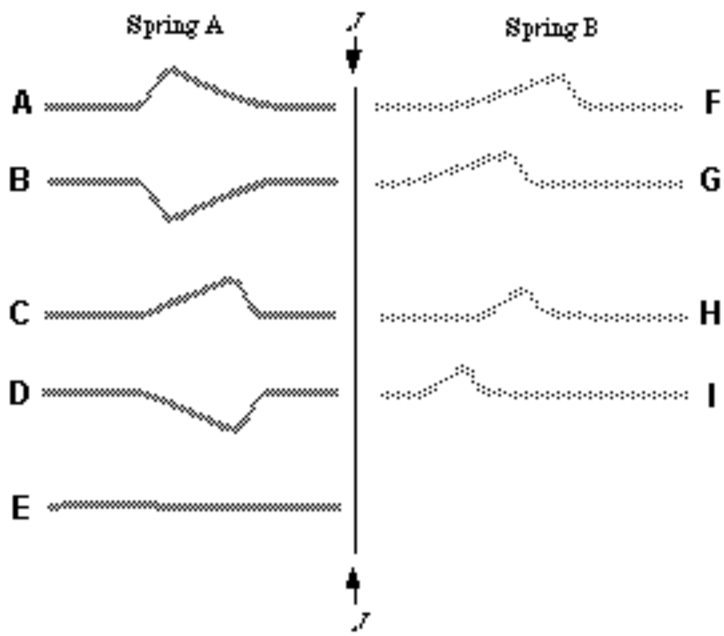
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. it looks longer because it is streched out as it moves from spring a to b



Q14. Which option best represents the pulse in spring A? E

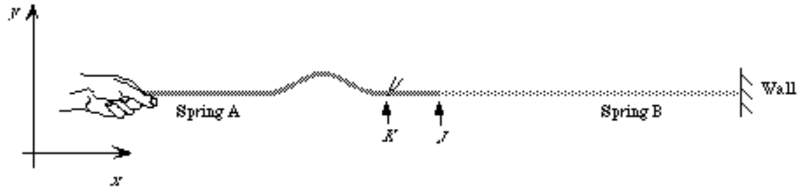
Q15. Explain. its straight?

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. because the pulse is longer but it is also faster so they cancel out

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The piece of yarn has velocity only in the y-direction because since this is a transverse wave the velocity of each particle of the spring will be perpendicular to the velocity of the wave.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Only in the y-direction for the same reason as above.

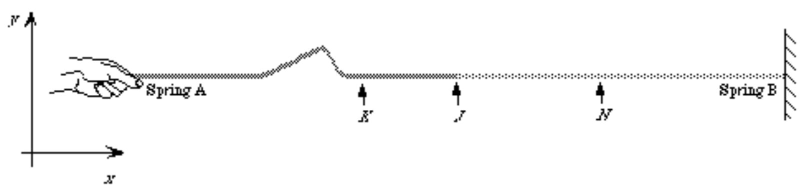
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. The tension in spring B is less than the tension in spring A because the pulse moves slower across spring B than it does across spring A.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. Unable to tell because the mass per unit length of the spring does not affect the wave velocity.

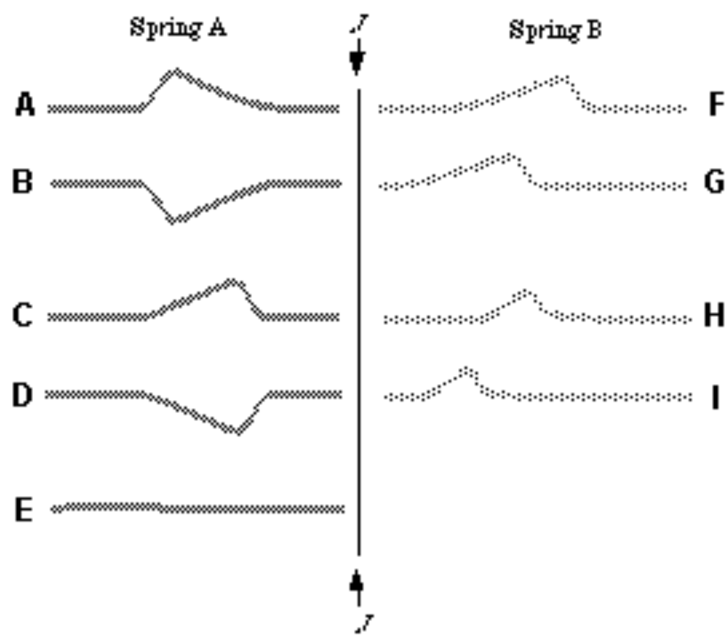
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. I would have to say F since it looks most like the original wave but it is hard to say since they all look pretty much the same.



Q14. Which option best represents the pulse in spring A? E

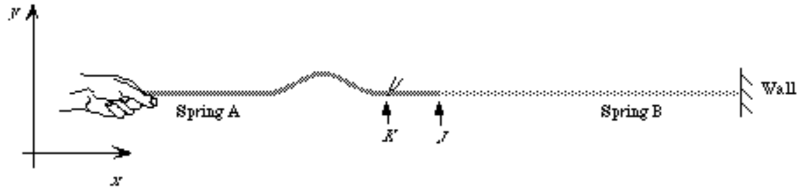
Q15. Explain. Spring A has no pulse since it has been transfered to spring B.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Unable to tell

Q17. Explain. The time for the pulse to pass point K is (velocity of wave over spring A)*(distance from begining of spring A to point K) and the time for the pulse to pass point N is (velocity of wave over spring B)*(distance from beginning of spring B to point N). The wave travels faster over spring A but the distance to point N is less than the distance to point K so I am unable to tell wether it takes longer to pass point K or to pass point N.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. the yarn only moves up and down...not back and forth in the x direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. the junction point only moves up and down therefore the velocity is only in the y direction.

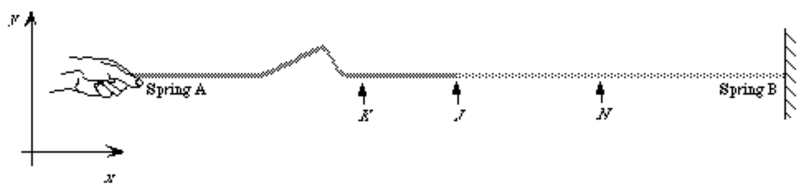
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. a less tense spring will create a slower velocity of a pulse.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. if there is less tension...then there must be more mass per unit length.

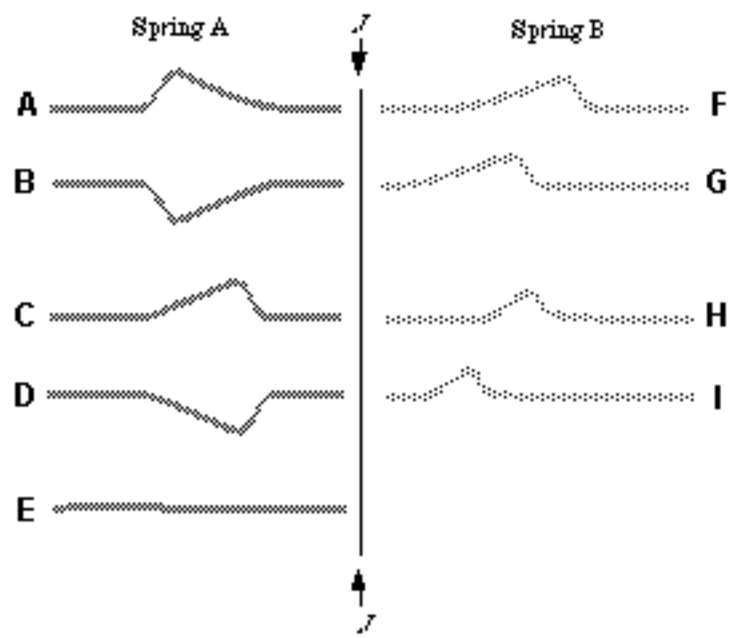
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. the pulse will have the same shape as in spring a...only now it will be moving slower.



Q14. Which option best represents the pulse in spring A? E

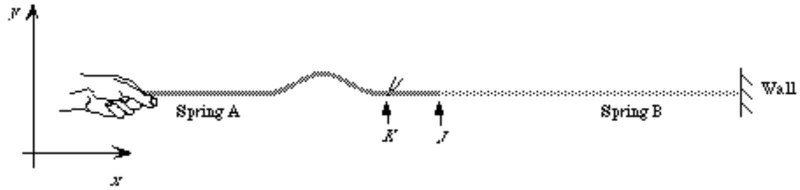
Q15. Explain. the pulse is in the other spring therefore spring a should be flat.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Unable to tell

Q17. Explain. i dont know exactly how much the pulse slows down when it gets to spring b therefore it is hard to tell how long it will take to travel a certain distance.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. Any point on the spring will only move up and down with a transverse pulse, not side to side

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Same as one, due to the type of wave, it will only move up and down

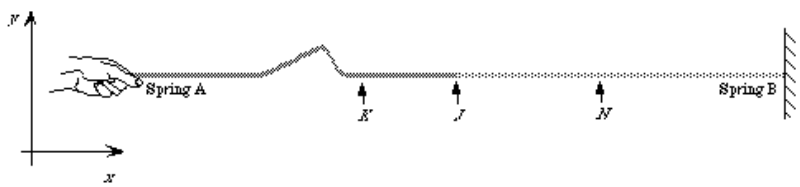
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. Because the pulse moves slower, the tension must be less

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. Because it moves slower, it must have more mass

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

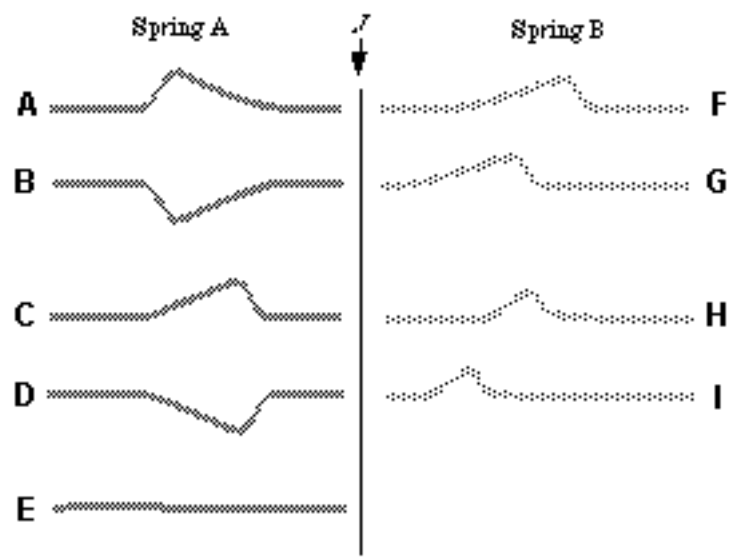
Q13. Explain. Because the pulse moves slower in spring B, it will have a smaller wavelength

Q14. Which option best represents the pulse in spring A? B

Q15. Explain. The reflection caused by the differences in springs will reflect an identical-shaped pulse on the opposite side of the spring

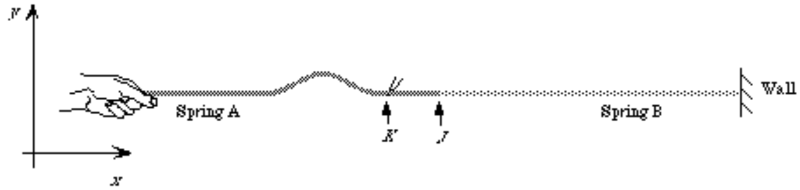
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. Because the velocity AND wavelength decrease in the second spring, the two times will be identical



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. It only moves vertically and does not travel with the pulse

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Same as above.

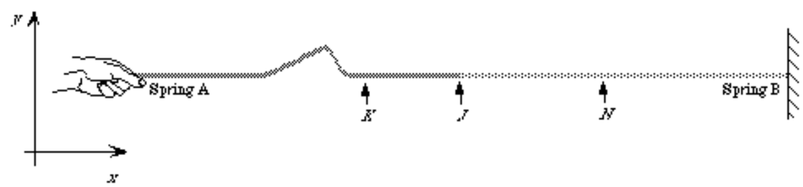
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. It travels faster on Spring A, so the tension is more on A.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. The velocity is slower on B, so the mass per unit length should be more according to v = sqrt F/u

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

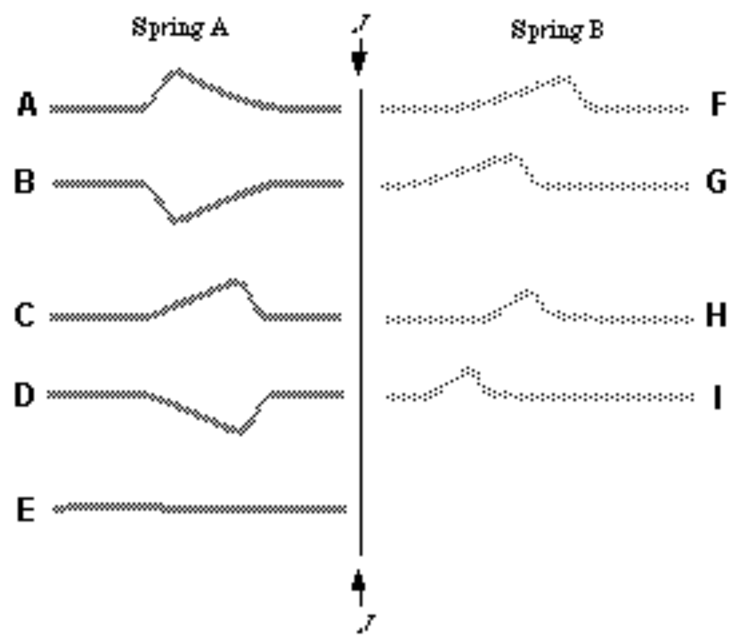
Q13. Explain. The shape of the pulse does not change

Q14. Which option best represents the pulse in spring A? D

Q15. Explain. Some of the energy gets reflected back towards the source

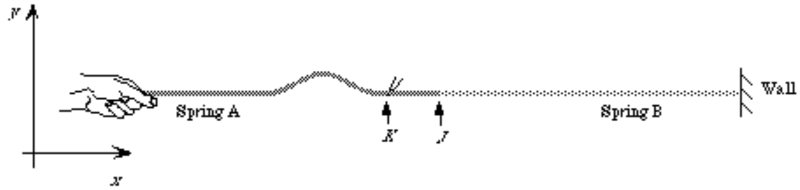
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. the pulse slows done, but the distance between the leading edge and the trailing edge also decreases



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. it only moves up and down, the rope

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. the pulse is a sin wave, there should be two, one going up and one going down

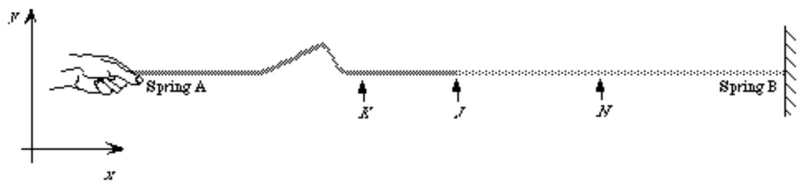
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. they are the same cause its the same k value all around

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Equal To

Q11. Explain. they are the same if they the same mass

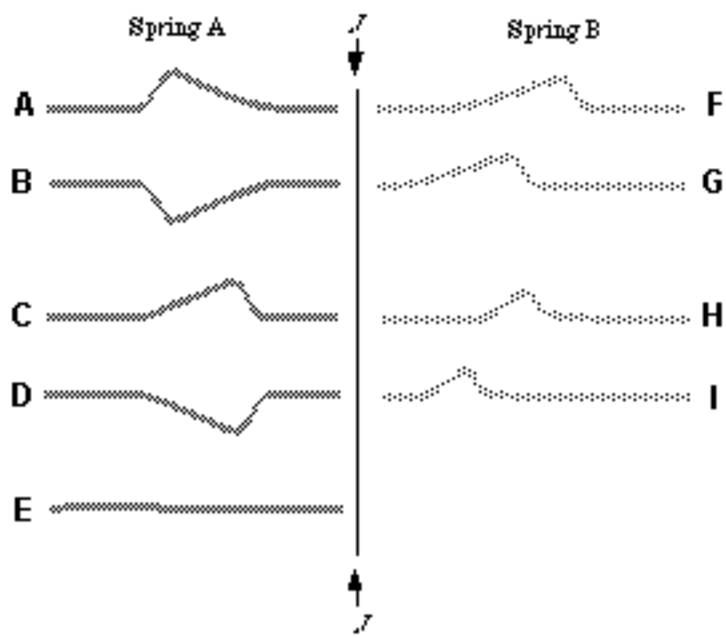
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. beacuse they just carry one the pulse, same as the one in a



Q14. Which option best represents the pulse in spring A? E

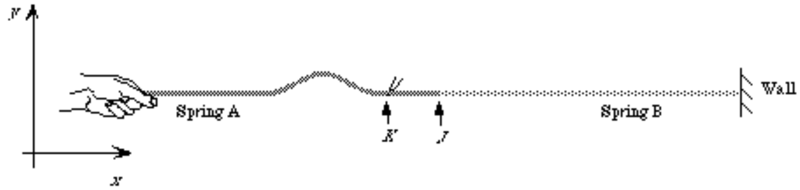
Q15. Explain. there would be no pluse left in a

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Unable to tell

Q17. Explain. i don't really quite understand this question

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q5. Explain. the pulse isn't the pure velocity; it's the velocity as the wave passes along the string to the wall, so the y-value is always the same.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. By superposition, the y direction changes as the x-coordinate changes.

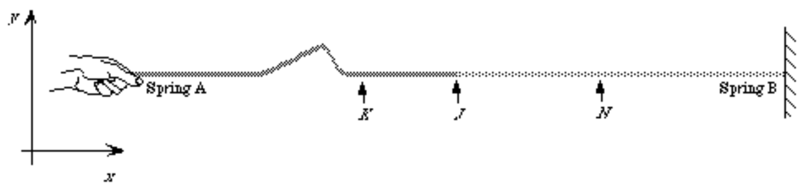
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. The more the tension, the faster the pulse.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. The mass does not affect the pulse.

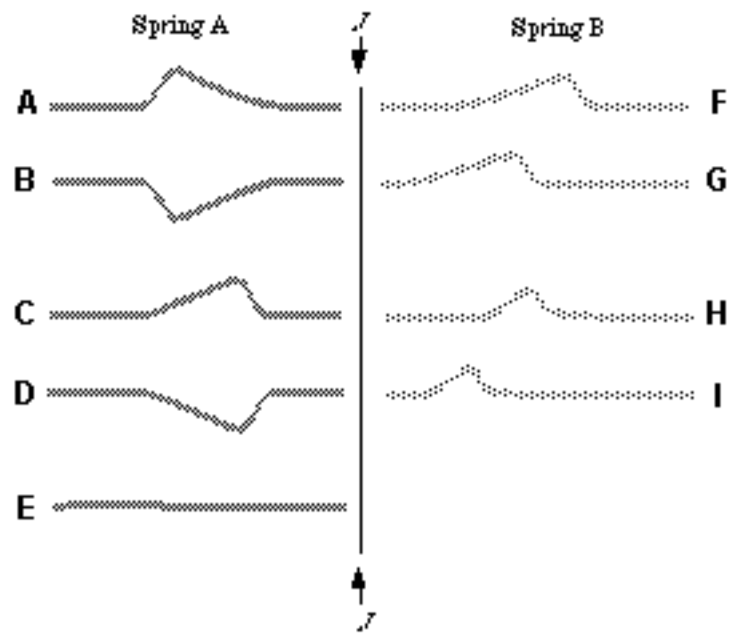
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. the pulse is smaller in B because the tension is less in B.



Q14. Which option best represents the pulse in spring A? E

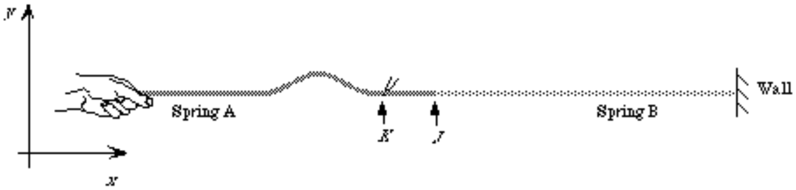
Q15. Explain. the entire pulse transfers to B

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. Because the tension in B is less than in A, the pulse takes more time to travel in B than A.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The wave is transverse so a point on the wave only travels in the y-direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Any point along a medium upon which a transverse wave is travelling only travels perpendicular to the direction of the wave, so there is only movement at this point in the y-direction.

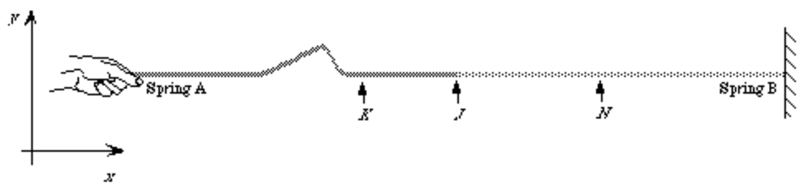
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Unable to Tell

Q9. Explain. We know wave speed=(tension/length density)^(.5). If wave speed goes down from A to B, we do not know if it is that tension has decreased or length density has increased that caused the decrease in wave speed.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. First, wave speed=(tension/length density)^(.5). Wave speed has decreased in B, but we don't know if that is due to a decrease in tension or an increase in length density from A to B, so there is not enough info to know how the mass per unit length has changed.

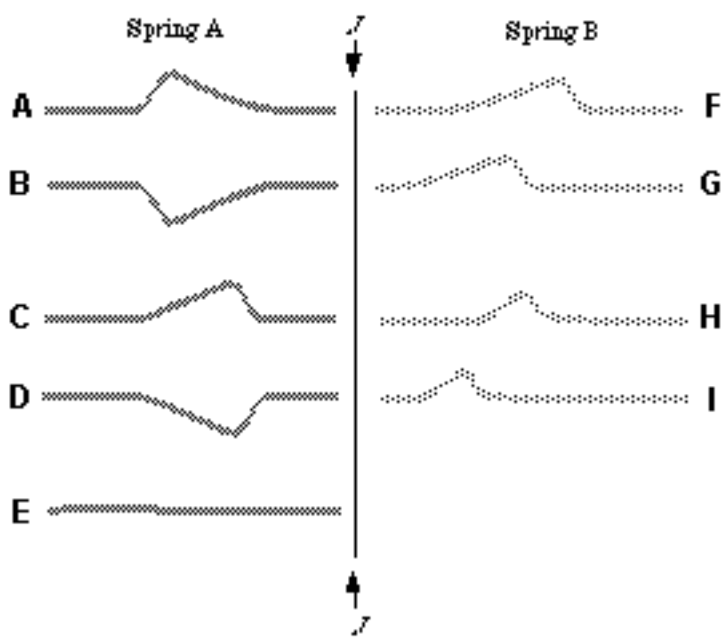
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. The transmitted wave has the same orientation as A, but is moving slower, so it should be closer than its reflected counterpart from line J.



Q14. Which option best represents the pulse in spring A? A

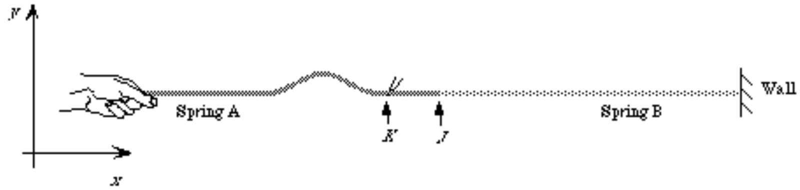
Q15. Explain. The pulse reflected to the left from junction J should have the same vertical orientation as the incident wave and the reflected waves leading edge should also be the same as the incident wave because spring A acts like it has an un-fixed endpoint at junction J.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. The pulse in B is slower, but it should also have a shorter wavelength. Since there is no more energy added to the wave, the longer, faster wave in A takes the same time to pass a point that the shorter, slower wave in B does.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. It travels up and down but its x position does not change.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Spring moves up then down, no londigtudinal pulse.

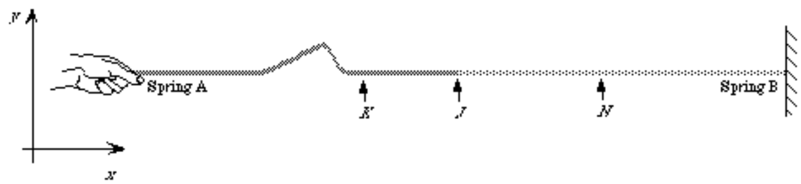
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. The spring may have a smaller spring constant, but according to newton's laws it must have an equal force as spring A.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. not sure

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. its should imitate spring a

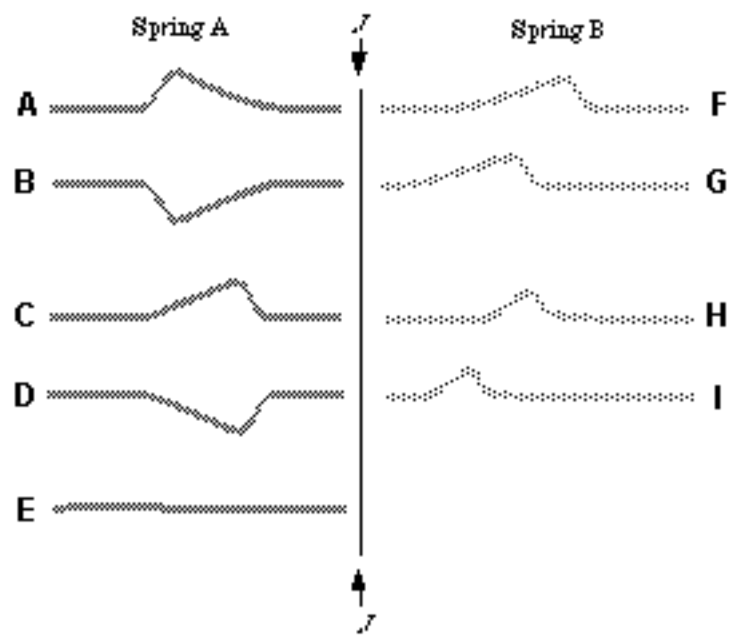
Q14. Which option best represents the pulse in spring A? E

Q15. Explain. the pulse should pass on to spring B

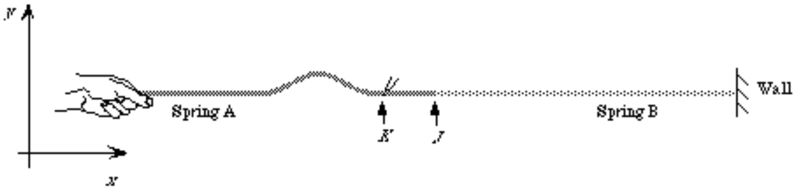
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. as stated above a pulse travels faster in A than in spring B.

End of response



Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. the yarn is only moving up and down, not side to side

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. same situation as before, but its made up of two different materials

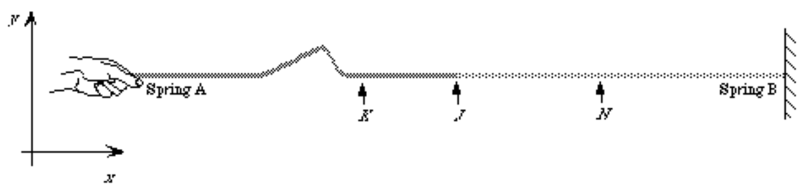
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. the pulse travels faster in a, so the tension of a must be greater

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. i don't know how you could tell that..

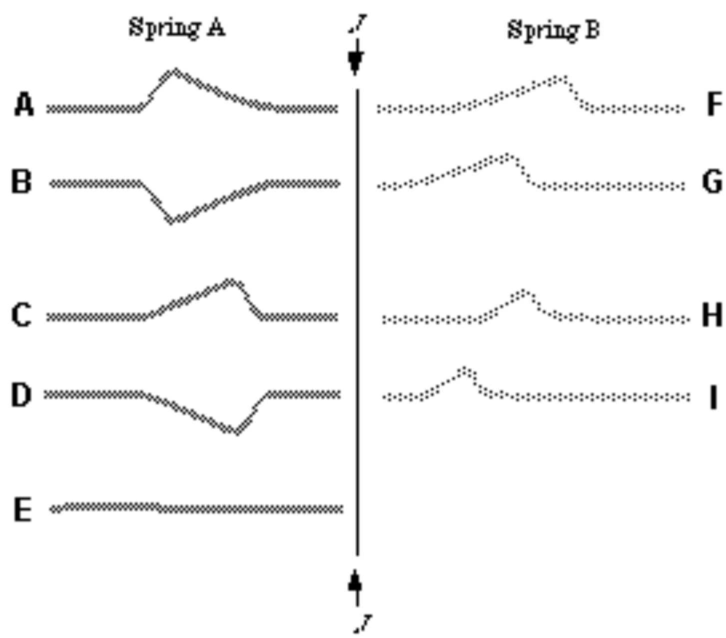
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. i think the pulse would continue on to the next spring and maintain the same shape



Q14. Which option best represents the pulse in spring A? E

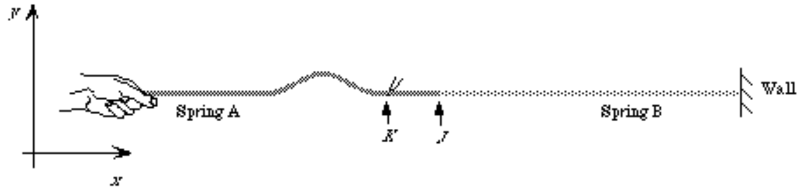
Q15. Explain. the pulse would have traveled onto the next spring, so spring a would be relaxed

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. i think that the transmitted pulse would take the same amount of time to travel the same distance as the orignal pulse..

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The yarn only moves up and down as the pulse goes by. The pulse has it's own velocity in the x direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q7. Explain. A pulse moves along only in the x direction.

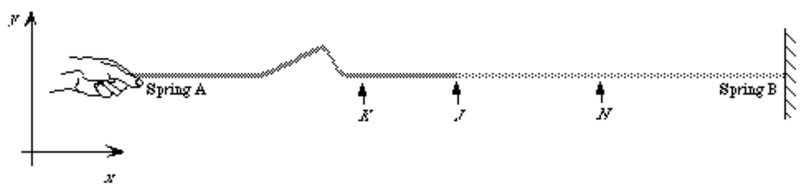
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. The tensions in the strings should be equal because it is only one string.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Equal To

Q11. Explain. Since the tension in the ropes are the same, and they have the same velocity, mass per unit length is also equal.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

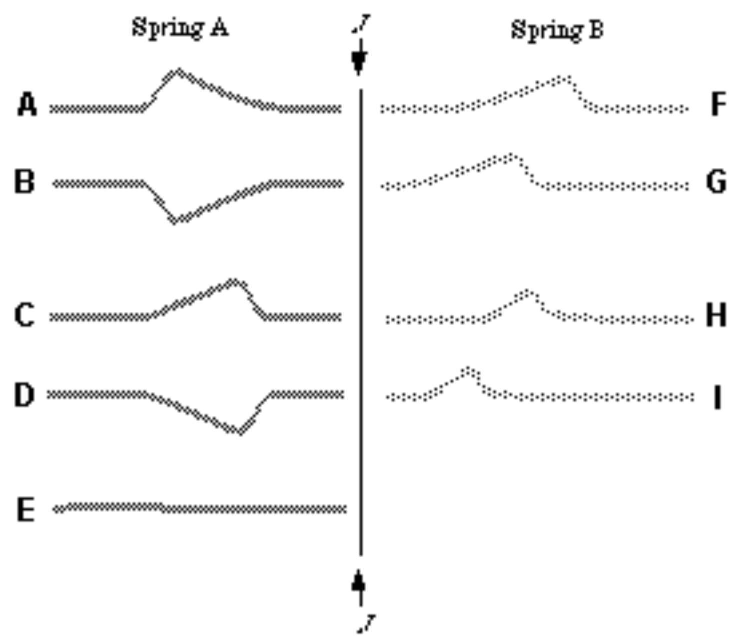
Q13. Explain. The pulse moves along at a constant velocity.

Q14. Which option best represents the pulse in spring A? E

Q15. Explain. There is no pulse, becuase it has moved past spring A.

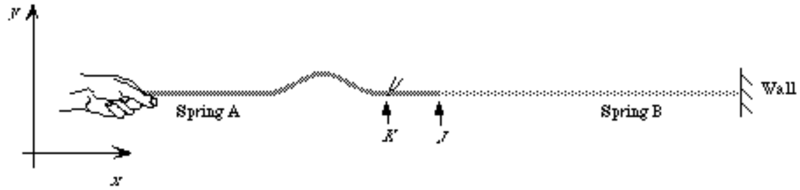
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. The times are equal becuase the pulse has the same speed in each case.



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. b/c of the way that the hand is moving the spring, there is going to be movement in only the y-direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. i feel like its goign to be in both directions, since the wave is coming in contact with different material.

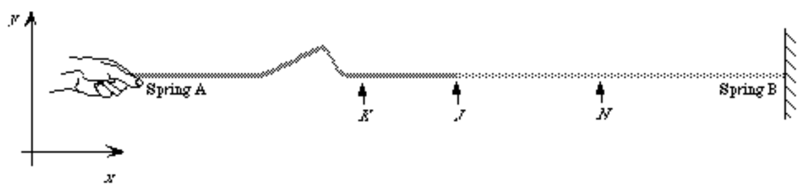
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. b/c the pulse travels faster in A

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Less Than

Q11. Explain. for the same reasons as above.

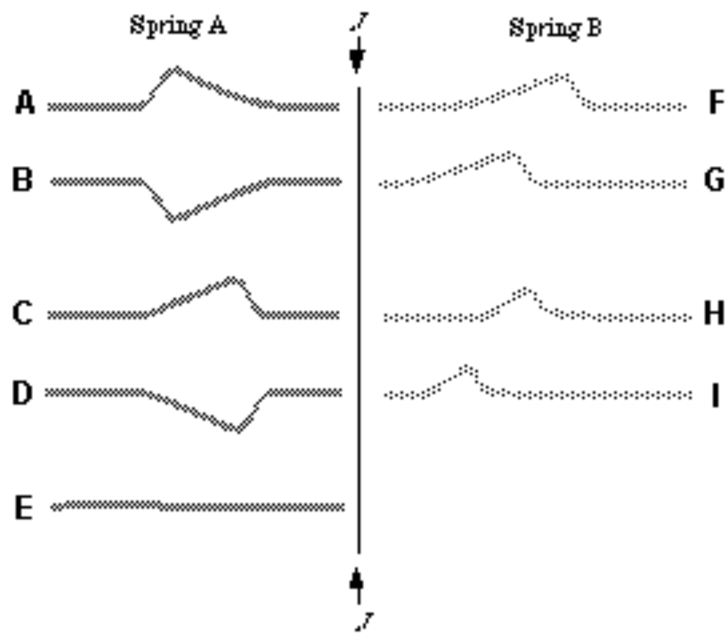
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. b/c teh pulse is going to travel the same path... its not a reflection...



Q14. Which option best represents the pulse in spring A? E

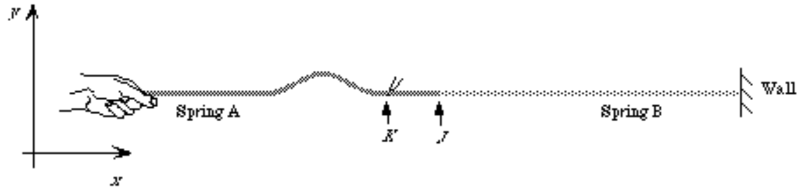
Q15. Explain. althogh there might be a small refelection due to changing material, i don't think that there will be a huge relfection though.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. i'm not really too sure why...

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. It is a transverse wave and its component is only in the y direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Still just a transverse wave, though some will reflect....

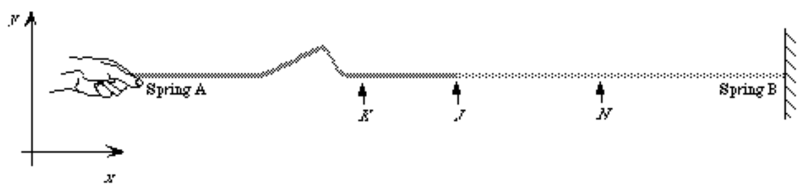
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. They would have to be the same if the same hand and wall holds them together...static equilibrium.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. I dont know the mass of either of the springs.....

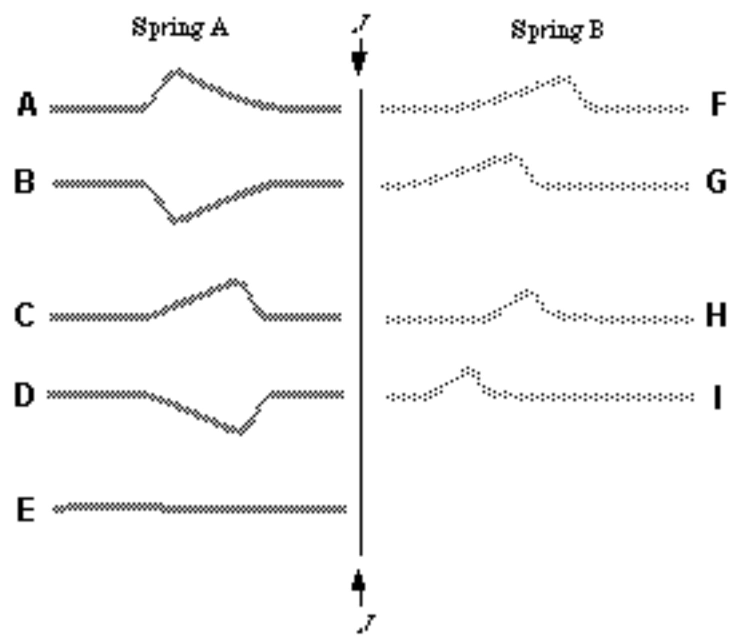
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. Should have the same shape, just a slightly lower amplitude to a reflection at the transition.



Q14. Which option best represents the pulse in spring A? B

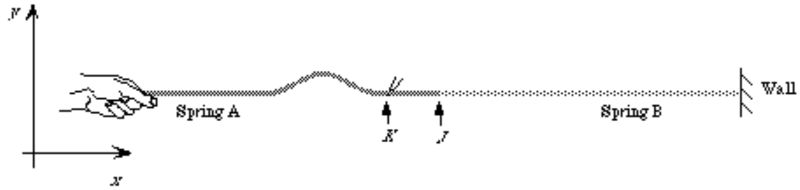
Q15. Explain. The reflection is a mirror image of the original pulse.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. Since point n is located farther away from k, it would take less time to get to point k than to point n...assuming the tension in the springs is the same....

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. Its a transverse wave so it only has velocity in the y-direction

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. velocity is change is distance over change in time, so since the speed of the wave is decreasing at this point, there is a change in the x-direction as well as the y direction

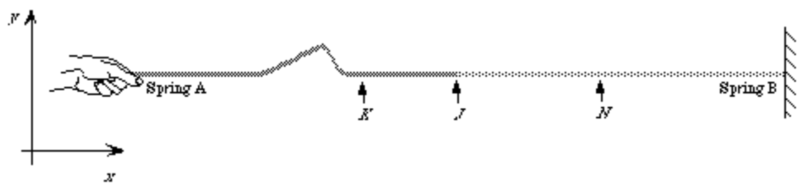
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. The spring with the greater tension will result in a faster wave velocity

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. This is what makes it more tense

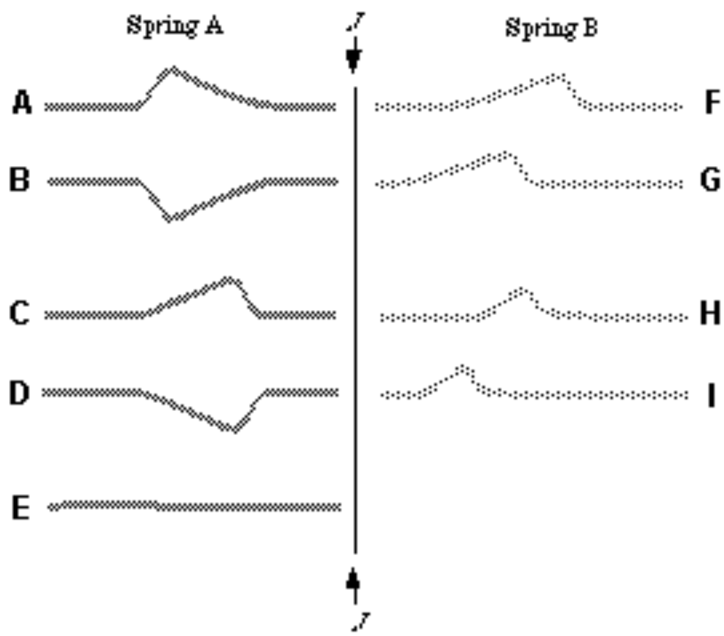
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. Its the same direction and shape because the wave is traveling in a straight line



Q14. Which option best represents the pulse in spring A? E

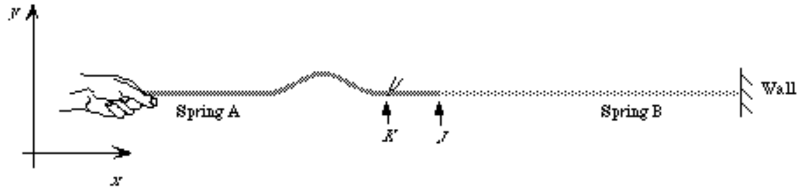
Q15. Explain. The wave will move on to spring B

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. Spring A has more tension so the velocity of the wave is greater through Spring A

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. A transverse wave moves particles perpindicular to it's direction of travel, which in this case is in the x-direction. Therefore, the peice of yarn moves in the y-direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. The fact that the wave changes medium shouldn't change the fundamental ways in which it behaves. The different medium may have a different intrinsic velocity, which would cause the velocity of the wave in the x-direction to change. However, it is still a transverse waves, and they can only move particles in a perpindicular direction from their direction of travel. So junction J will only have movement in the y-direction.

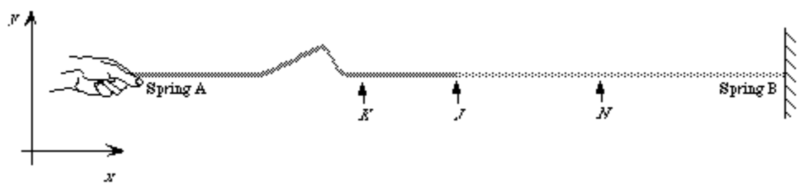
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Unable to Tell

Q9. Explain. The intrinsic velocity of a system (in this case, a spring) is directly proportional to the tension in the system. However, it is also inversely proportional to the mass per unit length. Since there is no information given about the springs being the same type or something akin to that, it's impossible to know which value changed.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. The intrinsic velocity of a system (in this case, a spring) is directly proportional to the tension in the system. However, it is also inversely proportional to the mass per unit length. Since there is no information given about the springs being the same type or something akin to that, it's impossible to know which value changed.

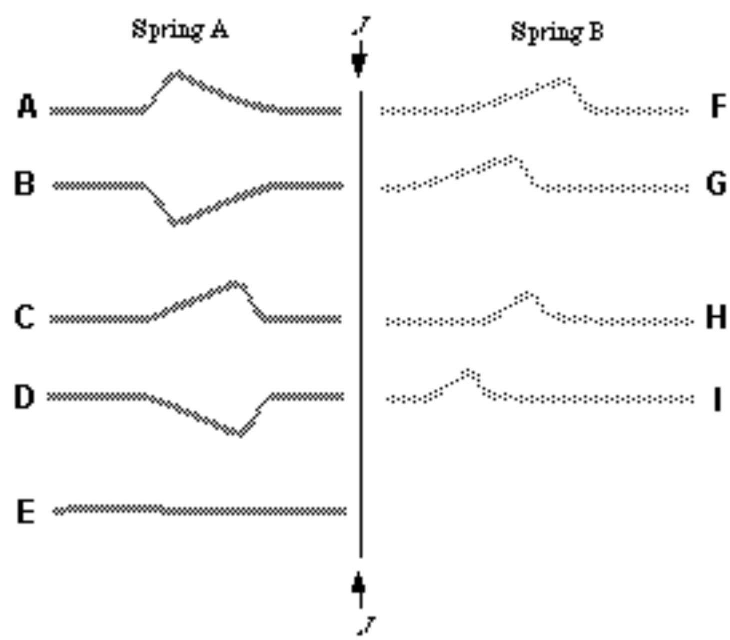
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. Because it's going slower, it will have a lower frequency, but the wavelength should NOT change, and neither should the amplitude



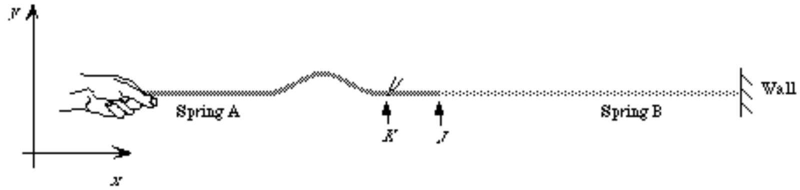
Q14. Which option best represents the pulse in spring A? E

Q15. Explain. The wave should continue to travel forward - I see no reason for reflection.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. If it's going slower in B, it'll take longer to pass N

End of response



Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.

Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. It moves up and down but in reality the yarn dosn't move in the x-direction at all, just the pulse.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

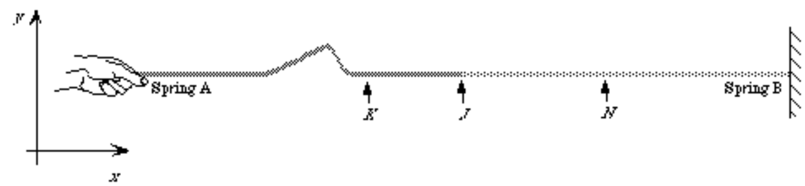
Q7. Explain. Although the spring has mostly movement in the y-direction, because of the elastic nature of a spring it will have a slight velocity in the x-direction as well.

Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. If the pulse travels faster in A then the tension in A must be greater.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. it's not as stretched out as much as A so it has a greater mass per unit length.



The student generates an asymmetric pulse in spring A that moves to the right as shown below.

After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. It's all attatched so the pulse will continue through until it is dampend or reflected.

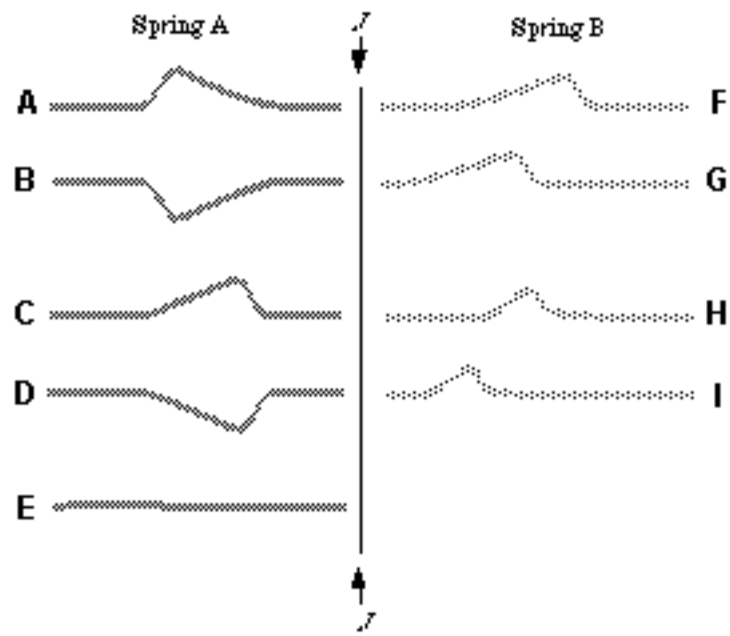
Q14. Which option best represents the pulse in spring A? A

Q15. Explain. It acts like an un-fixed end.

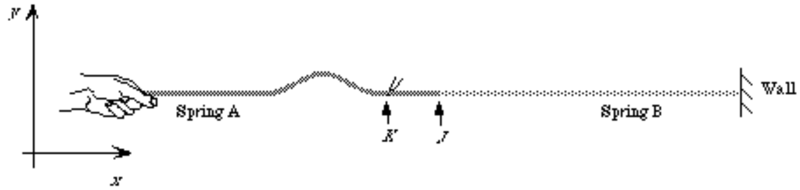
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. the pulse travels slower in spring B remember.

End of response



Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. any point on along the yarn moves only with respec to the y-axis, by derict observation of a transverse wave.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. I think that spring B will follow suit with spring A

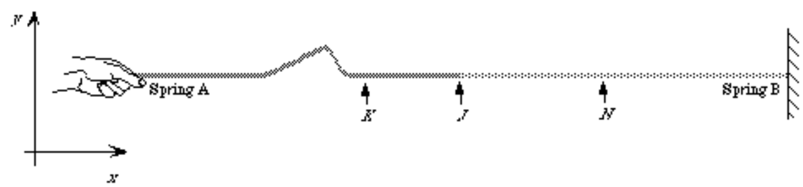
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Unable to Tell

Q9. Explain. Tension has to do with the spring constant, which is unknown for both springs

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. There is no information regarding the mass of either spring.

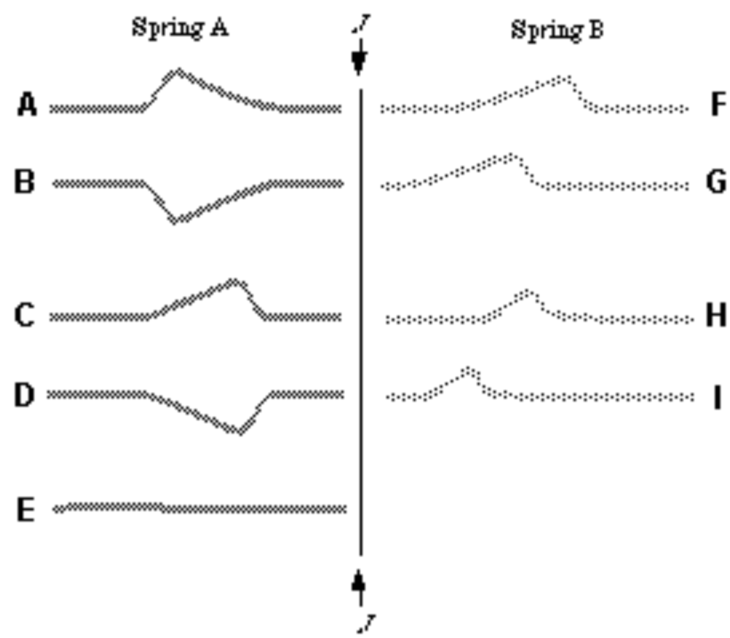
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. Unless anything fishy is going on about the junction, I can assume that he pulse traveling down spring B will resemble the pulse traveling down A. The question is not clear actually, because I don't know how the left side of the diagram fits into the descriptions.



Q14. Which option best represents the pulse in spring A? D

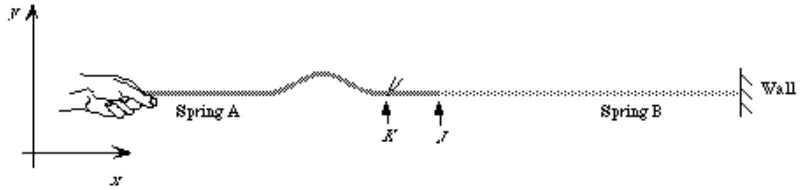
Q15. Explain. I guess that the junction acts something like a wave terminus. The wave goes back in the opposite direction.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. The width of the wave will remain the same, regardless of tension.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. Because there is no X-motion

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. Because at the junction it wants to go more to the right because it has more x-velocity before

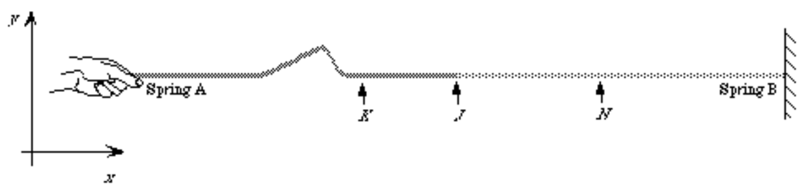
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. Because it is not moving as fast.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. Because it is tougher for the wave to have higher velocity that is why it goes slower

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. Because it loses some energy

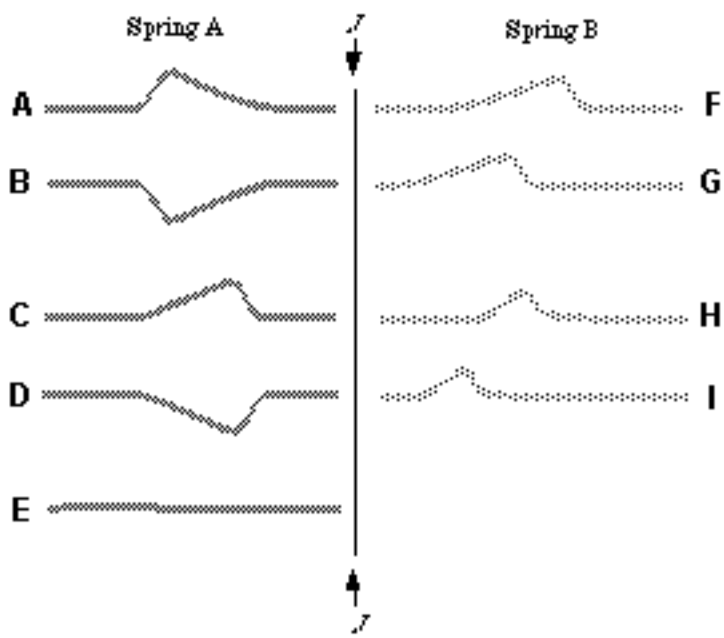
Q14. Which option best represents the pulse in spring A? E

Q15. Explain. The pulse is only on the second spring

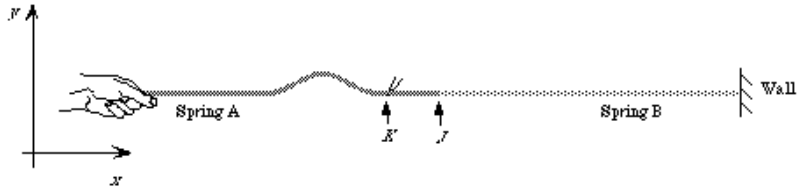
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. Because it moves faster on spring A and K-J is shorter than J-N so obviously it is goin to take less time

End of response



Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The string doesnt move in the s direction only the pulse moves in the x direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. becasue

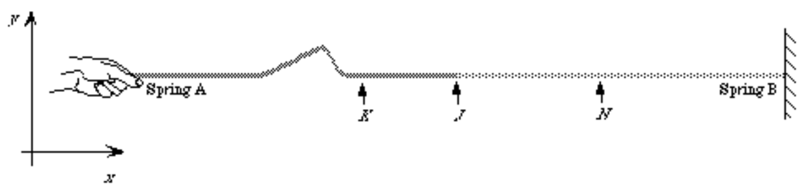
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. Less tention less speed. The pulse on part b is slower than in part a.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Less Than

Q11. Explain. Tention and density are dependent on eachother.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. Becasue

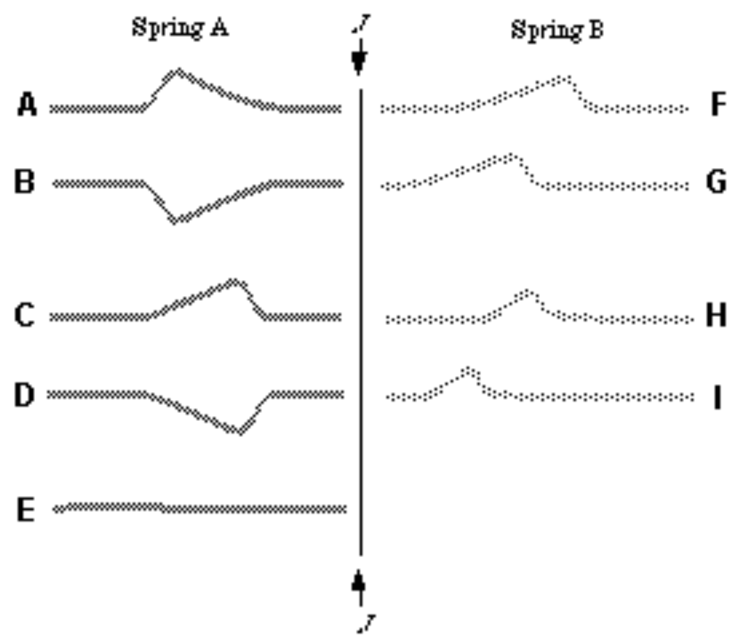
Q14. Which option best represents the pulse in spring A? E

Q15. Explain. Yeah!!

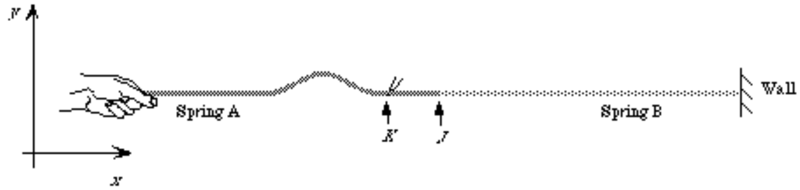
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Unable to tell

Q17. Explain. I not sure if the chart is to scale

End of response



Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. Assuming the pulse is transverse, as it appears from the diagram, this result follows.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Not sure about this, out of time.

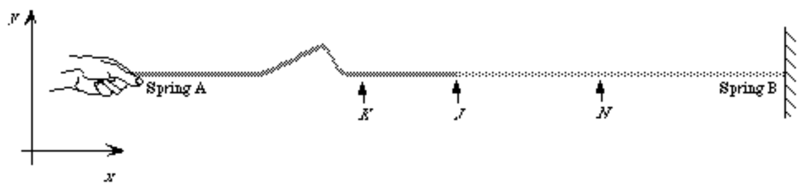
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. The tensions must be equal (third law)

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. With constant tension, the velocity of the pulse increases with decreasing mass per unit length. The velocity of the pulse in spring B is less than that in spring A, so the mass per unit length of spring B must be greater.

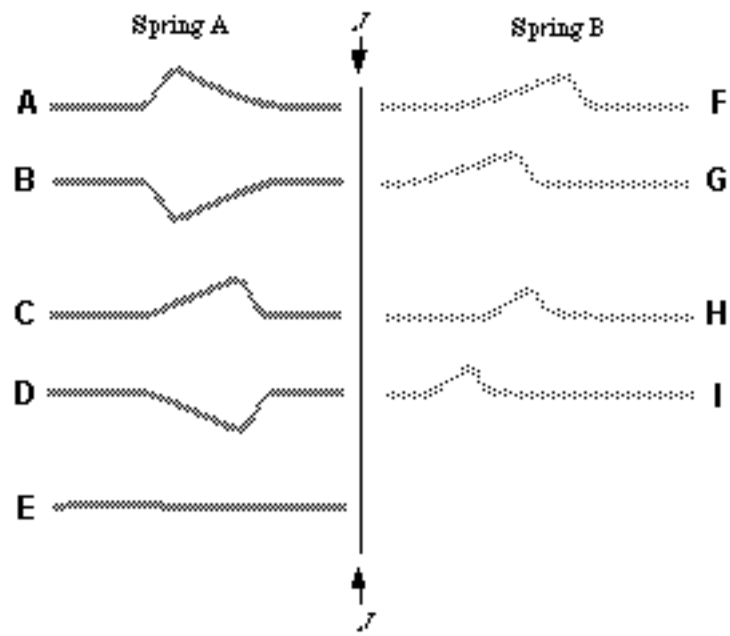
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. Part of the pulse is transmitted across the junction point. The transmitted pulse has lower amplitude than the original pulse. It also has smaller length because the pulse velocity in spring B is lower. (I could not tell a difference between H and I)



Q14. Which option best represents the pulse in spring A? B

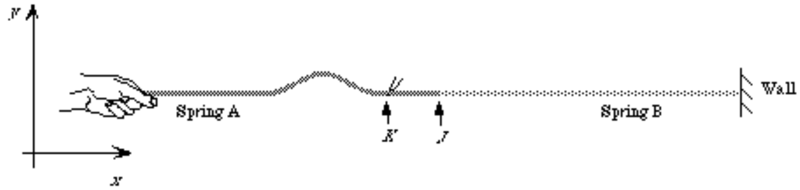
Q15. Explain. Part of the pulse is reflected from the junction point.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Unable to tell

Q17. Explain. How far is point N from point J? How far is point K from the left end of the spring? There is not enough information to answer this question.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. I do not really understand the problem. But I think the wave transmitted to the yarn is on the upward direction, which is NOT perpendicular to the yarn and thus we will have only longitudinal wave produced -> speed only in the y-direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q7. Explain. This is because the wave coming to it has only x-component.

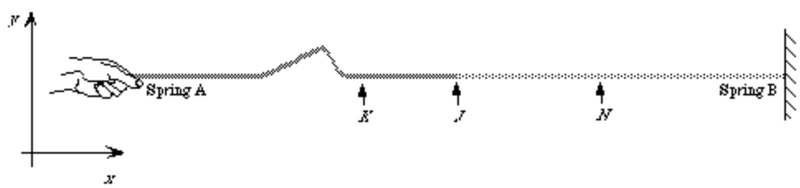
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. Because the pulses travel faster in Spring A, which means Spring A has greater tension.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. Just an intuition. Since speed is proportional to the tension and is inversed to the mass per unit length and that Spring B has already had less tension, we couldn't tell exactly the mass per unit length.

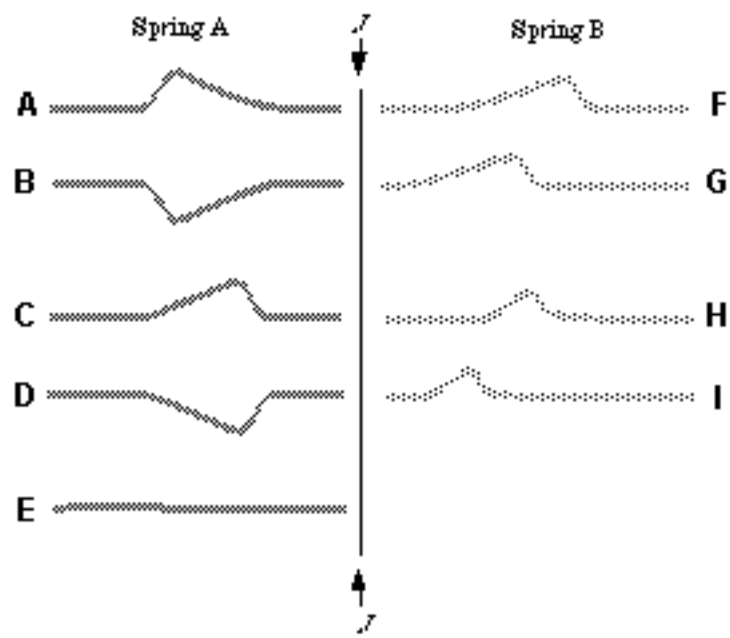
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. The difference in intrinsic properties does not affect the shape of the pulse being transmitted. It only affects the speed.



Q14. Which option best represents the pulse in spring A? E

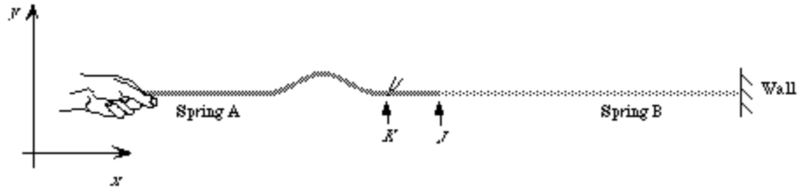
Q15. Explain. The junction does not act as a wall here.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. This question regards the wavelength. But the time to complete the wavelength is the speed. Spring A has greter tension -> greater speed and less time to travel the point.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. This is due to the nature of the pulse moving on the spring.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. This is caused by the junction point.

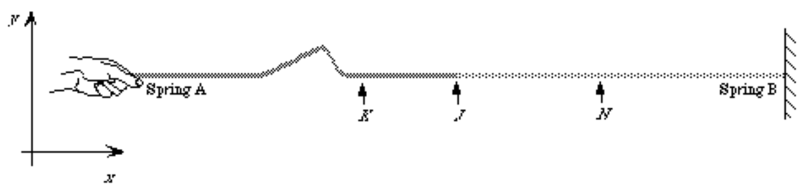
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. They are attached together.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Equal To

Q11. Explain. They are attached together.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? I

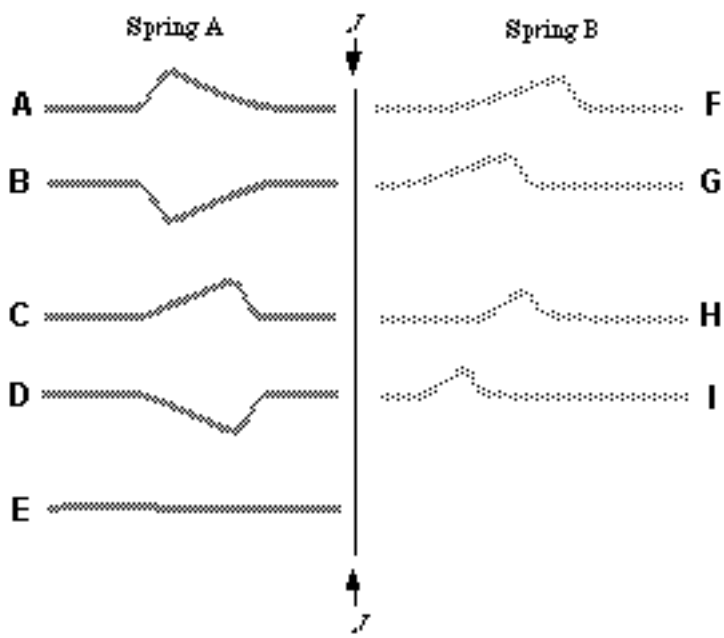
Q13. Explain. The pulse would be less than that of A.

Q14. Which option best represents the pulse in spring A? E

Q15. Explain. The pulse has left A.

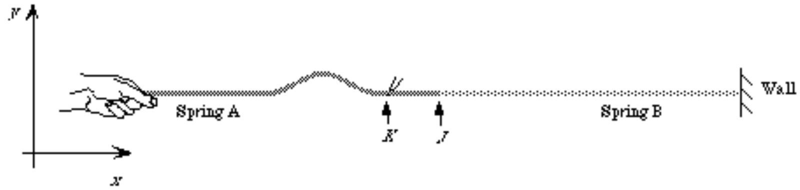
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. The pulse wouldmove faster along A than B.



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q5. Explain. the wave only moves perpendicular to the actual medium. (transvese wave)

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q7. Explain. same reason... the wave is only moves the material up and down, its not a longitudinal wave.

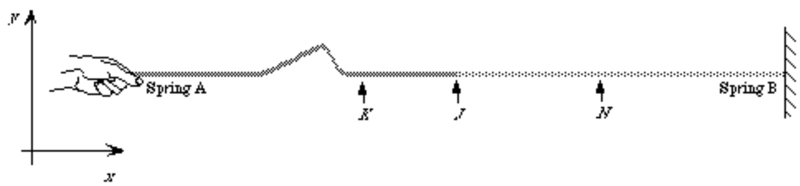
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. since the wave moves faster in A, most likely the tension in A is greater... unless they springs were made of differing materials, but i don't think we are supose to infer that?

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. since B has less tension (from above question), it would have more spring per meter.

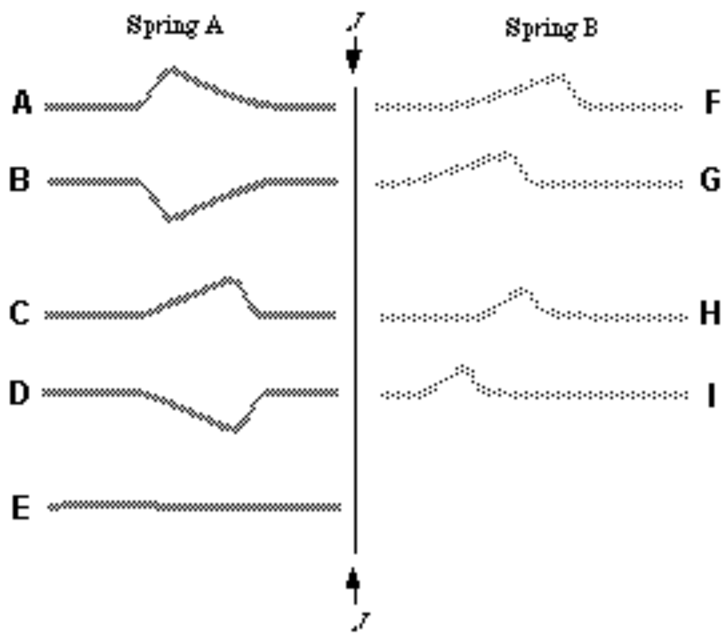
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. just guessing that it wont change.



Q14. Which option best represents the pulse in spring A? E

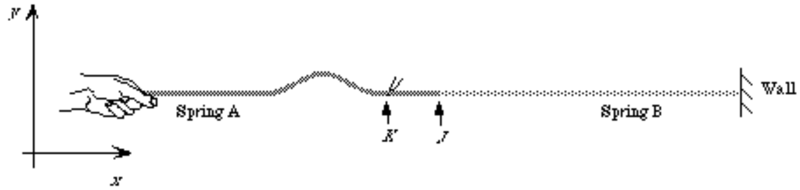
Q15. Explain. ummm.... so if the pulse is onto section B, there should be no more pulse on E?

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. just a guess since its going faster in A, but, im sure there is some trick to this that i don't know!

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The wave is transverse. i.e. The individual pieces of the string moves perpendicular to the direction of wave. The yarn moves up and down in y direction only.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. The individual peaces of string moves transverse to direction of pulse.

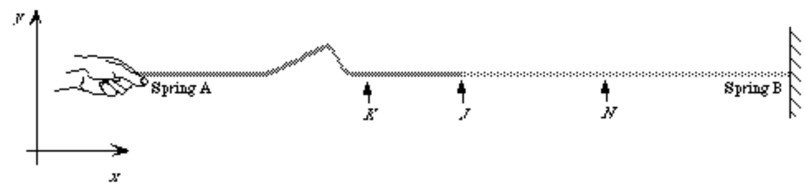
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. The larger the tension, the faster the pulse travels through. Hence A has more tension.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. Less mass per unit length --> faster pulse travel.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

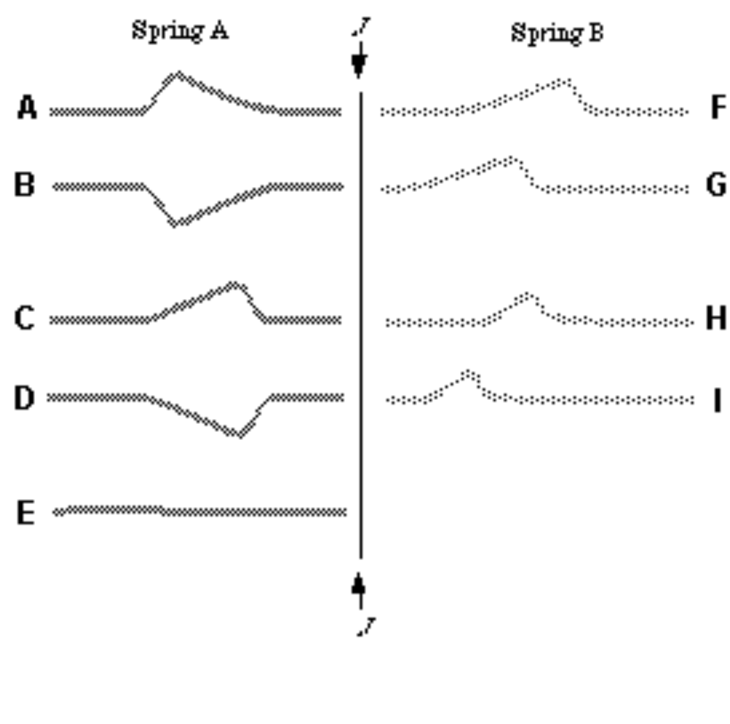
Q13. Explain. The shape of the pulse is not affected by tension.

Q14. Which option best represents the pulse in spring A? E

Q15. Explain. spring A becomes stationary as the pulse moves to B.

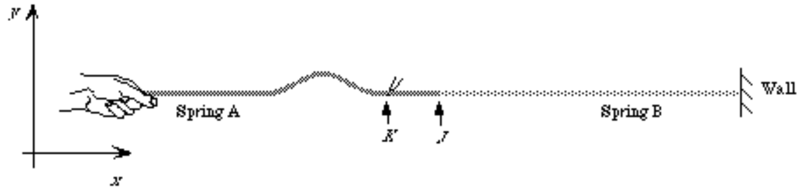
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. The pulse would have to travel about same distance at A to K or at B to N. However, since pulse travels faster in A, then the time in A is shorter. d/v=t, d constant, v inc, t dec.



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. the wave does not actually move the spring laterally only vertically

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. same reason as above

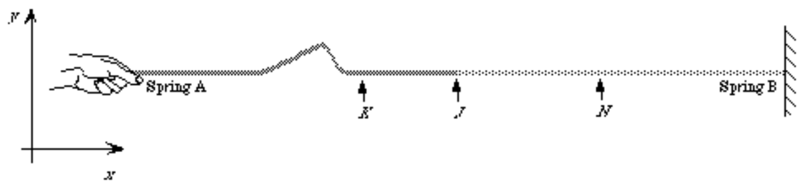
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Unable to Tell

Q9. Explain. the speed depends on tension and mass density. b might have less tension than a or less mass density, not able to tell

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. same as above

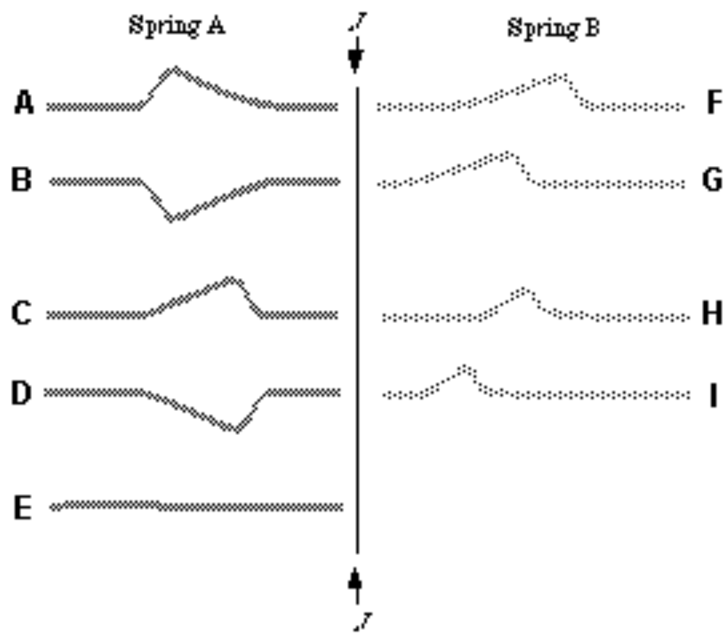
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. as the wave slows, the wavelength increases



Q14. Which option best represents the pulse in spring A? E

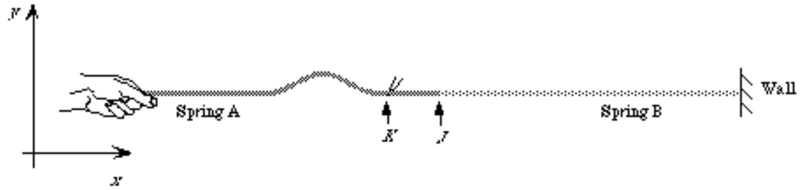
Q15. Explain. the pulse has already passed through a.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. the wave moves faster in a than in b.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. It is a transverse wave so the vibration is only perpendicular to the wire.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. It is a transverse wave so the vibration is only perpendicular to the wire.

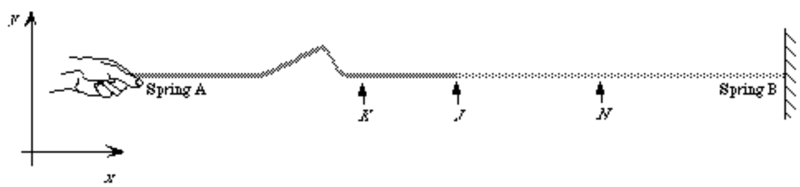
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. If the velocity of the wave is smaller, than the tension of the wave is smaller.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Less Than

Q11. Explain. I guess that if B has less tension, it will be less dense.

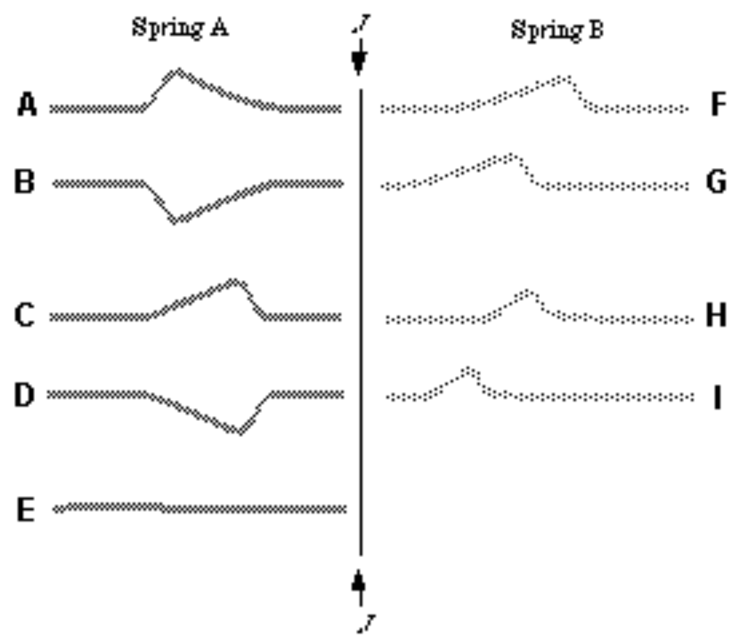
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. The wave will have the same amp. and freq. but the velocity will be smaller.



Q14. Which option best represents the pulse in spring A? E

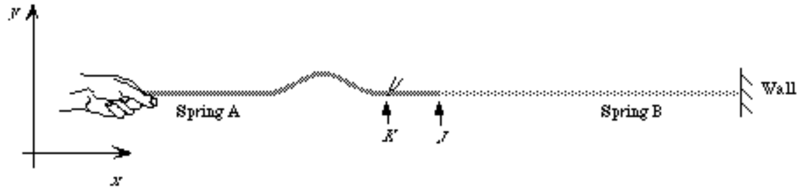
Q15. Explain. The pulse is no longer on string A.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. The wave travels slower on spring B and will take longer to get to N than K.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. after the wave has passed, point K will be in the same relative x direction so it doesn't have any x components

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. same reason as above. seems reasonable

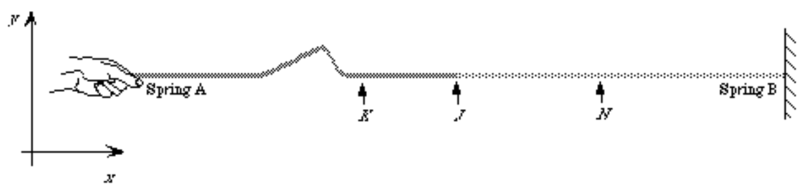
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. the tension is less than A because when the tension is greater the wave can travel easier

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. i don't think it is dependent

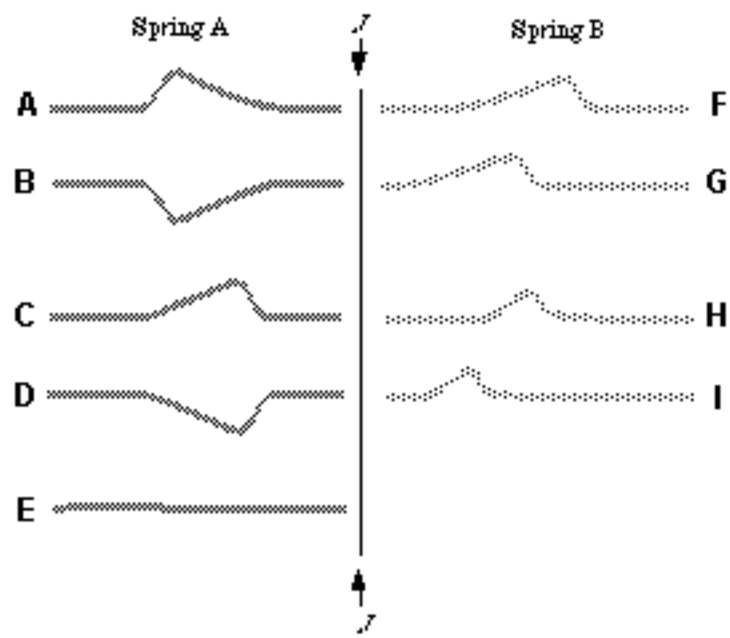
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. the wave will continue in the same direction with the same sign for the amplitude. Choice H is the only one which represents this



Q14. Which option best represents the pulse in spring A? E

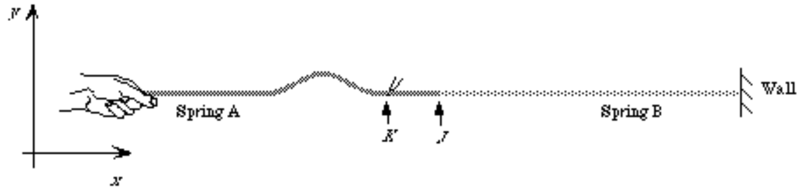
Q15. Explain. After the pulse has reached junction J and has passed spring A, then there won't be any vertical displacement left on spring A. THe entire pulse will be traveleing along spring B.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Unable to tell

Q17. Explain. we can't quantify it exactly, though I would assume that it would take less time to travel from K to J than from J to N because the pulse travels faster in spring A than in spring B. Also N is a much further distance from J than K is.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The yarn would move with the motion of the wave; thus only in the y direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. The motion is constant; thus the direction would still remain the same.

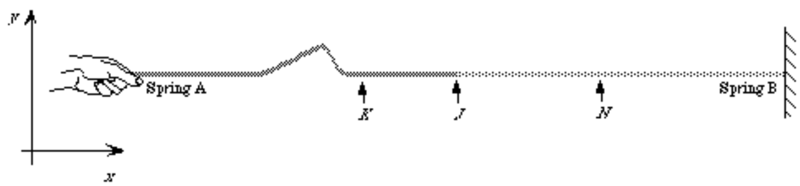
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. They should be equal though it is not a strong but two that have been tied together. This is because it can be looked as one spring and not two divided at point J.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Equal To

Q11. Explain. The reason is the same as in Question 6.

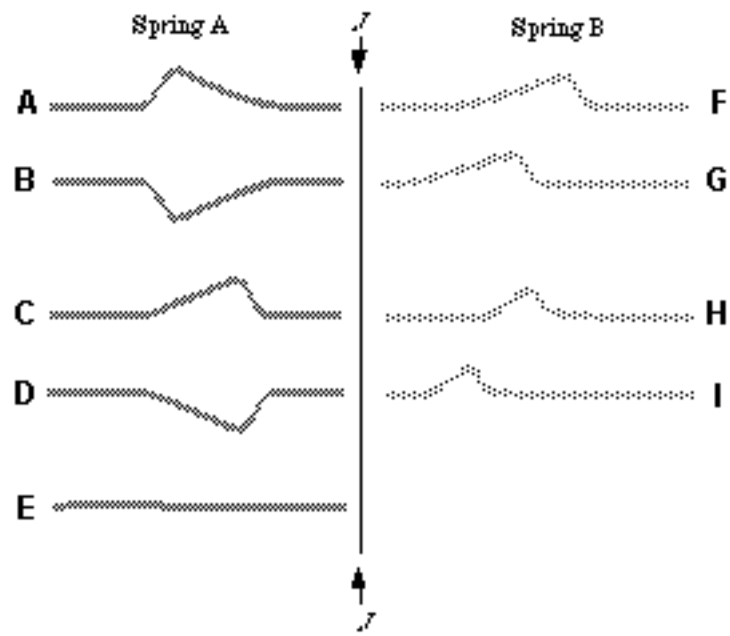
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. It would be F, because the motion is constant through the spring; thus, it would resemble the wave of spring A.



Q14. Which option best represents the pulse in spring A? D

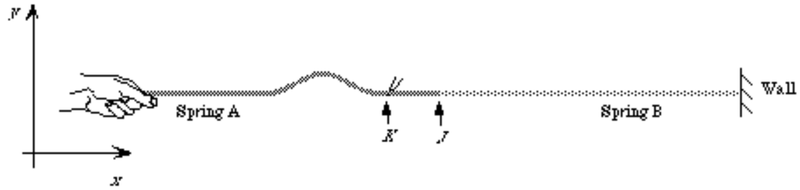
Q15. Explain. After a short time, the motion would be reversed. Thus the representation is that of diagram D.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. It should be equal to because the motion and tension throughou the two springs are constant.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q5. Explain. The pulse only goes left to right, with the string.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q7. Explain. The pulse only goes left to right, with the string.

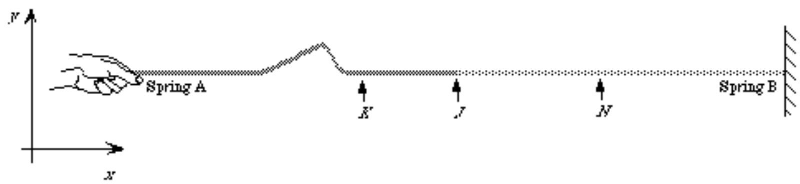
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. B is more stretched out than A, so less tension than A.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Less Than

Q11. Explain. B is more stretched out, so B has less mass per unit than A.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

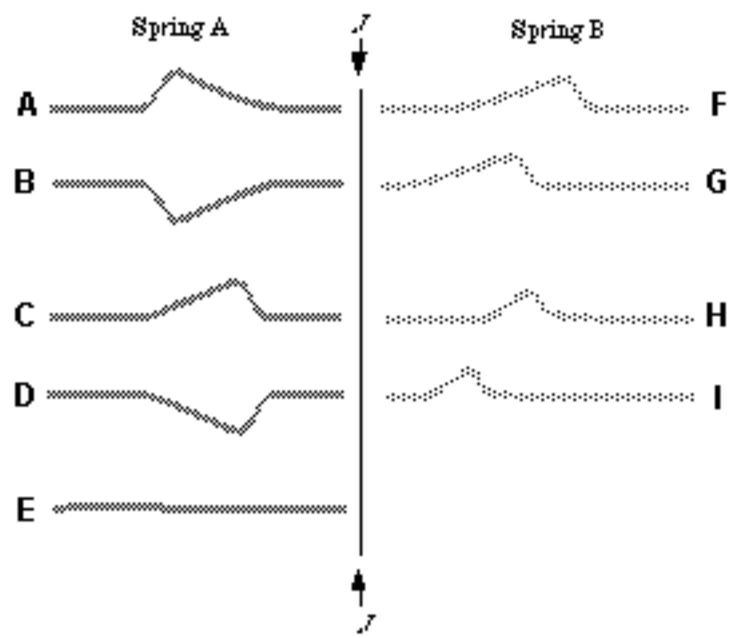
Q13. Explain. It will copy the original pulse from Spring A.

Q14. Which option best represents the pulse in spring A? B

Q15. Explain. The pulse basically flips over and turns around when it comes back.

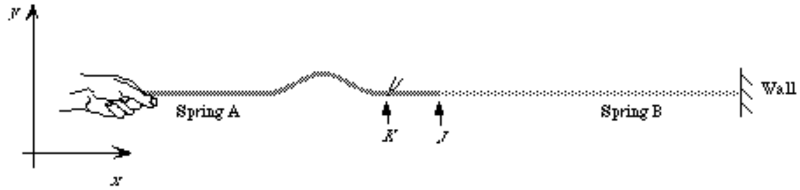
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. A is denser than B, so it takes longer for K than for N.



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. for transverse waves every point of the medium moves perpendicular to the direction of motion of the pulse, thus in the y direction

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain.

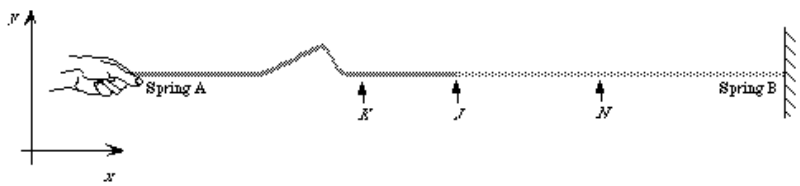
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. since the springs are connected at the junction they will exert equal but opposite forces on eachother, thus the tension is the same, also the springs do not move horizontally

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. the pulse travels slower in b thus since v=(Ft/mu)^0.5 B would have a higher mass density

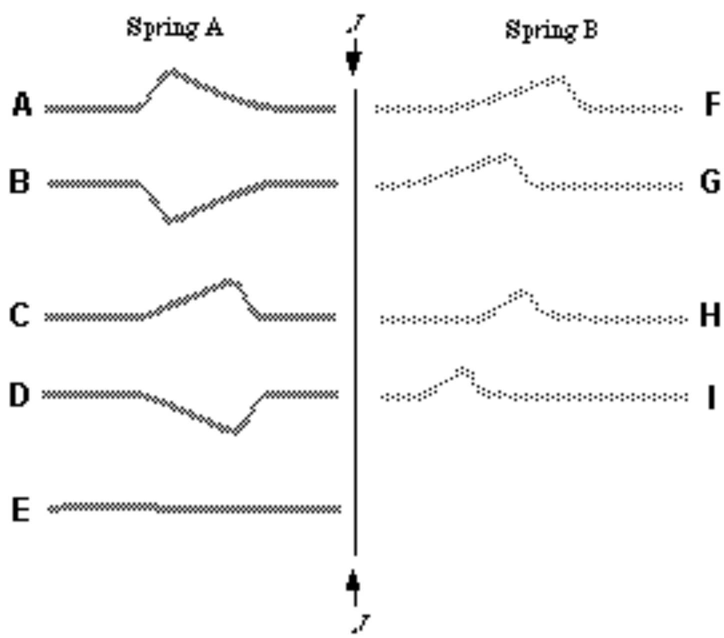
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. Since not all of the energy is transferred to the string b, the amplitude of the wave pulse will decrease, since the density in b is greater in a and the speed of the pulse is less, the wavelength should also decrease



Q14. Which option best represents the pulse in spring A? B

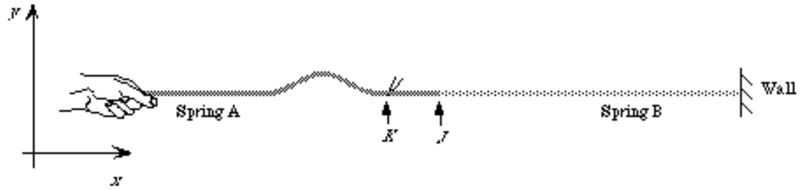
Q15. Explain. since spring b has higher mass density, pulse a would be reflected, the resulting wave would move on the opposite side of the spring.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. the wavelength of the pulse decreased as well as its speed, therefore it would still take the same time to pass both points.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. WEll, the particles in the yarn itself simply go up and down, it is the velocity of the wave that goes along the x.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. if the wave is changing it's velocity the pieces of yarn are still going up and down, maybe just slower

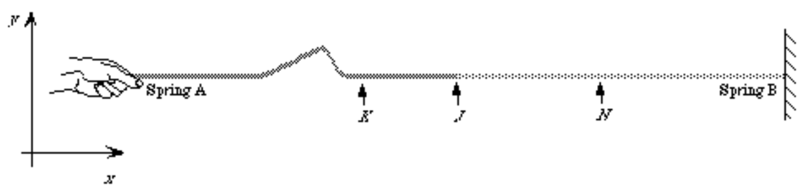
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. If the pulse through a is going faster, we know that increasing the tension increases the velocity of the wave. So b must have less tension

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. We know that an increased mass slows the wave and so if b has less tension and is going slower it could also have more mass and be going slower.

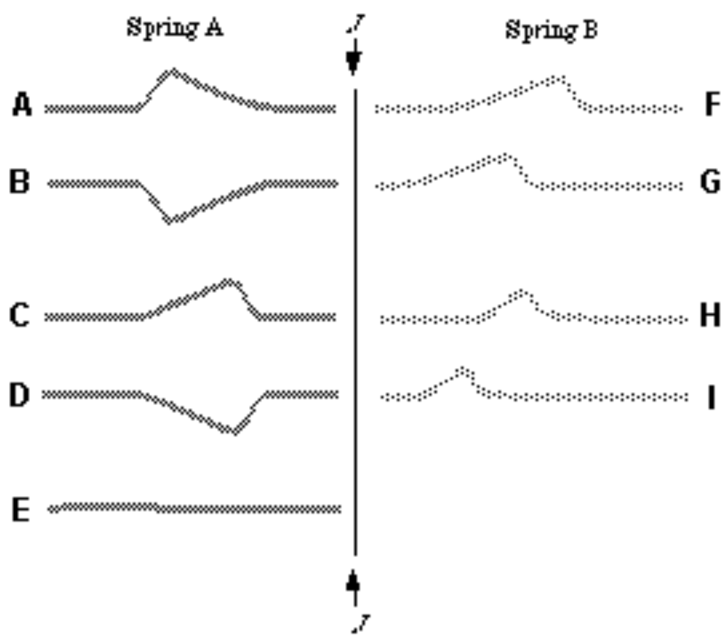
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? I

Q13. Explain. The pulse is still being propagated, but at a slower rate



Q14. Which option best represents the pulse in spring A? C

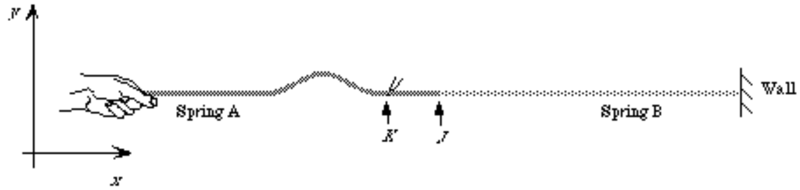
Q15. Explain. I'm not sure, it just looks like a better answer than the others

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. If the pulse wave goes slower through the B spring, then the time it takes the pulse to travel in a is less than for b

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. during the time period it will only move perpendicular to the string which is in the y direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. same reasoning....it will only go up and down not side to side.

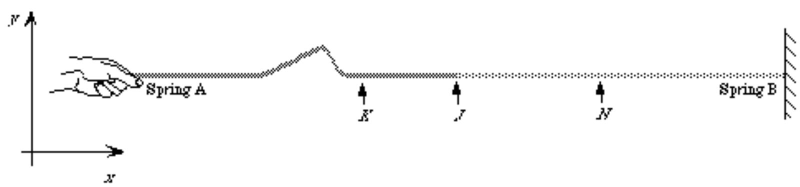
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. because tension is a major factor in the velocity of the wave in the spring.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Equal To

Q11. Explain. same spring...so there for same mass/unit length.

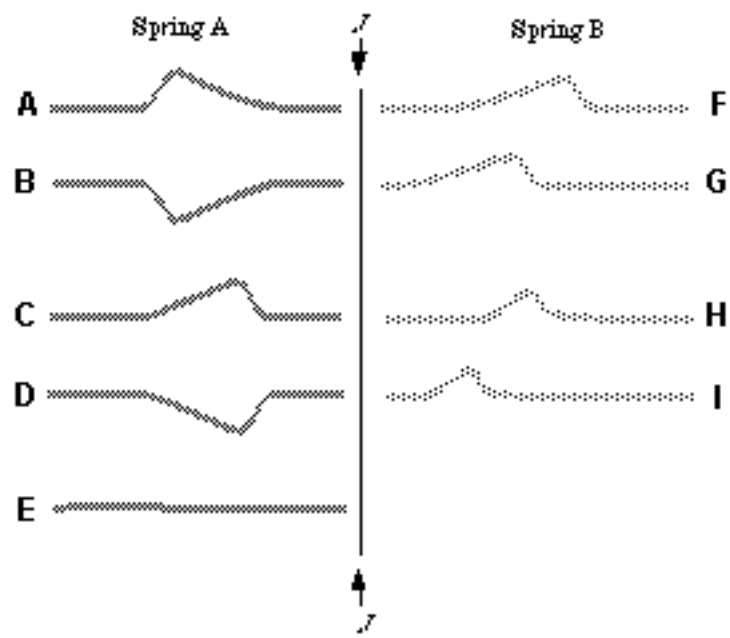
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. because it wil be the same pulse...this question is worded funny.



Q14. Which option best represents the pulse in spring A? C

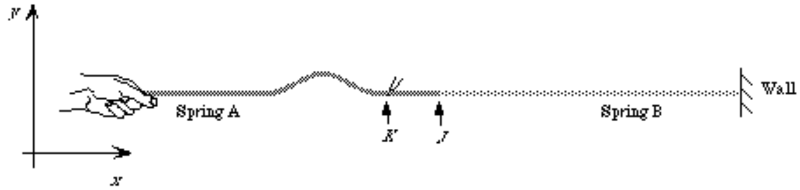
Q15. Explain. because its the same spring.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. because the tensions tighter in A

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. the pulse is moving in the x direction, but the actual material particles are moving themselves in the y dierection. the string is still in the same place once the pulse has passsed

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Not Answered

Q7. Explain. for the same reasons as above

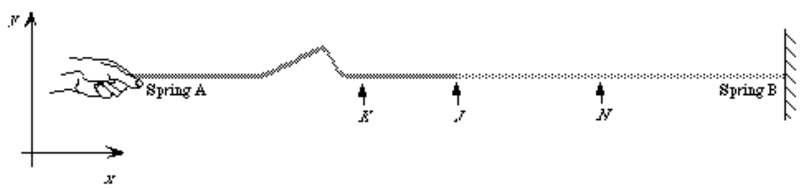
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. since the pulse moves faster in a, this means that the tension of A is greater causing it to have a greater restoring force and making the pulse travel faster

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. waves travel faster in less dense material; this is why sound travels faster in air than in water

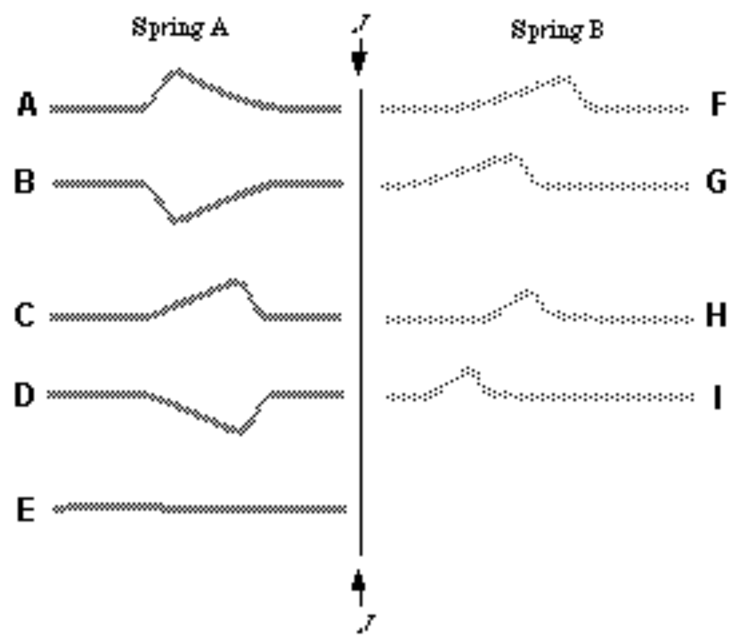
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? I

Q13. Explain. the pulse wound not be travelling as fast so it would be closer to the junction point and it would not be inverted as it was not reflected, but passed through the junction



Q14. Which option best represents the pulse in spring A? B

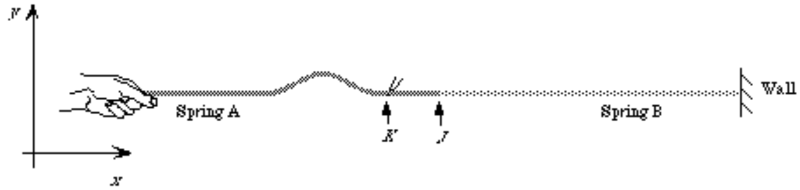
Q15. Explain. the pulse would have been inverted as it was reflected off of a more dense 'wall'

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. the pulse travels faster in A than in B so that means that it would pass each point in A faster than each point in B

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. This is a transverse wave, and the displacement of particles on the spring will be perpendicular to the motion of the pulse.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. If particles on the spring are only moving in the y-direction, then velocities can only be in the y-direction at specific points on the spring (i.e. the junction).

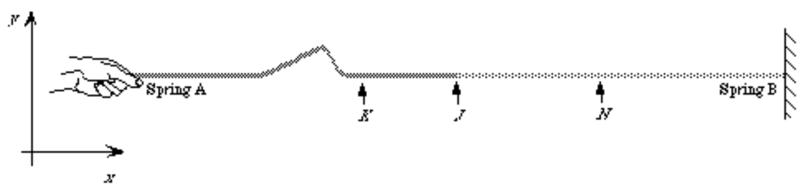
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. This is because the pulse slows down when it reaches spring B. Greater tension is proportional to greater velocity of pulses.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. There is no indication of a difference of amplitudes in this problem, and so we cannot tell the differences in mass per unit length.

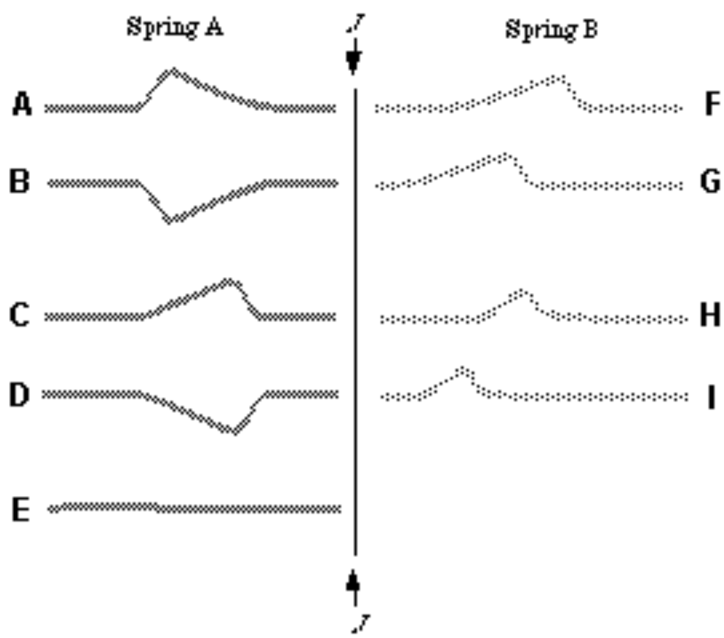
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. The pulse should remain the same along spring B, but will be travelling slower.



Q14. Which option best represents the pulse in spring A? E

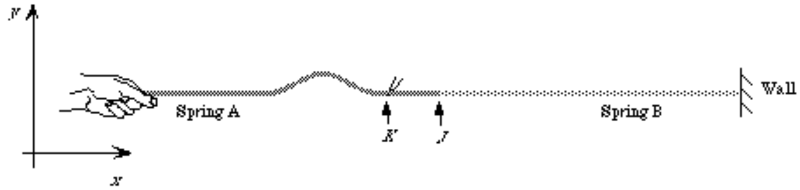
Q15. Explain. Once the pulse passes through spring A, and is moving in spring B, there will be no pulse in spring A.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. If the pulse has a greater velocity travelling along spring A, it will take less time to pass through a given point than it would along spring B.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. It is a transverse wave, yarn travels perpendicular to movement of the wave.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Same reason as above

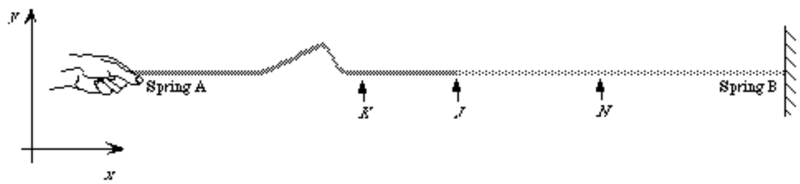
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Greater Than

Q9. Explain. Since the velocity of the wave is greater, the tension is greater.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. It is impossible to determine the mass based on the information given

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

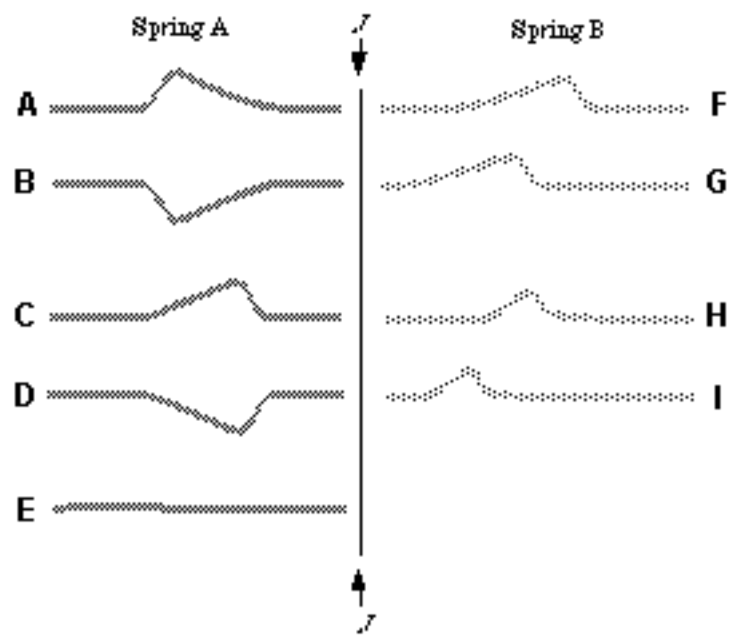
Q13. Explain. Since velocity is lambda*frequency, the wavelength must get longer

Q14. Which option best represents the pulse in spring A? E

Q15. Explain. There is no more wave present in the spring A

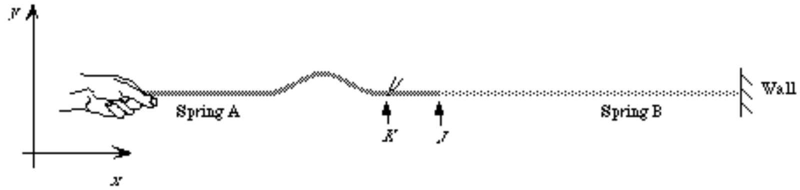
Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. The velocity is greater in spring B but the wavelength is longer, so it takes just as long.



End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. because wave doesn't make the string to move in the X direction, it only causes the string particles to move upwards or downwards. So it will only have velocity in Y direction.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. because wave doesn't make the string to move in the X direction, it only causes the string particles to move upwards or downwards. So it will only have velocity in Y direction.

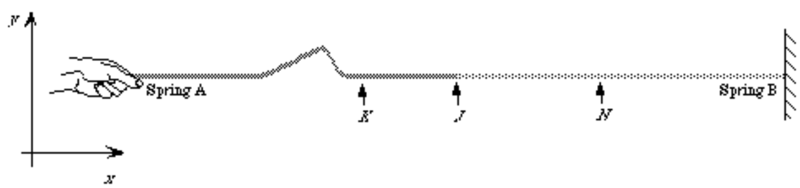
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Greater Than

Q9. Explain. Greater tension will make the velocity of each particle goes slower!

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

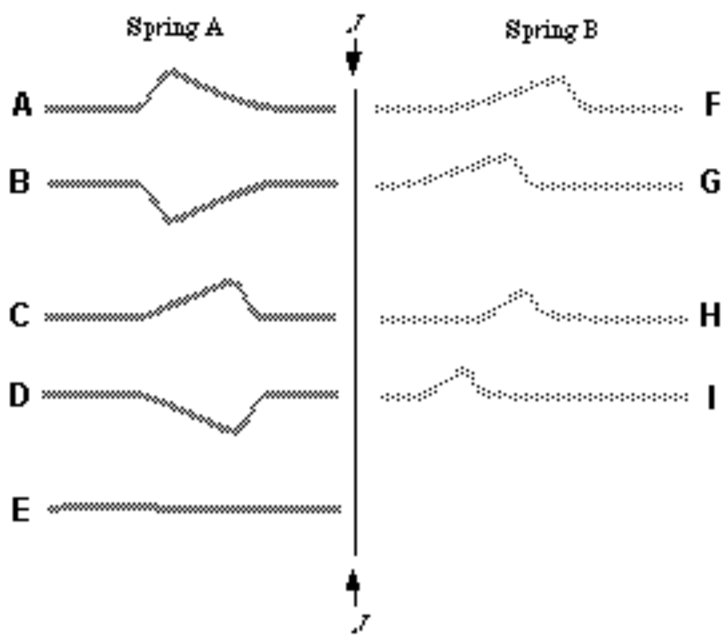
Q11. Explain. Because the wave on spring B is slower, so it must has greater tension and greater mass!

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H



Q13. Explain. because the wave should have the pulse in the same side. and should have the really similiar shape! Just that since spring B has greater tension. then it should have smaller wave!

Q14. Which option best represents the pulse in spring A? C

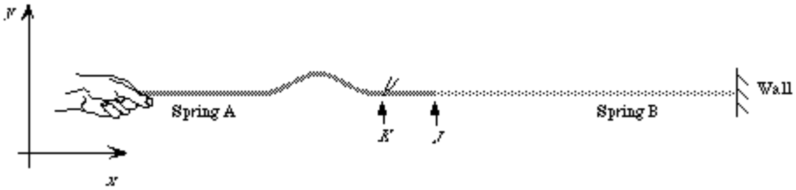
Q15. Explain. Same as my explanation in previous question!

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. Because B has biger tension, so less velocity, so greater time!

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. particles only move up and down. They do not move with the wave.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q7. Explain. Wave velocity is only in the x direction.

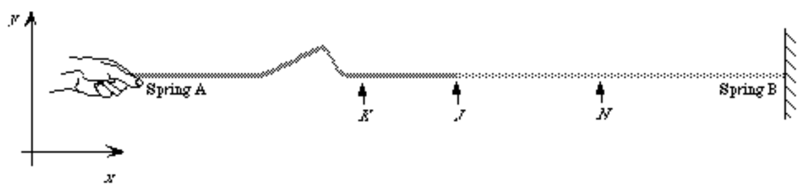
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. more tension, faster velocity.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Less Than

Q11. Explain. more mass per unit length of which to travel through when more tension

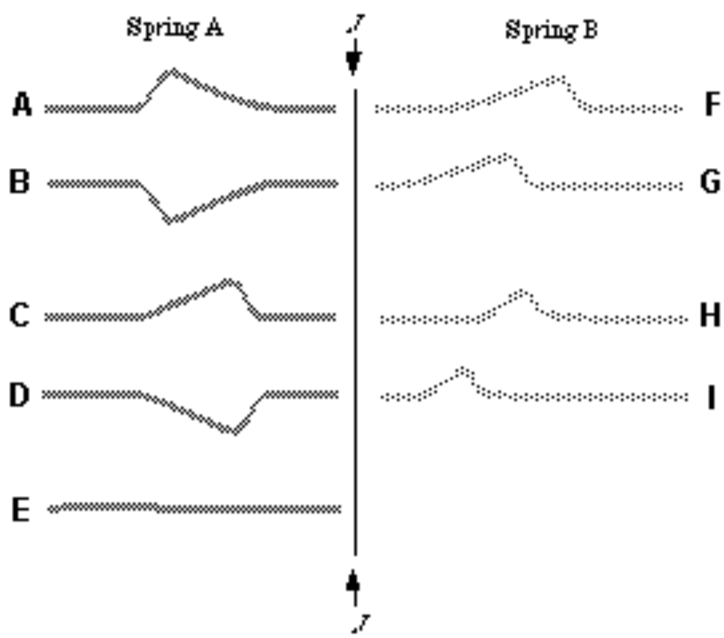
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. transmission remains the same, even if different material.



Q14. Which option best represents the pulse in spring A? E

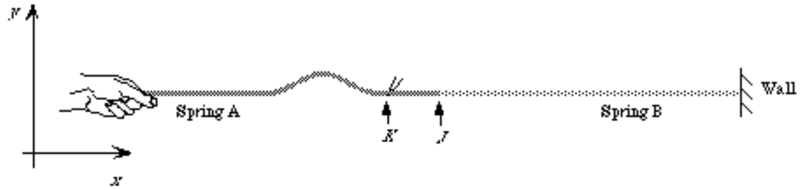
Q15. Explain. no longer any wave pulse travelling through.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. if the wave velocity is greater in spring a, it will travel faster

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. Pulse is just a vertical motion.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain.

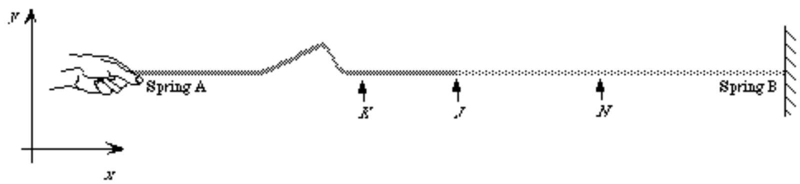
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. Pulse travels faster in higher tension.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Less Than

Q11. Explain. Pulse travels slower in less dense material.

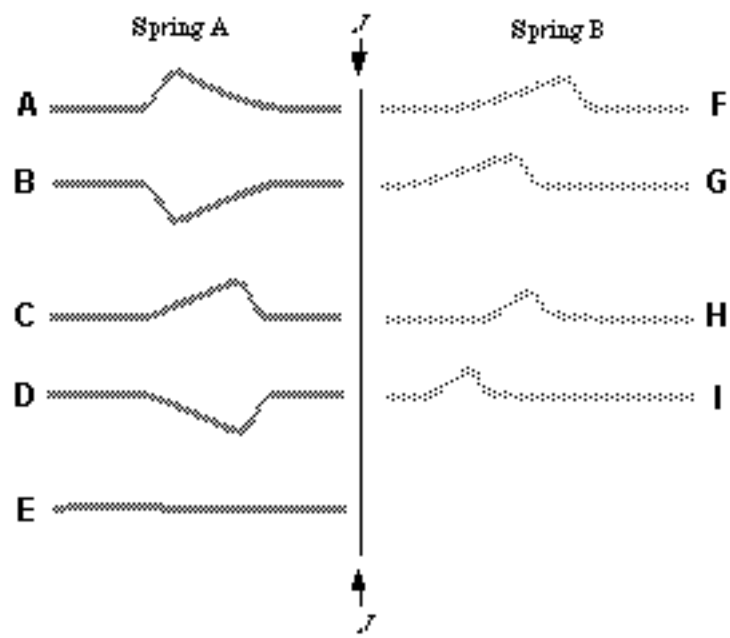
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B?
I

Q13. Explain. Pulse travels slower in spring B, and thus gets shorter.



Q14. Which option best represents the pulse in spring A? A

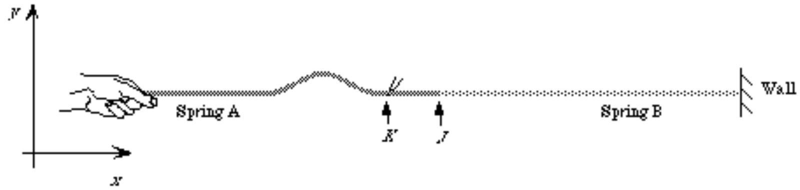
Q15. Explain. Bounces back, but on the same side because point J is free to move.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. The pulse is shorter, but moving slower and thus takes the same time.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. it only moves up and down

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. because it is still moving up and down

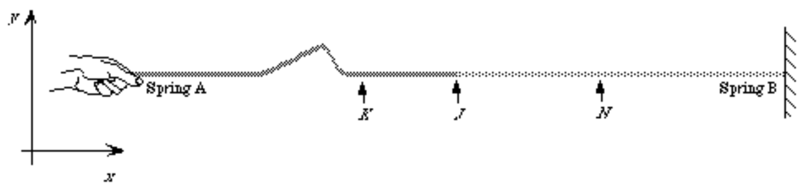
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. it is equal becaue you are pulling it together

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. becuase the velocity moves slower in B than A

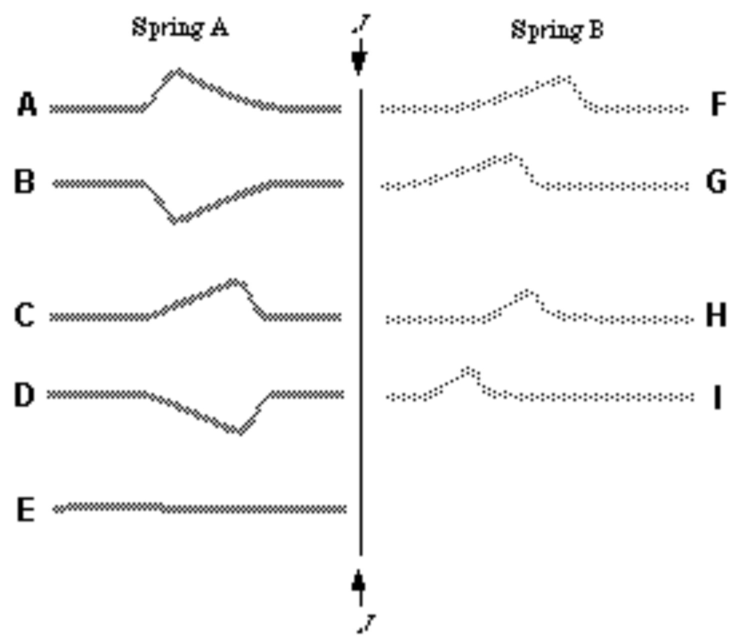
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. since the wave moves slower, the wave compresses



Q14. Which option best represents the pulse in spring A? E

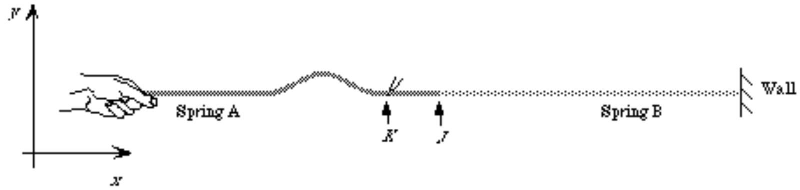
Q15. Explain. the wave leaves that portion thus no wave is there

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. I do not know

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q5. Explain. both since it is moving in both direction. up and down and sideways as well.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. still both ways. nothing changes.

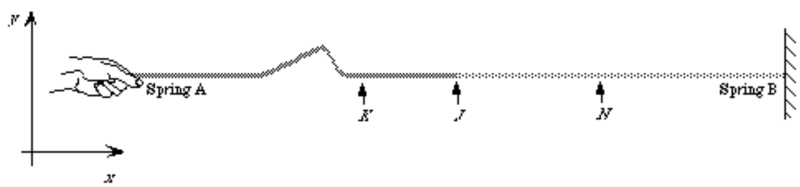
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. since pulse is less than so does the tension.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. i don't know exactly unless i perform the experiment myself

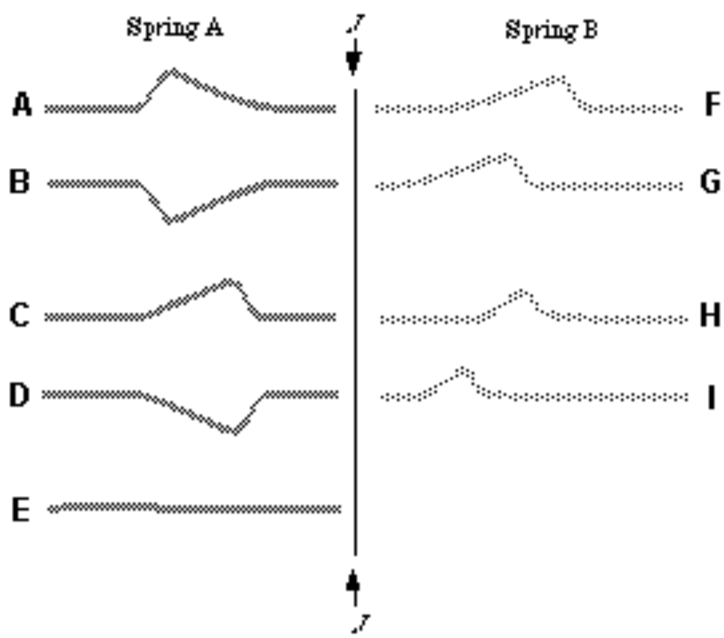
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. since pulse decreases so does the amplitude of the pulse.



Q14. Which option best represents the pulse in spring A? E

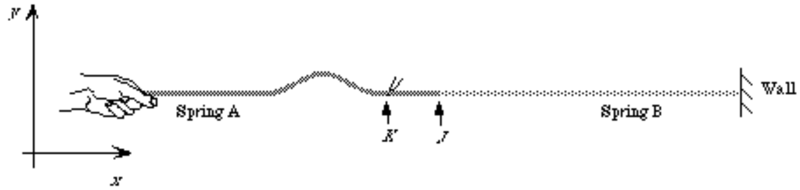
Q15. Explain. it will begin to go straight and until the pulse comes back to string a.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Greater than

Q17. Explain. greater than becuase the pulse is greater in a than b.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q5. Explain. If it had any components in the y direction it would eventually end up farther down than it started, which isnt the case.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q7. Explain. If it had any components in the y direction it would eventually end up farther down than it started, which isnt the case.

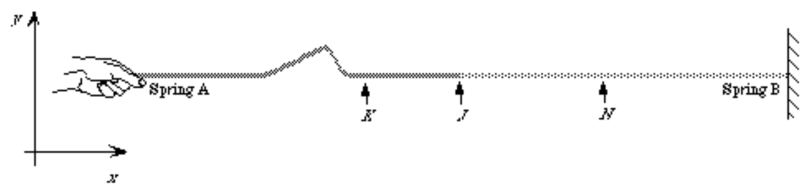
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. The larger the tension the larger the velocity. So if the velocity is larger in spring A then the tension is larger.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. There isn't enough information to tell.

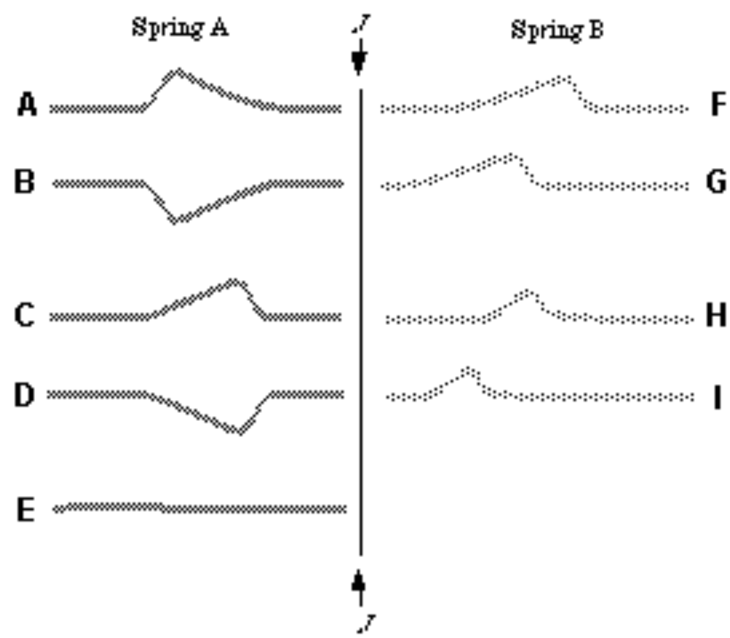
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. The pulse isnt going to change shape because the spring has changed.



Q14. Which option best represents the pulse in spring A? E

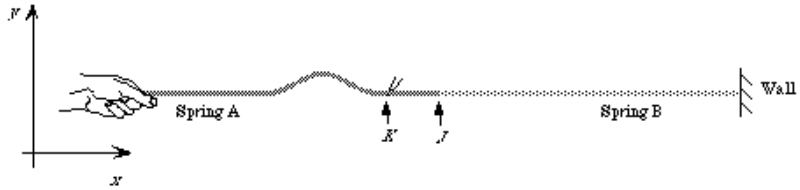
Q15. Explain. After the pulse reaches the junction all of the energy is transfered over and there is no longer a pulse in A.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Unable to tell

Q17. Explain. The velocities are unknown and the distances arent the same, so there is no way to guess what will happen.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. because there is only components perpendicular whan the wave is transverse

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. because the wave is traveling to the left and it is rising up

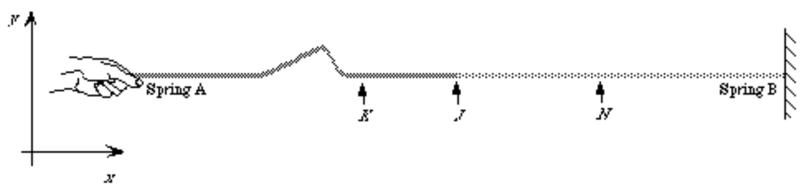
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. because the wave travels faster in a and the more tension the faster a wave will travel

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. because waves move slower for greater mass per unit length

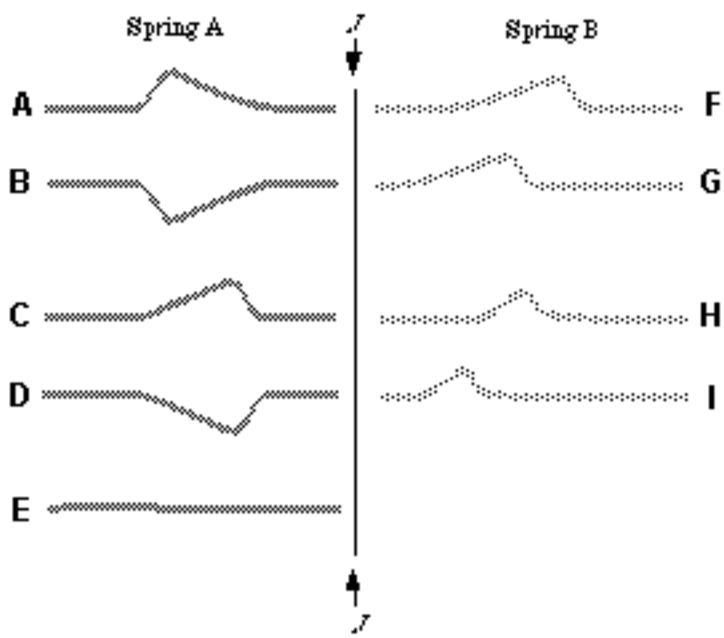
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. because the spring will not chang the shape of a pulse but it could change the size



Q14. Which option best represents the pulse in spring A? E

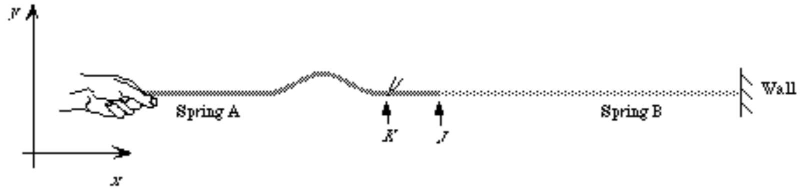
Q15. Explain. because the energy from the wave will go directly into spring B so A will be left with no wave

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Equal to

Q17. Explain. because the wave moves faster in spring A then spring B but the wave will be smaller in spring B

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The spring doesn't move horizontally, only vertically.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> x</i>-direction

Q7. Explain. The spring is still only moving vertically.

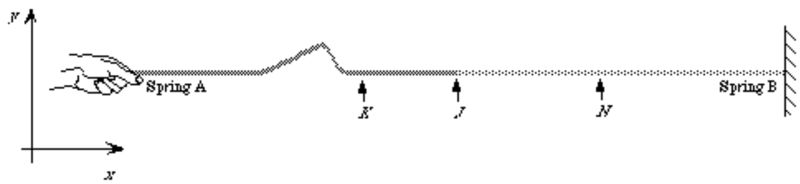
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. The tensions of the springs will be equal since there's no outside forces acting on them.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. Since tension is the same and velocity is less, mass per unit length must be greater.

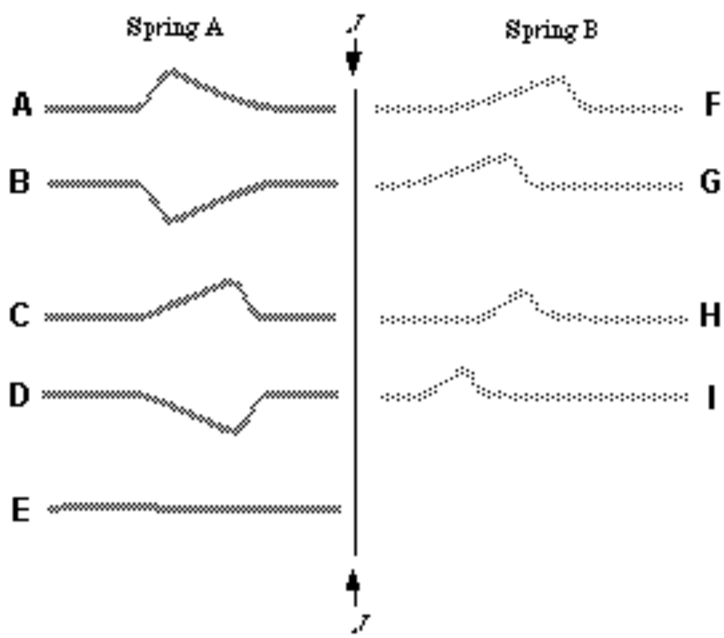
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. The spring will be the same shape, but smaller.



Q14. Which option best represents the pulse in spring A? B

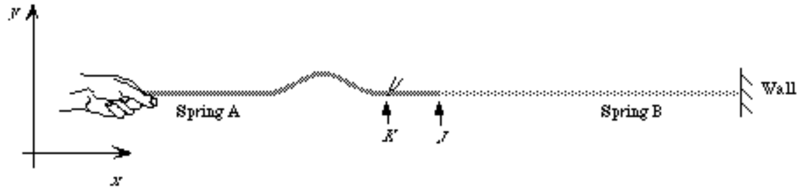
Q15. Explain. A portion of the pulse is reflected.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Unable to tell

Q17. Explain. I don't know, there aren't any numbers.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The piece of yarn will move upwards, then downwards as the pulse passes by that point, but it will not move horizontally.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. The junction will move upwards, then downwards as the pulse passes by that point, but it will not move horizontally.

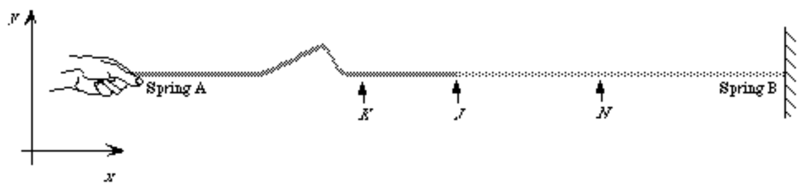
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. The pulse moves faster along spring A, so the tension in spring B is less than the tension in spring A.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. Without more specific information about the tension we cannot compare the mass per unit length of the springs.

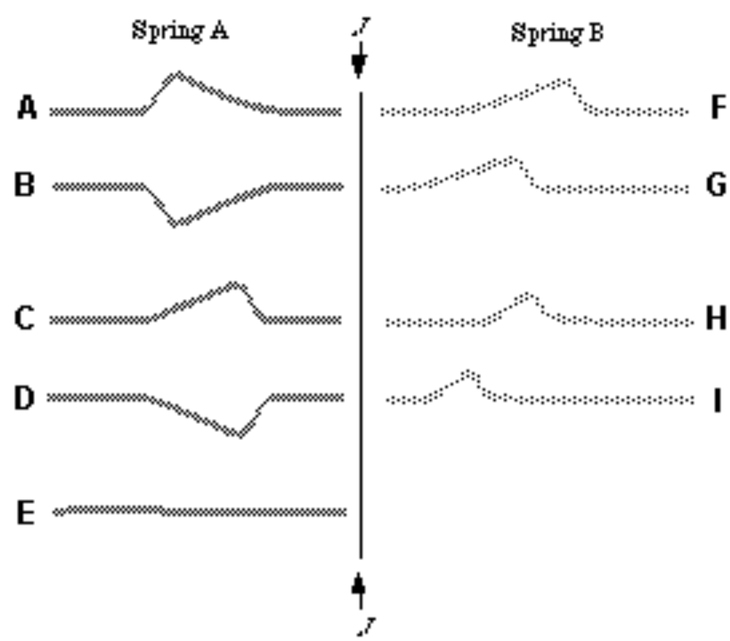
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. Due to the increased tension in spring B, the pulse through it will be similar in shape to the pulse in spring A, but with a smaller amplitude.



Q14. Which option best represents the pulse in spring A? E

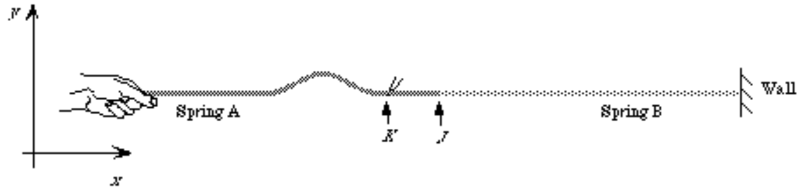
Q15. Explain. The pulse continues onto spring B, leaving no pulse in spring A.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. We know from before that the pulse moves slower in spring B, and here it has a smaller distance to cover (K to J, as opposed to J to N) as well.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. its a transverse wave, so the yarn will only move transverse to the motion of the pulse

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. same reasons as above

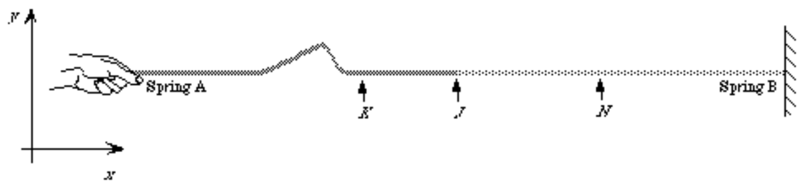
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. speed of the pulse is lower in b, so tension is lower

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. teh greater the density, the slower the pulse

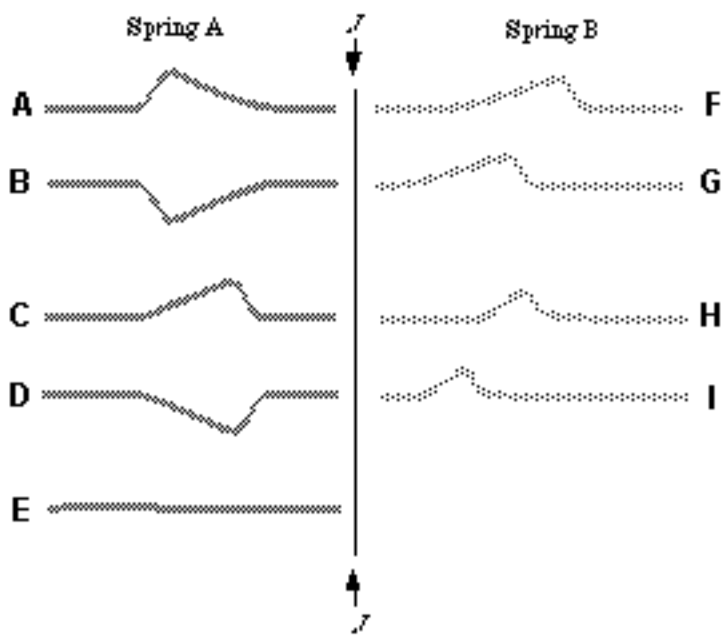
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. the amplitude will be slightly dampened in the transition into b



Q14. Which option best represents the pulse in spring A? E

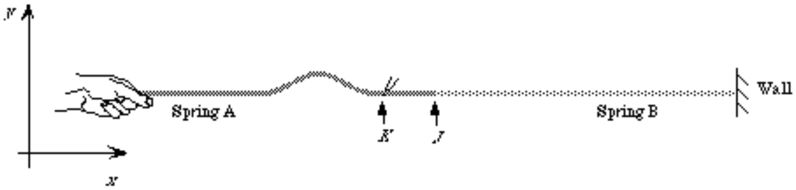
Q15. Explain. the pulse will travel completely onto b, no pulse will be reflected

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. the velocity is greater across k than n

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The pulse moves up and down so only in the y direction does it move.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Same reason as above.

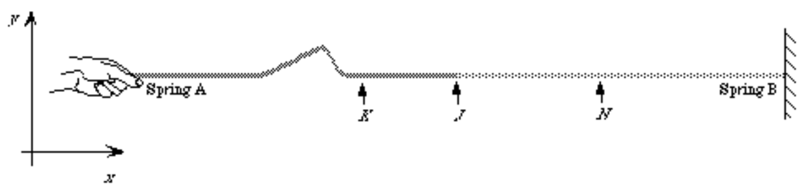
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Equal To

Q9. Explain. If they are connected then the tension should be the same for both.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. They did not give us enough information to tell.

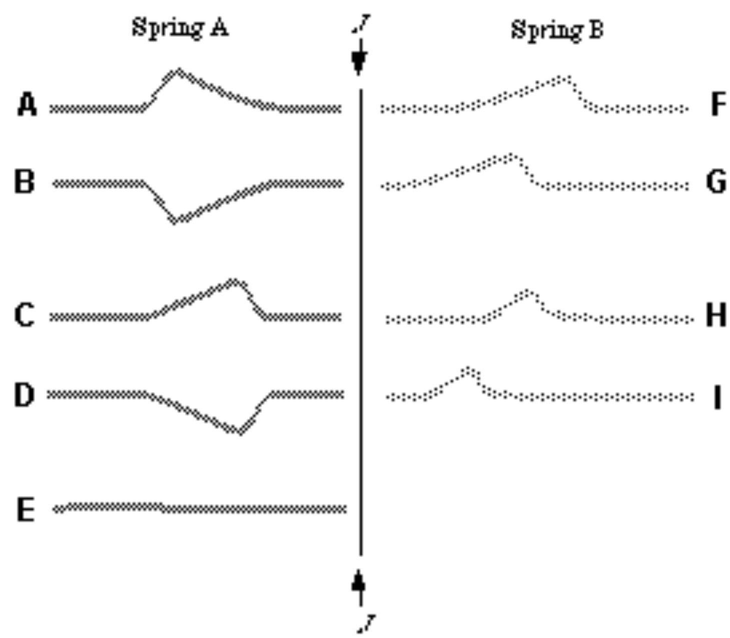
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? H

Q13. Explain. Should look like the pulse from spring A.



Q14. Which option best represents the pulse in spring A? E

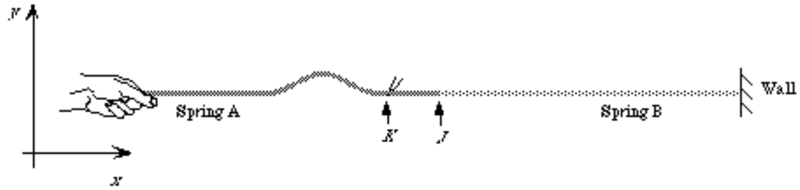
Q15. Explain. There should be no pulse.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Unable to tell

Q17. Explain. Depends on the mass of the springs.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The motion is transverse

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. the motion is transverse

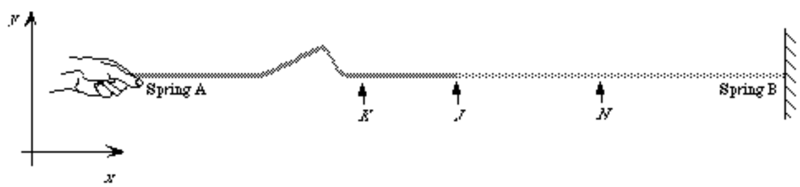
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. its going faster so the tension is greater

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

Q11. Explain. don't know

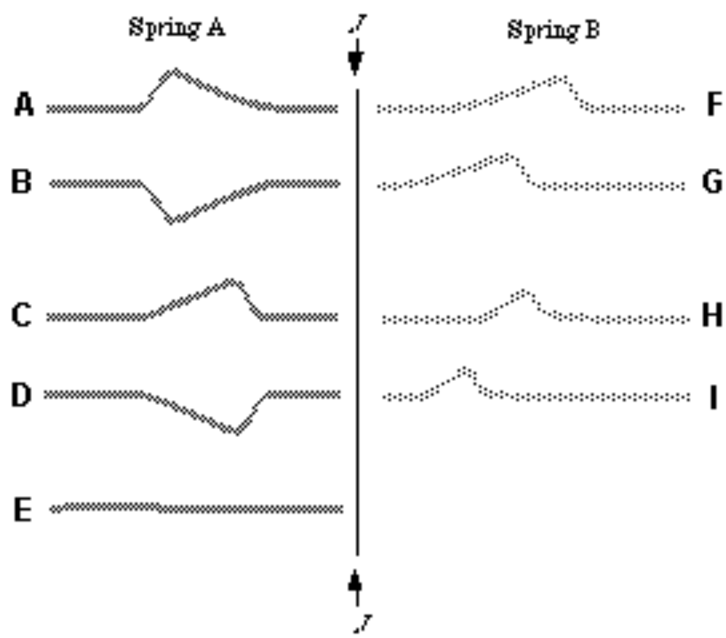
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. maintains same shape and is farther along than G



Q14. Which option best represents the pulse in spring A? E

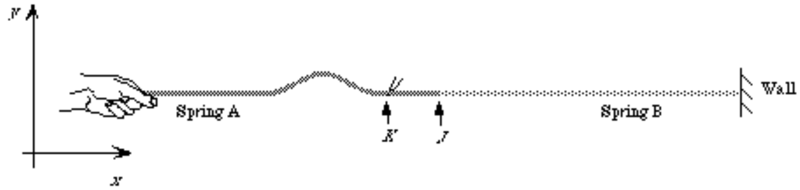
Q15. Explain. the pulse is in B so A is flat

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. the pulse is moving faster in A

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. In transverse waves, movement of particles is in the perpendicular direction to that of the pulse, therefore the string would move in the y direction only.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. Just because it changes springs, the movement in them is still in the same direction which is in the Y direction.

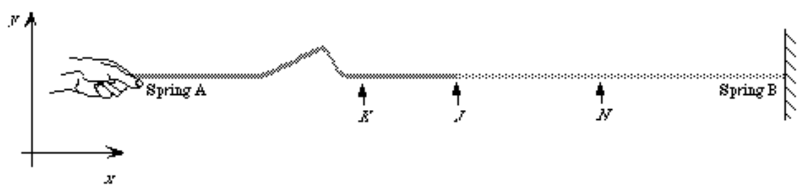
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Unable to Tell

Q9. Explain. Velocity of the wave not only depends on the tension in the string, but also the material its made of, elasticity. So no knowing if they are the same materials or not we dont know what tensions are greater than one another.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Equal To

Q11. Explain. the mass per unit length is the same because the amplitudes are the same.

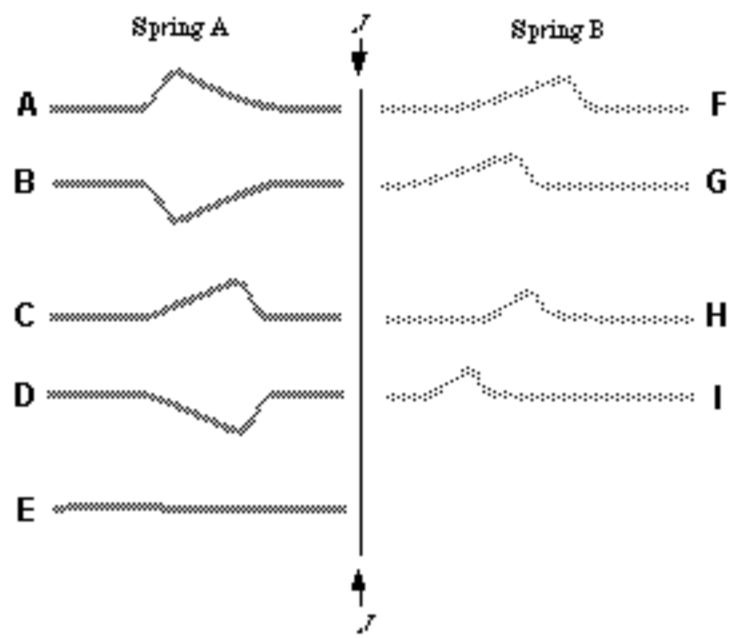
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. the geometry of the wave does not change as it changes mediums, but the speed does change.



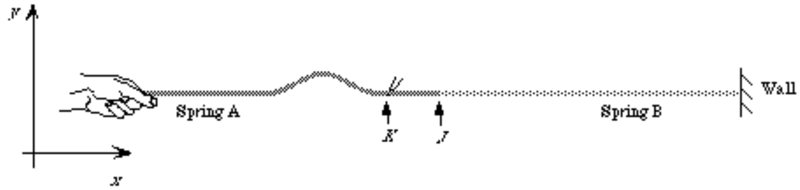
Q14. Which option best represents the pulse in spring A? C

Q15. Explain. The wave looks the same as it did previously, though a change in mediums, the shape of the wave does not change.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. Because K and J are closer than J and N, not to mention that there is still some of the wave is in the slow medium while its tip is going from J to N, so it takes less time for the first distance.

End of response



Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.

Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. It undergoes tranverse motion.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

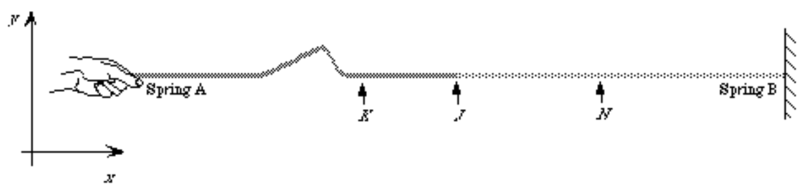
Q7. Explain. it undergoes tranverse motion.

Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. less tension = slower pulse speed

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. slower speed = more mass/length

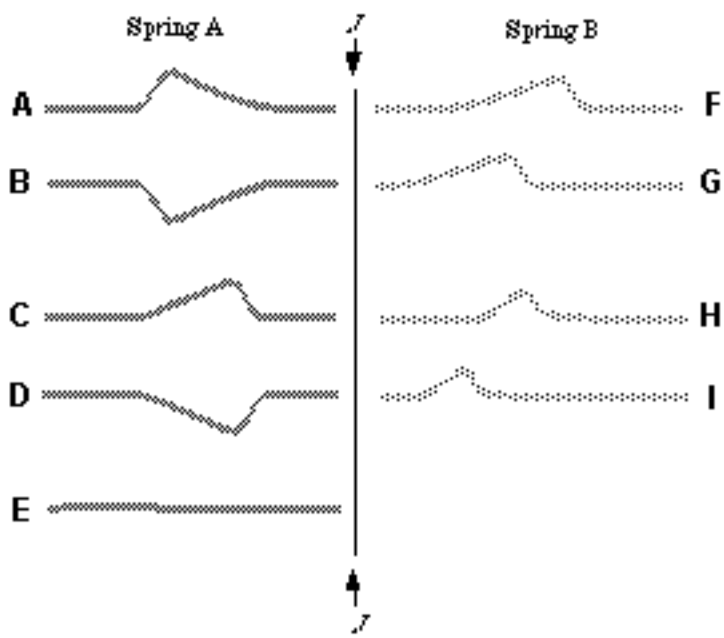


The student generates an asymmetric pulse in spring A that moves to the right as shown below.

After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F

Q13. Explain. Should transmit a very similar pulse to spring b



Q14. Which option best represents the pulse in spring A? D

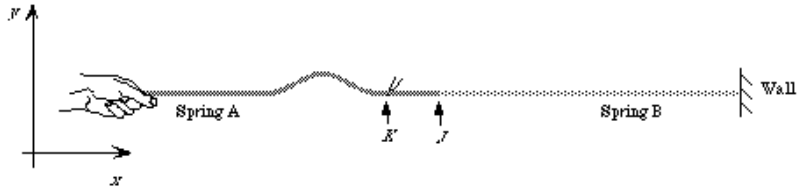
Q15. Explain. I think it will reflect like that. Do I have reasoning? Barely.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. It's moving faster at point K than it is at point N, based on what was told to us at the beginning of the pre test.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. Since this is a transverse wave, there is only a y component since each point moves only vertically.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? In both the <i> x</i> and <i> y</i> directions

Q7. Explain. Since the springs probably have different spring constants since they have different velocities, there would probably be velocity components in x and y directions.

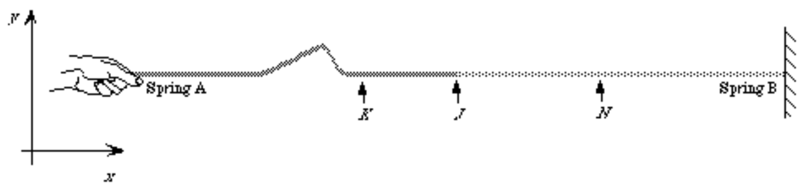
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Greater Than

Q9. Explain. since the velocity is slower in spring b, this spring must have a higher spring constant and therefore must have greater tension.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Greater Than

Q11. Explain. The mass per unit length must be greater in b than a because the velocity gets slower and this can be caused by a greater mass per unit length which would require a greater force to create the wave.

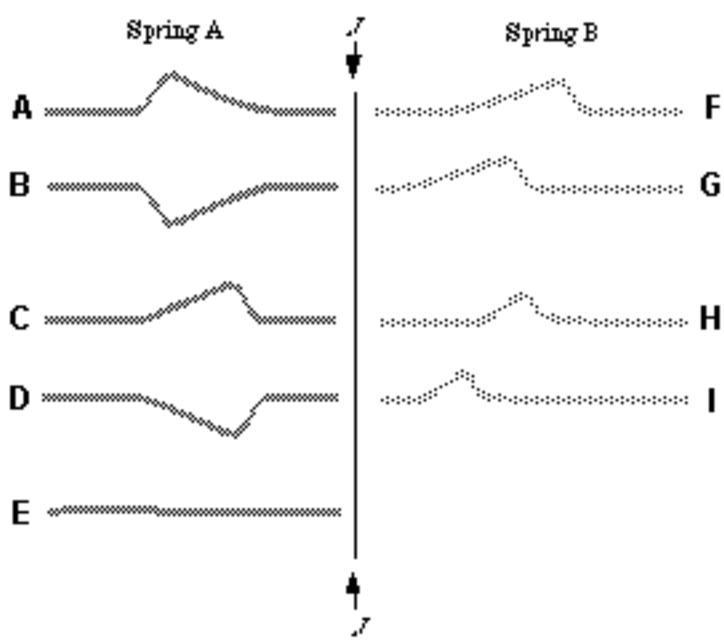
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? I

Q13. Explain. The transmitted pulse will be slower and have less of an amplitude and length but continue on in a similar shape as in spring a.



Q14. Which option best represents the pulse in spring A? D

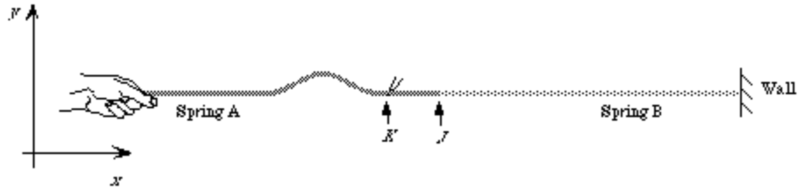
Q15. Explain. The pulse after meeting at junction j would be inverted and reflected back since spring b has greater k. Thus, the reflected pulse would have smaller amplitude and be inverted.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. since spring a travels at greater velocity than spring b, it would require more time for the pulse to travel the same distance in spring b.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. The wave is transverse, physically moving the transmission medium only in the y-direction. Thus, anything attached to it will only move in that direction as well.

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. It's a transverse wave: y-direction only.

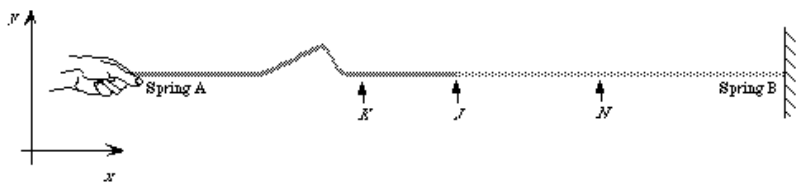
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Less Than

Q9. Explain. The lower the tension, the lower the wave transmission speed.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Unable to Tell

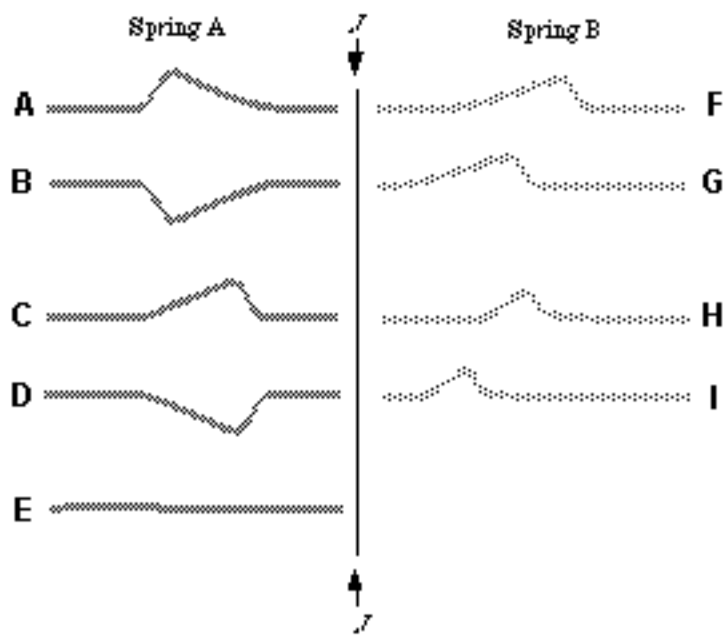
Q11. Explain. We don't really know, it could be either way.

The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? F



Q13. Explain. The pulse should have the same shape as it did on the other spring.

Q14. Which option best represents the pulse in spring A? B

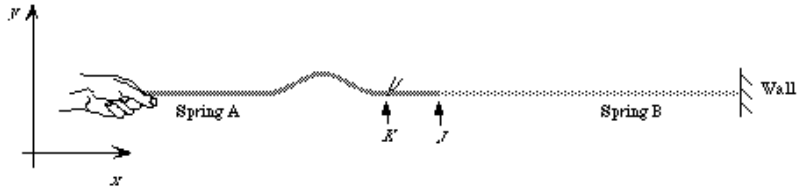
Q15. Explain. At the junction, an opposite pulse will be reflected onto spring A.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Less than

Q17. Explain. The pulse is traveling faster on spring A, and thus will be pass by any point on it faster.

End of response

Two springs, A and B, are attached end-to-end at point J. The student creates a pulse in the x-y plane by quickly moving spring A. The student notes that pulses travel faster in spring A than in spring B. A piece of yarn is attached to spring A at point K, as shown.



Q4. As the pulse passes point K, does the velocity of the yarn have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q5. Explain. the pulse has a velocity in the x direction, but the yarn has a velocity in the y directoin

Q6. When the pulse reaches the junction point, J, does the velocity of the junction have components only in the x-direction, only in the y-direction, or in both the x and y directions? Only in the <i> y</i>-direction

Q7. Explain. same as question 2

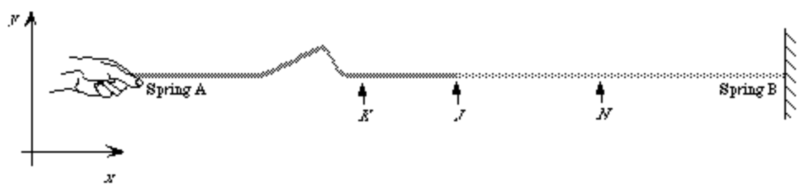
Q8. Is the tension in spring B greater than, less than, or equal to the tension in spring A? Greater Than

Q9. Explain. the pulse on b moves faster, so that implies there is a bigger restoring force which means there is more tension.

Q10. Is the mass per unit length of spring B greater than, less than, or equal to the mass per unit length of spring A? Less Than

Q11. Explain. it moves faster because it requires less inertia which means it has less mass.

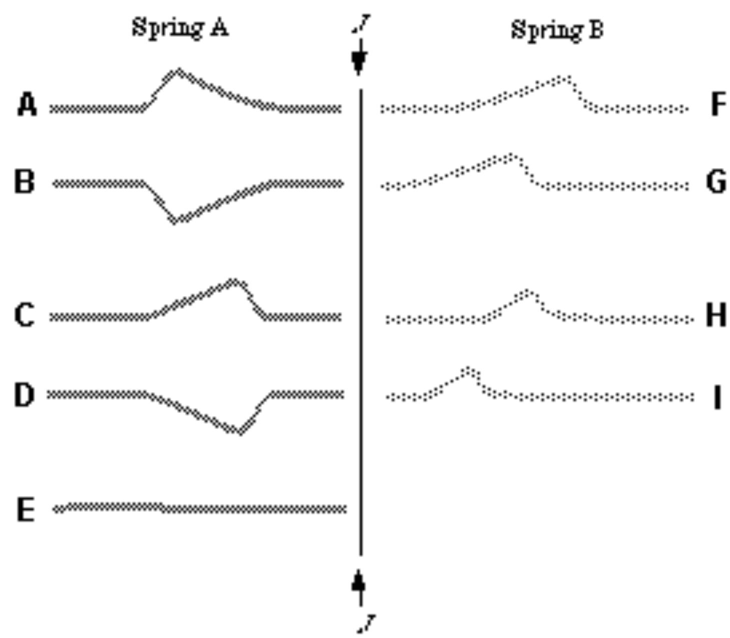
The student generates an asymmetric pulse in spring A that moves to the right as shown below.



After the pulse has reached the junction:

Q12. Which option best represents the pulse in spring B? G

Q13. Explain. the pulse continues moving in the same direction.



Q14. Which option best represents the pulse in spring A? E

Q15. Explain. the pulse did not reach an endpoint, so it does not reflect back onto a.

Q16. Is the time it takes the pulse traveling along spring A to pass by point K greater than, less than, or equal to the time it takes the transmitted pulse traveling along spring B to pass by point N? Unable to tell

Q17. Explain. do not know the distance from 0-k and from j-n.

End of response