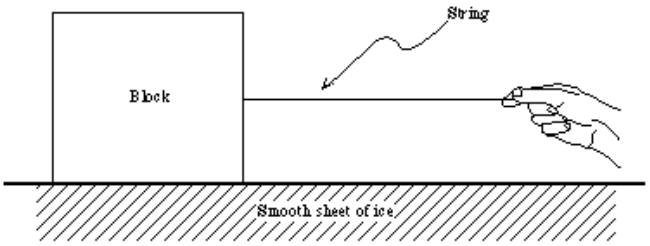
Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

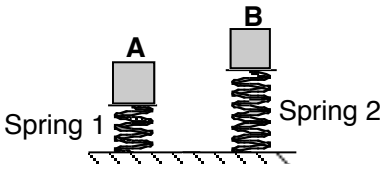
Q5. Explain. The block is moving some distance, and it is initially at rest, therefore it must be accelerating.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to $0.5\ F_O$.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. The block, assuming no friction, will tend to stay in motion. This means that if a force, albeit a decreasing one, is contiuously applied to the block it must still be increasing in speed. The only caveat is that the acceleration is decreasing.

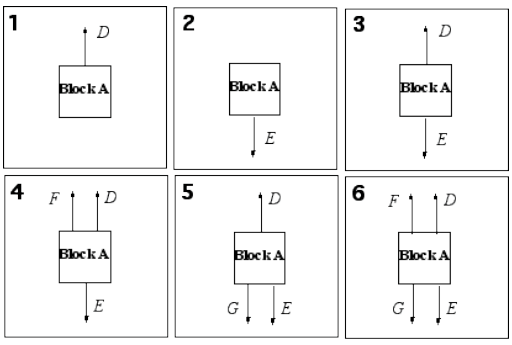
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	spring	block
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



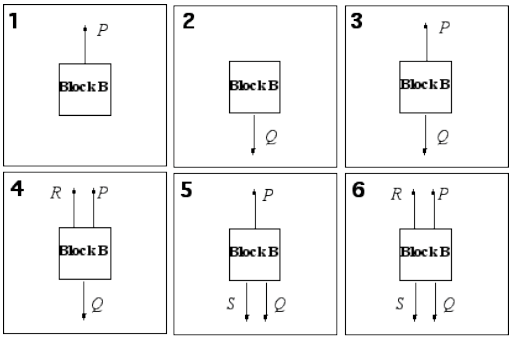
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. P=E<Q=D

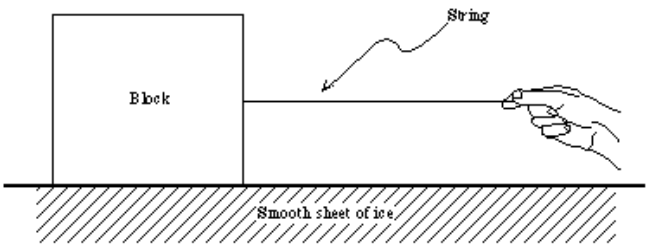
Q23: Explain. Assuming that spring one is a compressed version of spring two:Since the blocks are the same, they should eventually end up at the same height, if the above assumption is true. This means that the downward force on spring 1 must equal the upward force on spring two, and vice versa.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

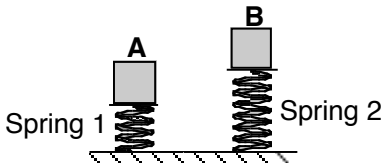
Q5. Explain. because the student is pulling the object with constant speed and the surface is smooth

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block moves with constant velocity.

Q7. Explain. because the surface is smooth

Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 5

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

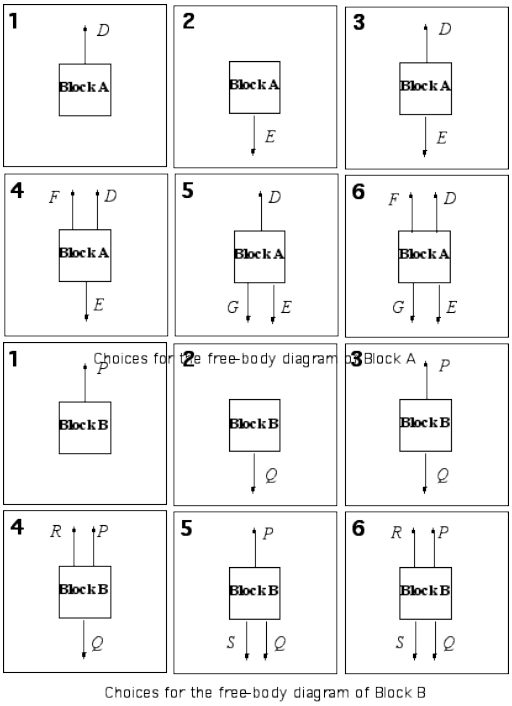
Force	Description	Exerted on	Exerted by
D	tension	block	spring
E	normal	earth	spring
F	no such force in the free-body diagram for A	unanswered	unanswered
G	gravitational	block	earth

Q21: Which figure best represents the free-body diagram for block B? 5

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. A=B

Q23: Explain. because all teh forces will be balanced out because they both have the same forces and that they should all balance out no matter the magnitudes of the forces

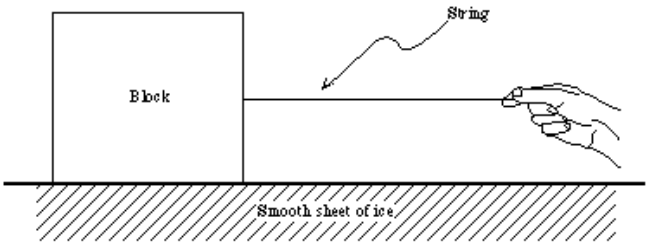
END OF RESPONSE



Choices for the free-body diagram of Block A

Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

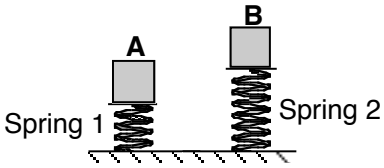
Q5. Explain. The block that the student is pulling is on an ice surface that has barely any friction. Since the force is constant the velocity of the block would be constant.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. If the force was constant, then the block would stay at a constant velocity. If the force is decreased then the velocity of the block would slow down. The block would still go, but it will be slower and slower.

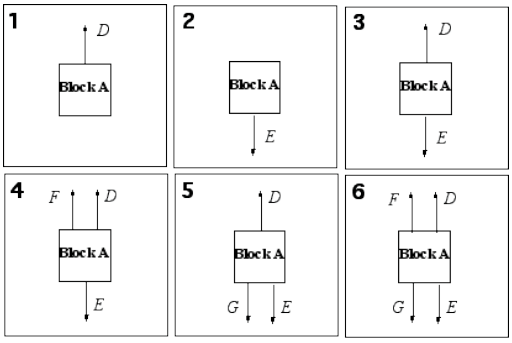
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 4

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	spring	block
E	gravitational	block	gravity
F	friction	spring	block
G	no such force in the free-body diagram for A	unanswered	no such force in the free-body diagram for A

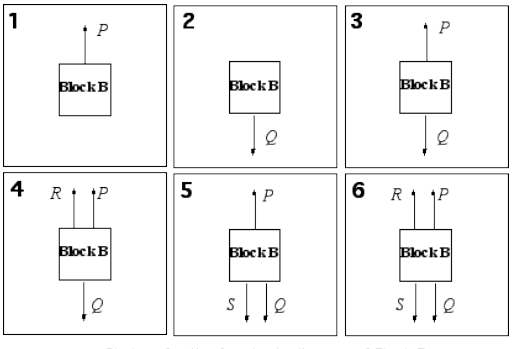


Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 4

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. B>A

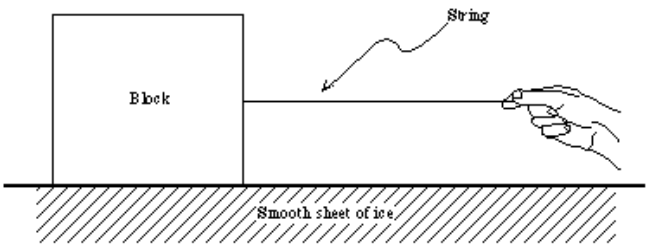
Q23: Explain. Because Block B has a bigger spring that will exert more force.



Choices for the free-body diagram of Block B

END OF RESPONSE

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

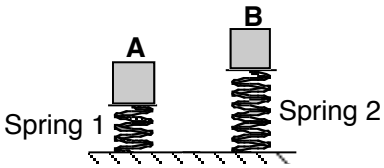
Q5. Explain. The student is exerting a constant force between 0m and 4m, so the block is moving at a constant velocity.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. The force being exerted on the block decreases, the magnitude at which the block is traveling decreases.

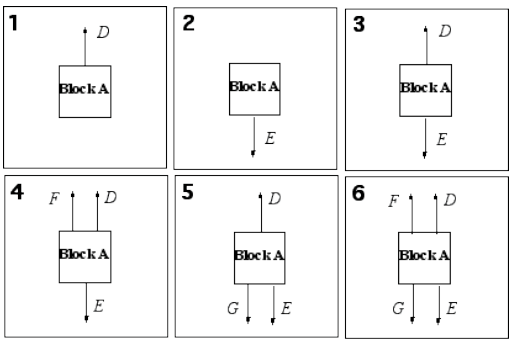
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	spring	earth
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



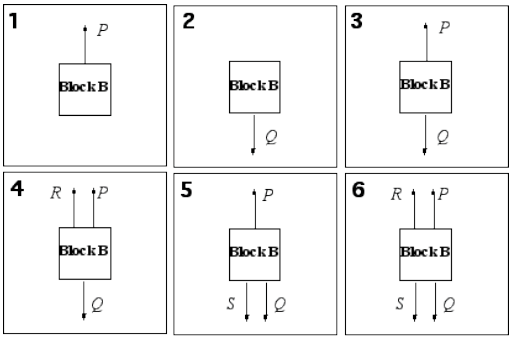
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. Q >= P > E >= D

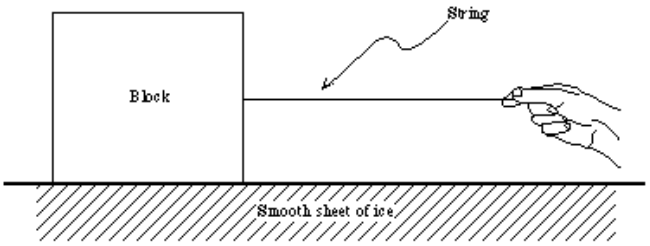
Q23: Explain. Because Block B is on a longer spring, I think the forces being exerted on that block are larger than that of Block A's. The normal force must be equal to the gravitational force for each block.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

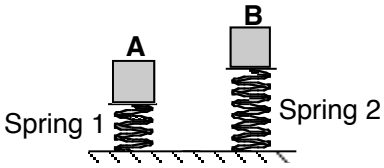
Q5. Explain. There is no friction and the student is exertinv a constant force, therefore the block moves with constant velocity.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block moves with constant velocity.

Q7. Explain. The student is steadily decreasing the magnitude of the force, and though the block slows down, it still moves at a constant velocity.

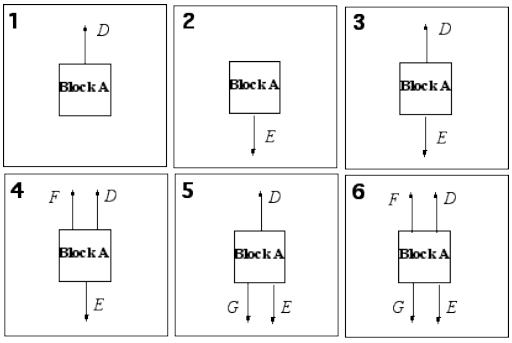
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	earth	gravity
E	gravitational	spring	gravity
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



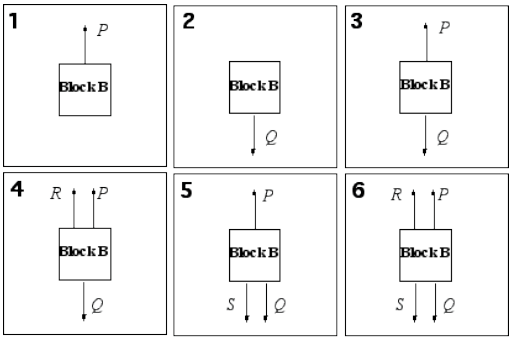
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. E>S>D=P

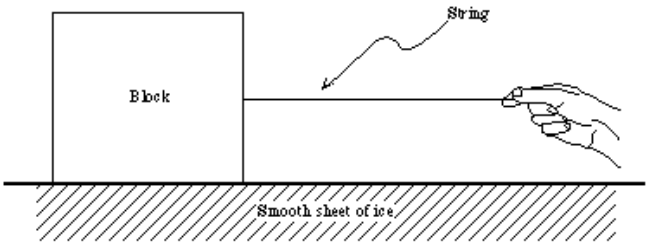
Q23: Explain. Because the Block A is more compressed, the force is greater than that of Block B.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

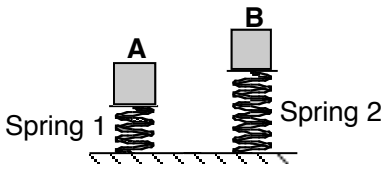
Q5. Explain. F=ma and if the force is constant and the mass is constant, the acceleration must be as well and for the block to move it must go from a velocity of zero to something else, thus it must accelerate, or in other words, speed up.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. The block is still speeding up. Even though the acceleration decreases causing the force to decrease as well, the block would still be accelerating thus still speeding up. It is still speeding up, just at a continuously slower rate.

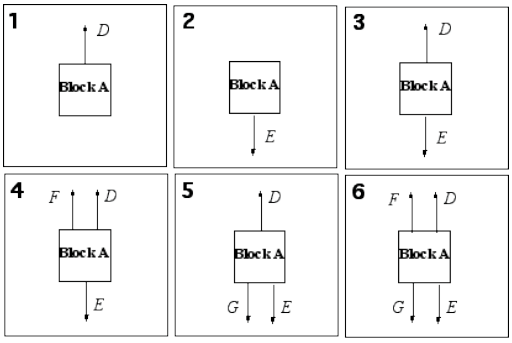
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	spring	block
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



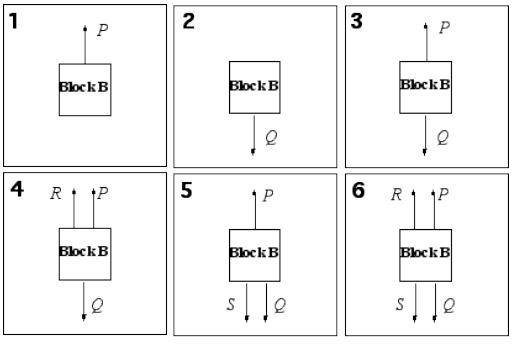
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. d=p=e=q

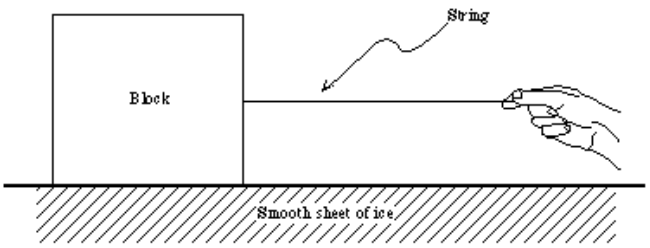
Q23: Explain. because the block is not floating or going through the table, its net force is 0, thus the normal force and gravitational force must be equal and in opposite directions. also becuase the blocks are identical, thus identical in mass, their forces are the same as well.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

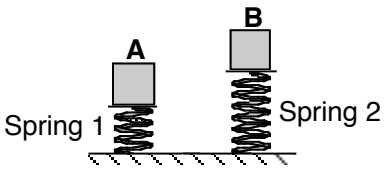
Q5. Explain. Because the person is exerting the same amount of force all the way

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. It slows down this is because Force of the object and the acceleration are proportional.

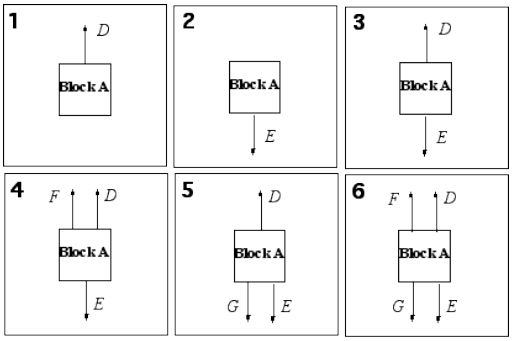
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	block	gravity
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



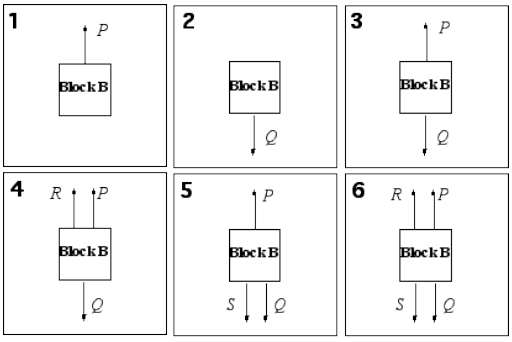
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. P>Q

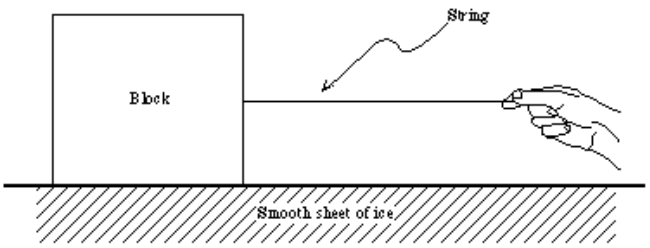
Q23: Explain. Because the force of the spring is greater than the force of gravity, thats why the block is high in tthe air.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

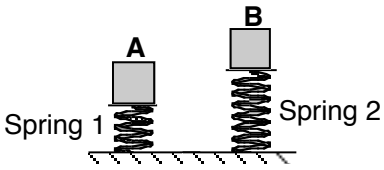
Q5. Explain. In order for the object starting from rest to move from 0 m to 4.0 m, it needs to speed up.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. None of the choices above correctly describes the motion of the block.

Q7. Explain. Even if the student reduce the amount of tension force, the surface is still frictionless. The object would continue the same speed as it did when it was at 4.0 m.

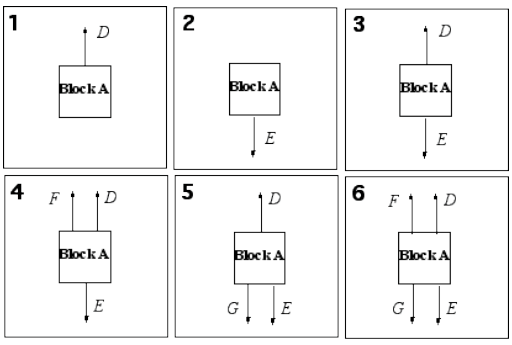
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	block	earth
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



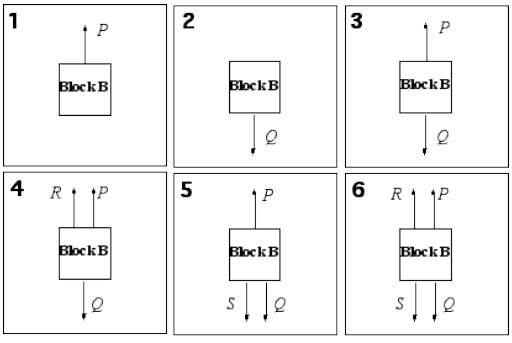
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. D=E=P=Q

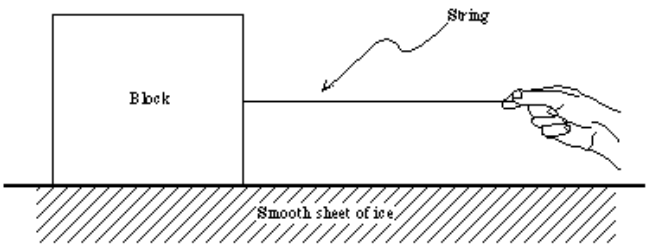
Q23: Explain. Because they are identical blocks, gravity has the same influence on them. Both of them are at rest, therefore they have no acceleration. If they have no acceleration, then the normal forces must equal the gravitational forces.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

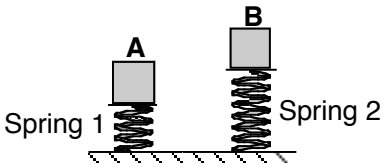
Q5. Explain. In a frictionless environment, the block will not stop once a force is applied until another force acts on it. thus continuing application of force continually increases the block's velocity.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. the block still has force being applied to it constantly. therefore it is still acclerating.

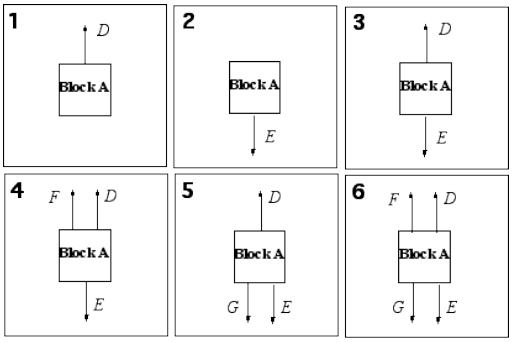
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 4

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	block	gravity
F	tension	block	spring
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



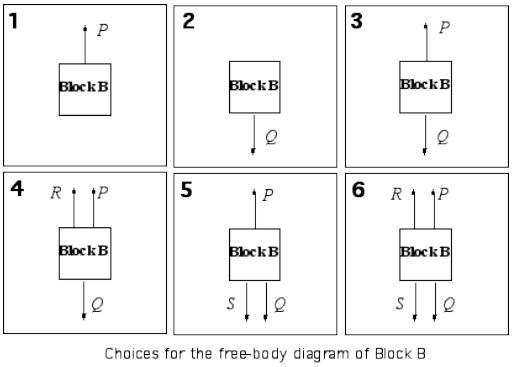
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 4

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. E=Q>F=R=P=D

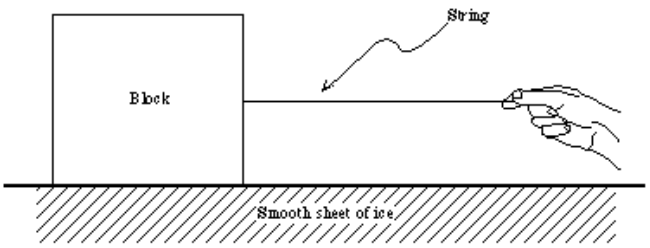
Q23: Explain. E and Q are the largest forces. Since the blocks are at rest, the sum of the upward forces FDRP are equal to the sum of E and Q.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

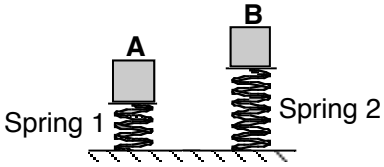
Q5. Explain. F=ma, if constant force is applied than there will be acceleration

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. F=ma, if is any force that is applied than there will be acceleration

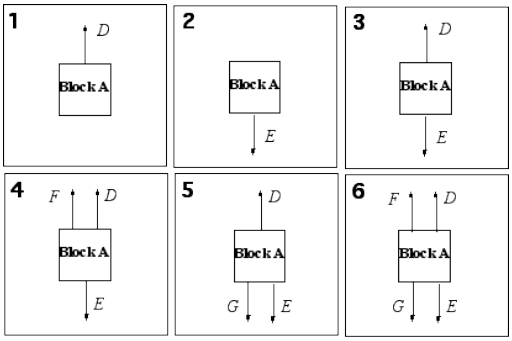
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 6

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	block	earth
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



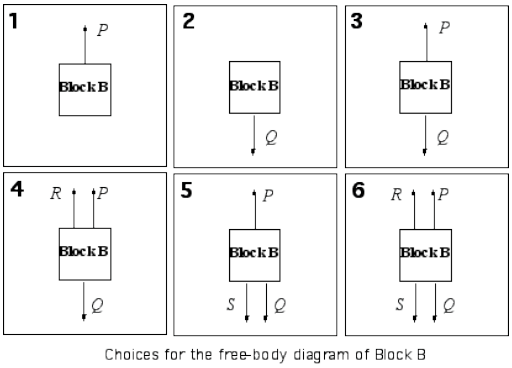
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. D=E=P=Q

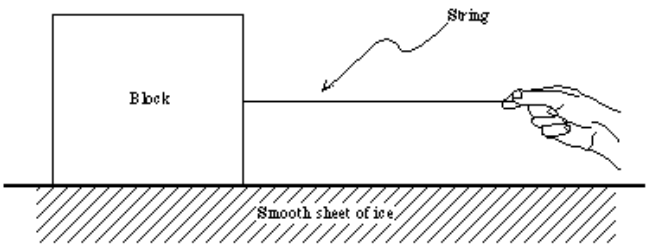
Q23: Explain. Every force there is equal and opposite one, meaning if two blocks weigh the same, then they must be exerting the same force onto the springe and the normal would be equal and opposite.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

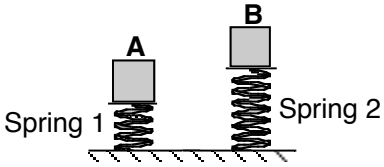
Q5. Explain. There is a constant force applied that is not changing.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. The force vector is decreasing and decelerating.

Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.

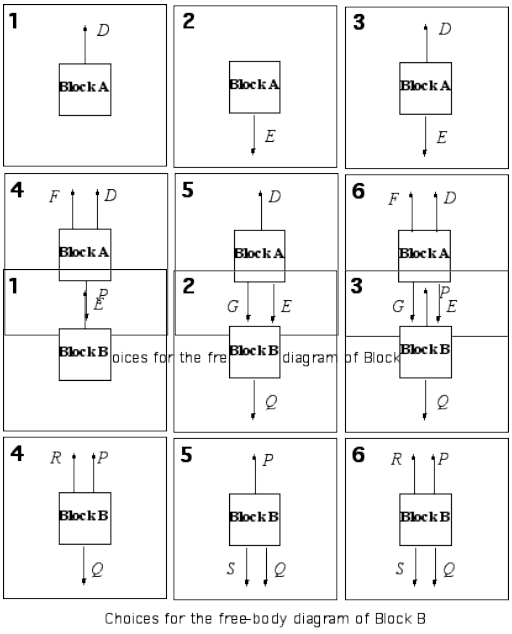


Q8: Which figure best represents the free-body diagram for block A? 6

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	block	earth
F	gravitational	earth	block
G	normal	spring	block

Q21: Which figure best represents the free-body diagram for block B? 6



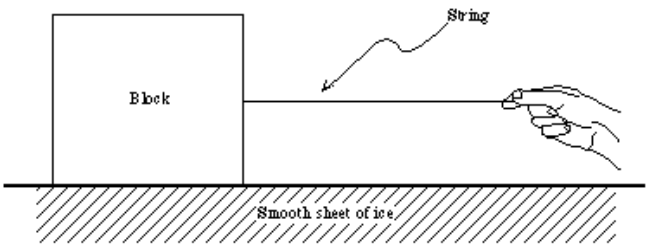
Choices for the free-body diagram of Block B

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. E=D>F>G

Q23: Explain. Gravita

END OF RESPONSE

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

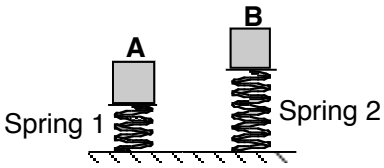
Q5. Explain. It seems that the block would gradually speed up until some speed was reached and maintained.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. I am guessing that by the time the block has reached 4.0m that an average speed has been reached. Therefore, by decreasing the magnitude of the force, the speed would gradually slow down.

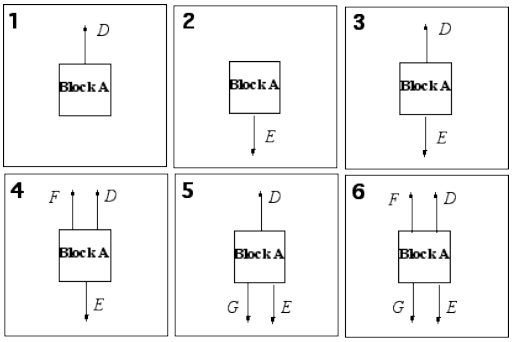
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	block	earth
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



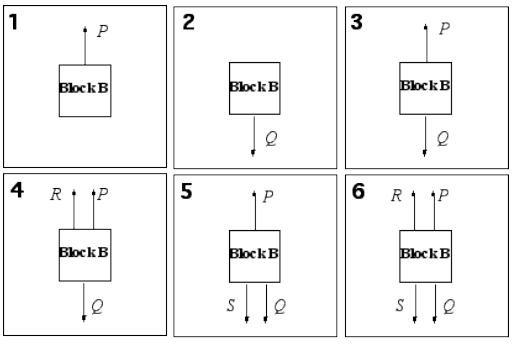
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. Q=E>P>D

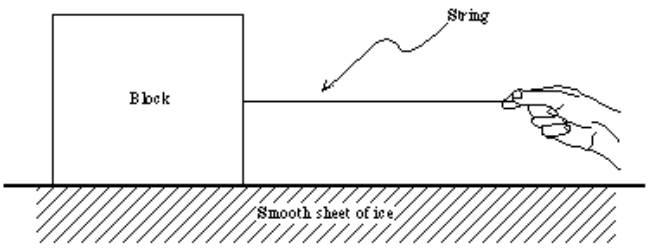
Q23: Explain. Gravity would be the same on both blocks. Block B's spring is higher, therefor it would take more gravity to lower it the A's level. Therefore the force of B's spring has greater magnitude than A's.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

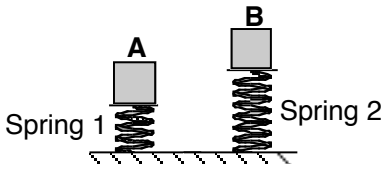
Q5. Explain. It is because the student exerts constnat force of pulling the block, so it should be moving at constant velocity.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to $0.5\ F_O$.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. Decresing the magnitude means the student is pulling with less force, so the block is moving slower and slower.

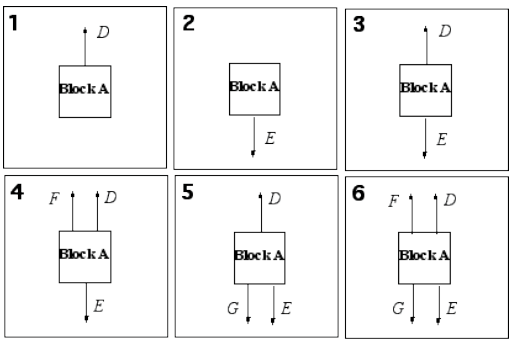
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 4

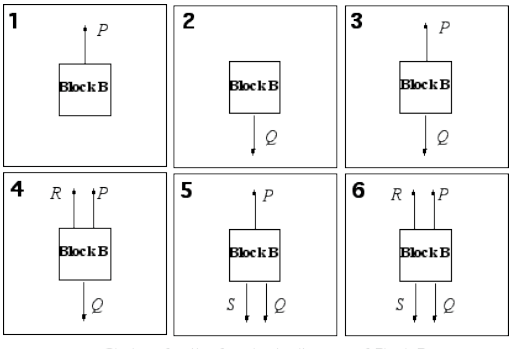
Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	spring	block
F	tension	block	block
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 4



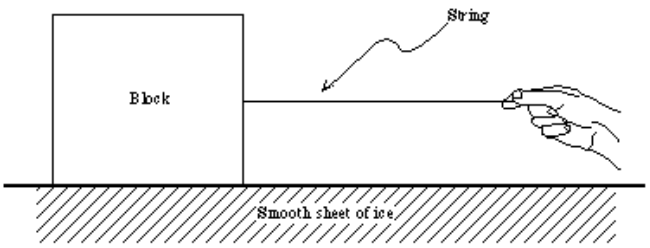
Choices for the free-body diagram of Block B

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. f>r>p=d=q=e

Q23: Explain. I believe the spring is pushing back, which is the tension to be the largest. Then the normal and gravitaional force should all be the same.

END OF RESPONSE

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

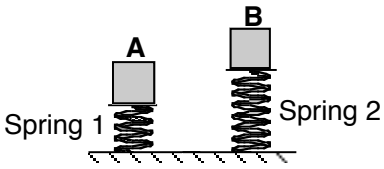
Q5. Explain. I don't know why.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. because the force decreased

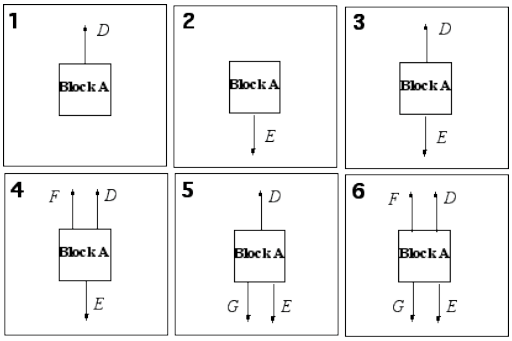
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 2

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
E	tension	spring	block
F	normal	spring	block
G	gravitational	spring	earth

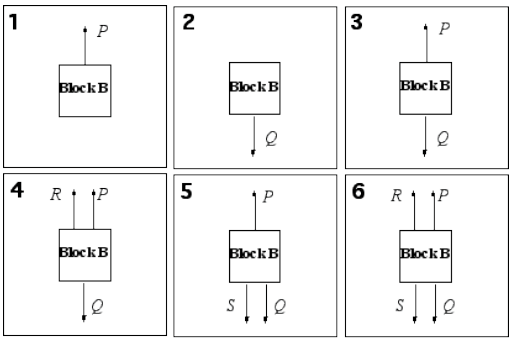


Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. P=Q

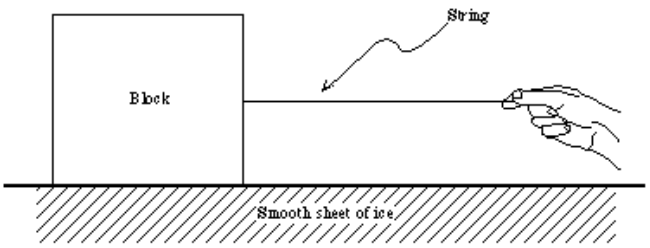
Q23: Explain. I don't know. It is a guess.



Choices for the free-body diagram of Block B

END OF RESPONSE

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

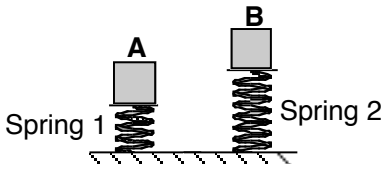
Q5. Explain. since there is no friction, the block moves with a constant force. There is no force being applied after it has been pushed.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. since the student is decreasing the magnitude, which is similar to the force, the block will begin to slow down.

Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 5

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

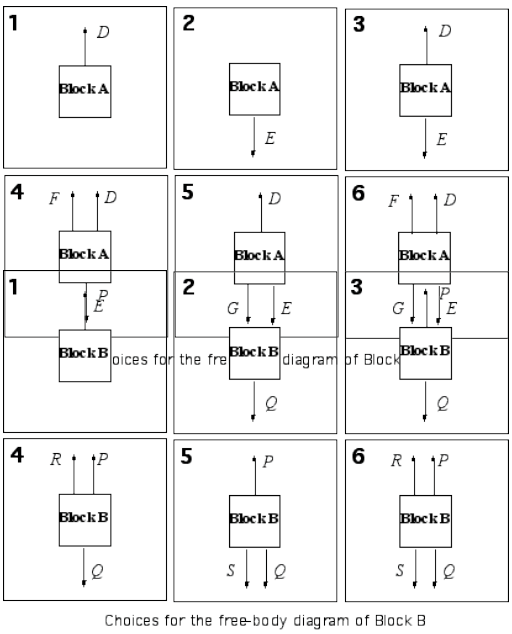
Force	Description	Exerted on	Exerted by
D	normal	unanswered	unanswered
E	gravitational	unanswered	unanswered
F	normal	spring	block
G	gravitational	spring	block

Q21: Which figure best represents the free-body diagram for block B? 6

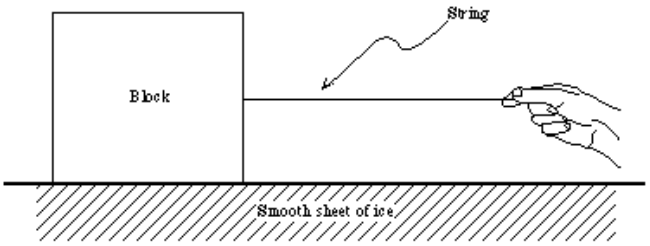
Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. Q>S>R>P,

Q23: Explain. i was not sure of how to answer this question..so i don't really know why i answered it the way i did.

END OF RESPONSE



Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

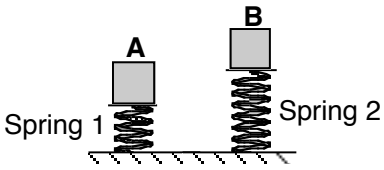
Q5. Explain. the student applied a constant Fo, as mass was not noticeably changed, acceleration would be constant and (from rest) in the direction of motion. The block speeds up.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. the student is still applying a force in the direction of motion, this accelerates the block in the direction of motion, speeding up.

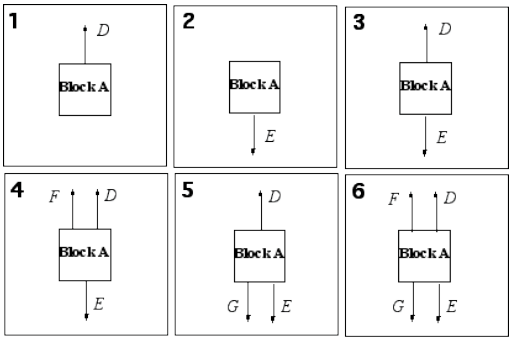
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	tension	block	spring
E	gravitational	block	earth
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A

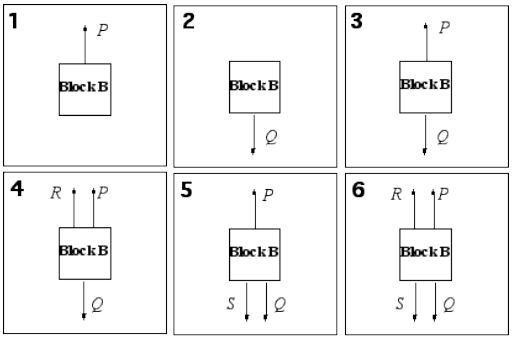


Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. P=Q=D=E

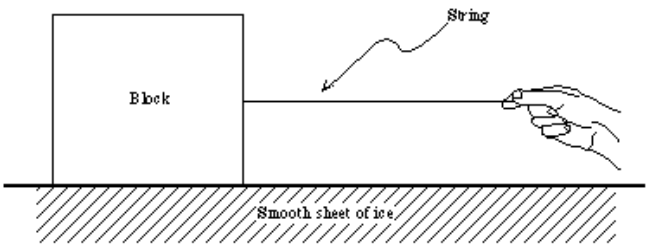
Q23: Explain. if the blocks are at rest, the sum of the forces acting upon them is 0. Thus if oppositely directed with only two forces per block, each of the two forces acting on each block is equal in magnitude. As the blocks are identical, neglecting minor fluctuations in earth's gravitational field, the force of gravity acting upon each of the blocks is equal and described above, the force of the springs acting on each block is e



Choices for the free-body diagram of Block B

END OF RESPONSE

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

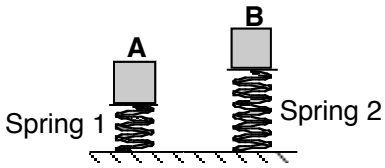
Q5. Explain. constant force means constant acceleration, means that the object is speeding up

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. lowering of the force means lowering in the acceleration, so the block is covering less and less distance at each interval of time (slowing down)

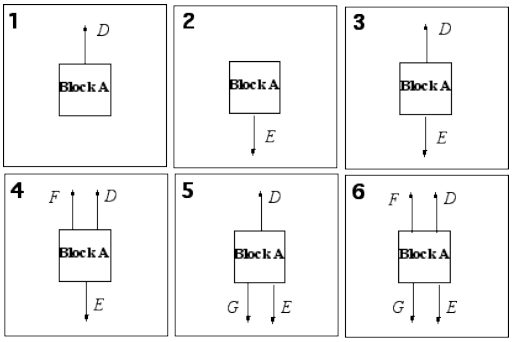
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 5

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	spring	block
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	tension	block	spring



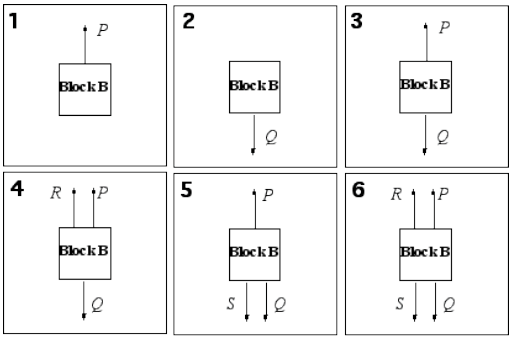
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 5

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. P=S=Q

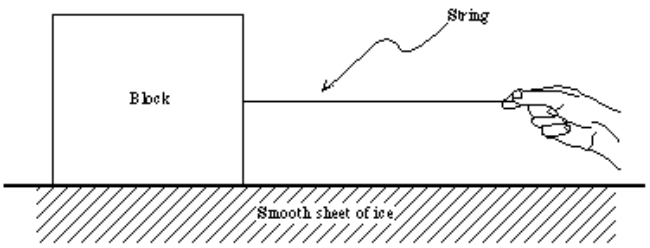
Q23: Explain. If the object is at rest, that means there is no acceleration. This means that the normal force must be equal to mg. The N prime vector is equal to the normal force, except it is in the opposite direction. This means that P=S=Q.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

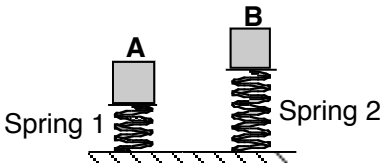
Q5. Explain. Newtons that says it will remain in constant motion unless another force acts on it.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. f=ma and accel = change in v over change in time-if the mass stays constant and the force is decreased the speed must decrease

Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.

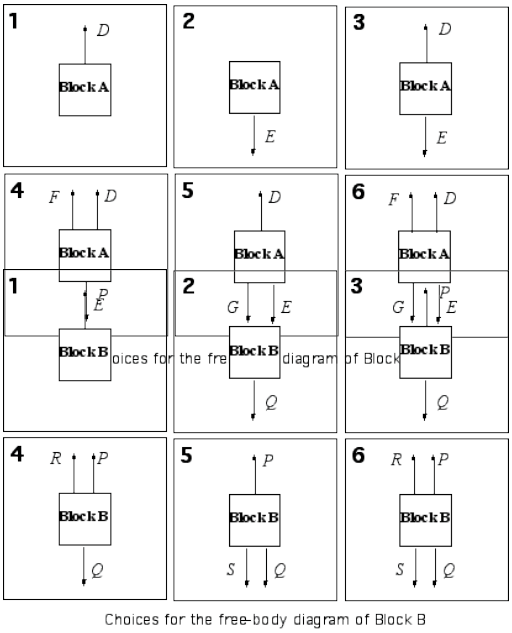


Q8: Which figure best represents the free-body diagram for block A? 6

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	normal	block	spring
F	tension	block	spring
G	gravitational	spring	block

Q21: Which figure best represents the free-body diagram for block B? 6

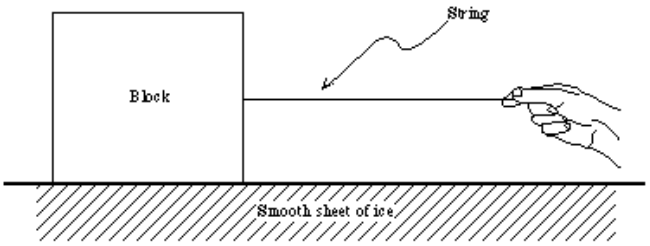


Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. R=S P=Q F=G D=E

Q23: Explain. if the objects are at rest the force being applied and received must be balanced out

END OF RESPONSE

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

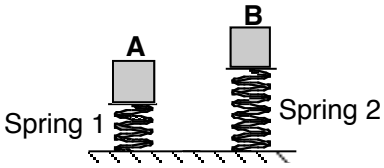
Q5. Explain. This is a good example of the law of inertia suggesting that a object in motion or in rest will stay that way unless acted on by another force.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block moves with constant velocity.

Q7. Explain. even though he does not apply the same magnitude of force, since there is no other force such as friction or another object acting on it, it will still move at the same velocity.

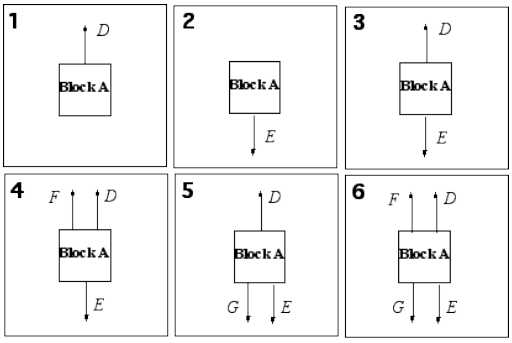
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	gravitational	block	spring
E	tension	spring	block
F	normal	earth	spring
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A

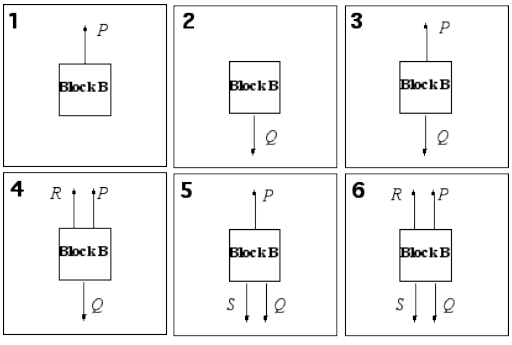


Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 6

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. P=Q, R=S, R+P>S+Q if srping goes down

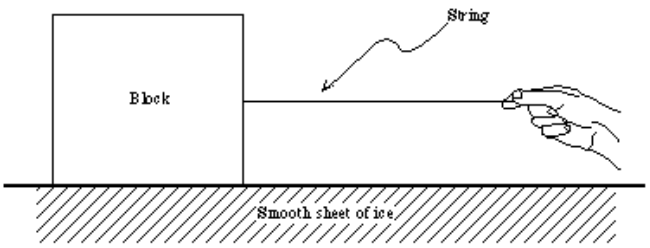
Q23: Explain. if the spring goes down, or gives, the we know that the net force given by the normal forces is not equal to the force on the spring going down, because then if the net forces were equal, the the box would push down on the spring with equal net force of the spring pushing back up on the box.



Choices for the free-body diagram of Block B

END OF RESPONSE

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

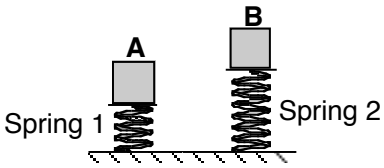
Q5. Explain. Force is required to change velocity, so if forced is used, it is probably to change velocity.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. Even if the amount of force used is halved, there is still the affect of force on the object, meaning the velocity is still changing (in this case, increasing).

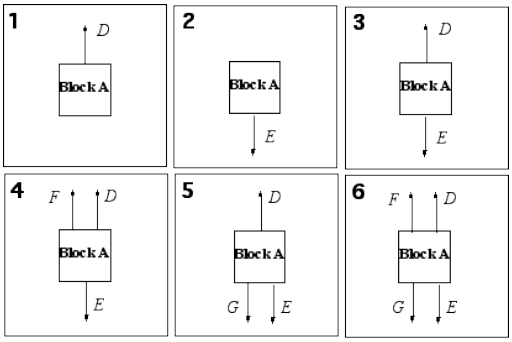
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 5

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	unanswered	unanswered
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	gravitational	unanswered	unanswered



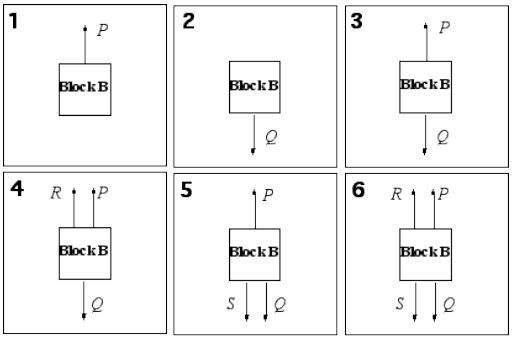
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? unanswered

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. BG=E>D

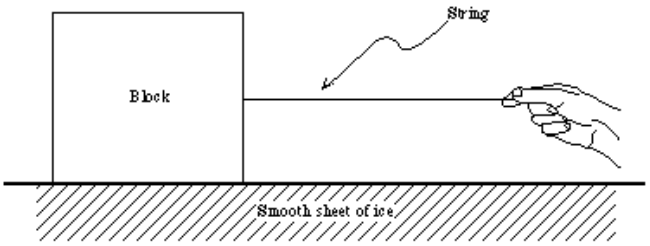
Q23: Explain. In Diagram A, the normal force exerted upward by the spring must be less than the force of mass and gravity downward (thus resulting in the compression of the spring).In Diagram B,

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

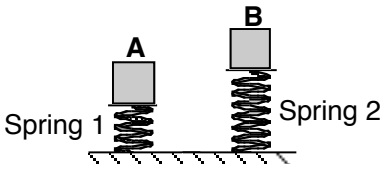
Q5. Explain. The block is starting from v=0, so it has to at least not slow down b/c it is moving forward. The force is constant, so the acceleration is constant, and the block speeds up.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. The block is still accelerating b/c the force is not negative, so the acceleration is greater than zero, so it's speed is still increasing, although not as much.

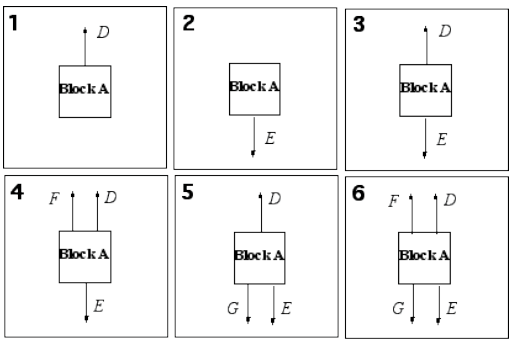
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	spring	gravity
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



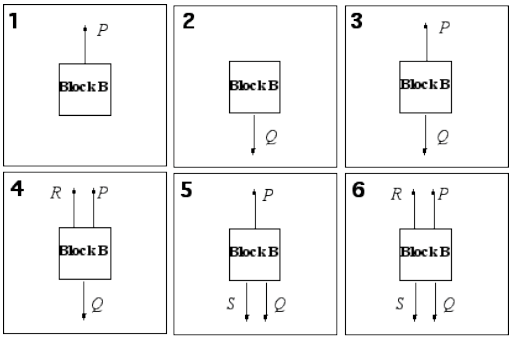
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. p>d>q=e

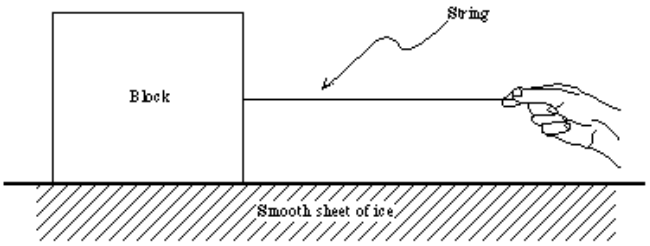
Q23: Explain. q and e are the same b/c the blocks have equal weight. p is greater than d b/c block b is higher off the ground than block a.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

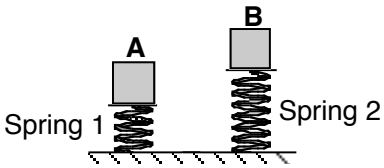
Q5. Explain. if there's no friction, the acceleration should be constant since it's pulling with a constant force. Also the mass is not changing, so the acceleration should be a constant force.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. the acceleration is slowing down which means the velocity and the movement of the block moves slower than originally.

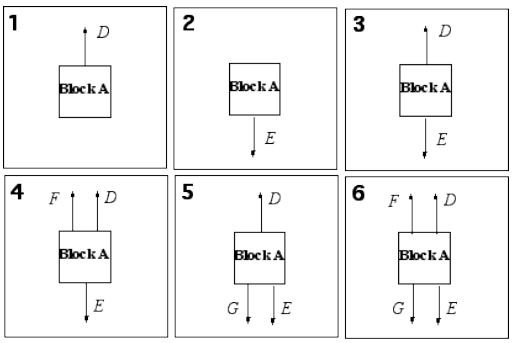
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 4

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	tension	block	spring
E	normal	spring	block
F	normal	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



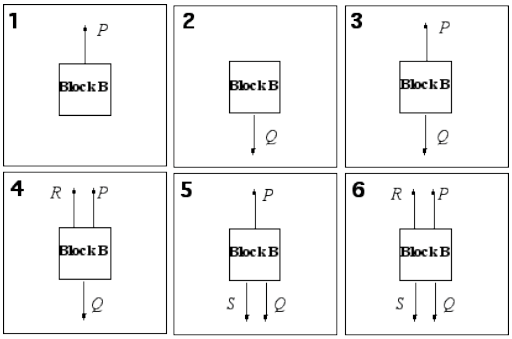
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 4

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. Q>P>R

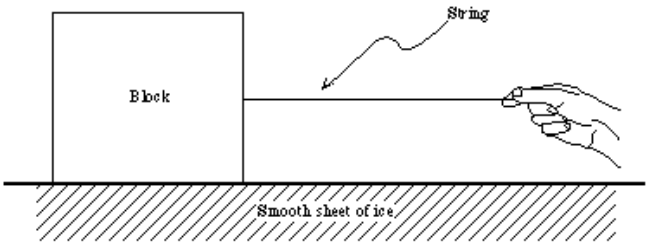
Q23: Explain. R is the friction force or the normal between any surface of two different objects. P is the force or tension of the spring. Q is the weight of the block.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

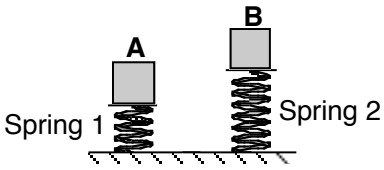
Q5. Explain. The student exerts a constant force, so the block should be moving across with a constant speed-- however this only applies if the surface has friction. Since it is frictionless (or close to it) the object increases speed as it is pulled.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. If the student uses less force, then the block should be slowing down.

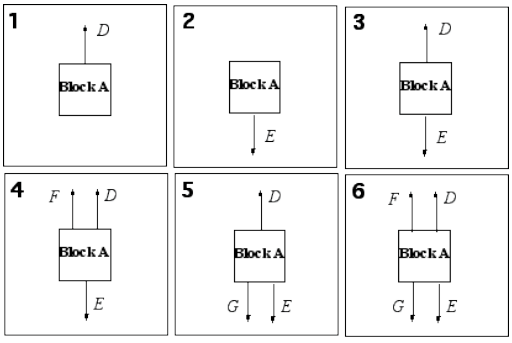
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 5

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	tension	spring	block
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	gravitational	earth	block



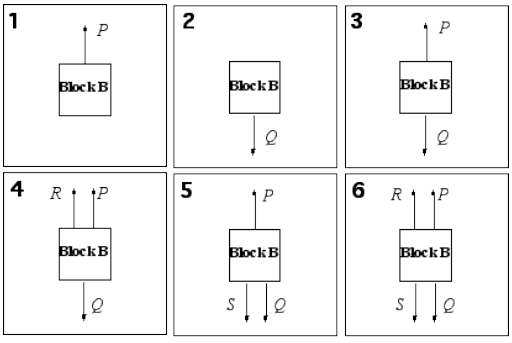
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 5

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. S = G < E = Q < D < P

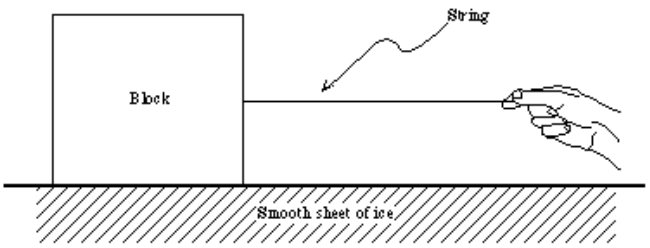
Q23: Explain. S and G are both gravitational forces so they are the same and negative. E and Q are the pushing on the spring by the block, and assuming the blocks aren't extremely heavy should by a less negative number than the gravitational forces. D is the Spring on the Block, and is dependent on the length of the spring. Since the spring of B is larger than P should be larger than D.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

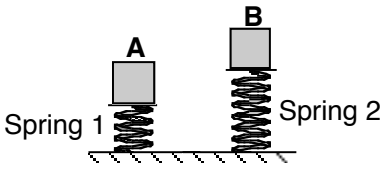
Q5. Explain. There was constant force being applied/

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. There is still force being applied to the block.

Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 6

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

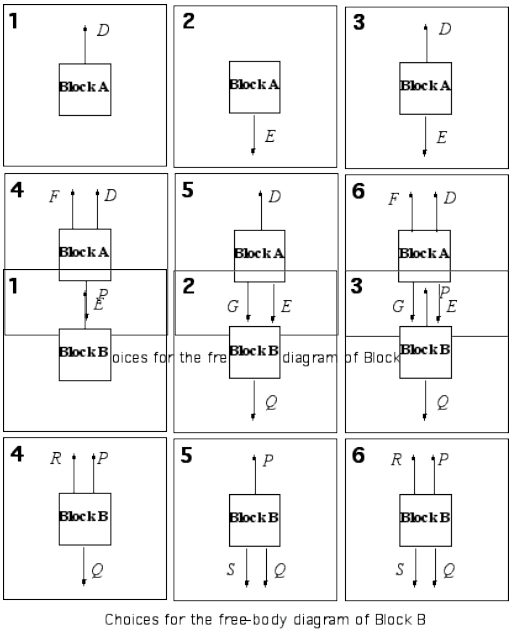
Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	spring	block
F	normal	spring	earth
G	gravitational	earth	spring

Q21: Which figure best represents the free-body diagram for block B? 6

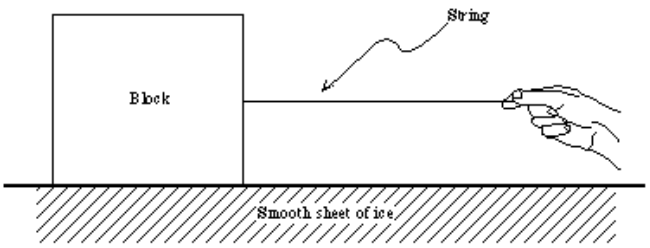
Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. F=D=G=E=R=P=S=Q

Q23: Explain. Sicne each block is the same and both the blocks are stationary all the forces must be the same in order to keep everything in equilibrium.

END OF RESPONSE



Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

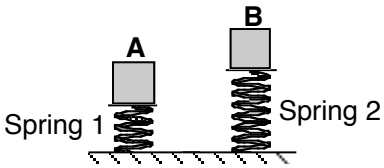
Q5. Explain. F=ma, if there were no friction, nothing would cause the block to slow down. Therefore it must be speeding up.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to $0.5\ F_O$.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. Because even though the force has been reduced, the speed has to increase according to the law F=ma. As long as the force is present, there is acceleration present also.

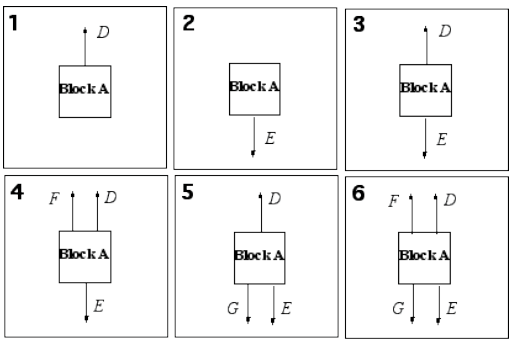
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	block	earth
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



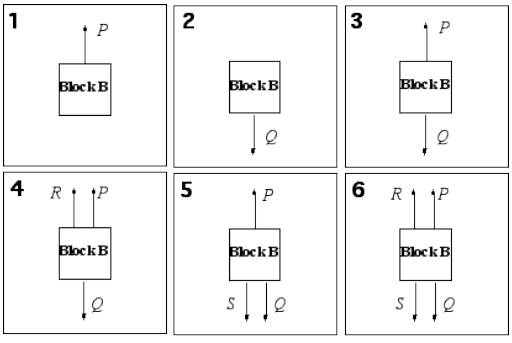
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. P=Q>R=S

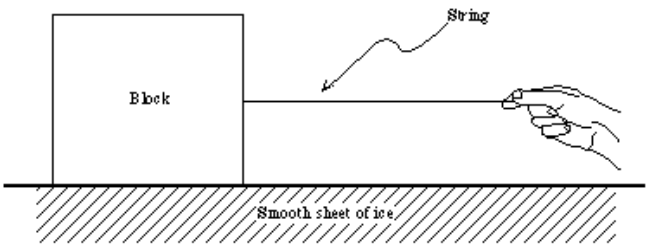
Q23: Explain. Since Block B is at rest, P (normal) and Q (gravitational) must be the same. There should not be any friction because there is no motion, and friction only exist when there is motion. There is no tention force because it not attached to a string.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. There is not enough information given.

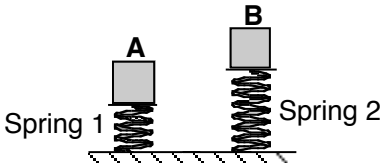
Q5. Explain. There is not enough information because newton's law said f = ma; since we only know the force, we cannot say anything about m or a. even though the object moves a certain distant, we cannot figure out the time or velocity of the object. therefore, we can not say anything about the movement of the object.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. There is not enough information given.

Q7. Explain. Same reasoning as question 2. we do not know the mass and time it takes the object to move a certain distant. Even though we have the magnitude of the force, we do not know the acceleration. Therefore, we could not describe the motion of the object.

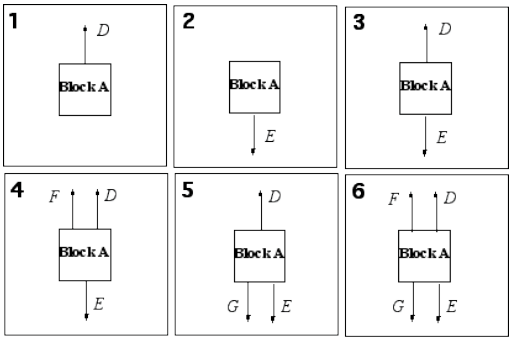
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



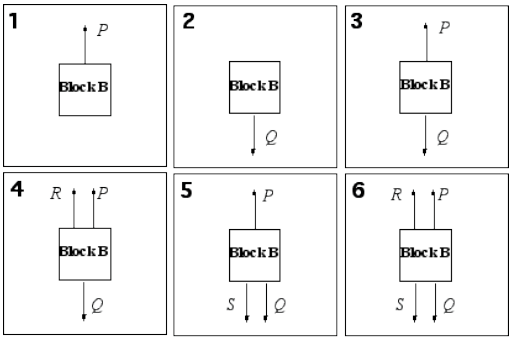
Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	block	earth
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



Choices for the free-body diagram of Block A



Choices for the free-body diagram of Block B

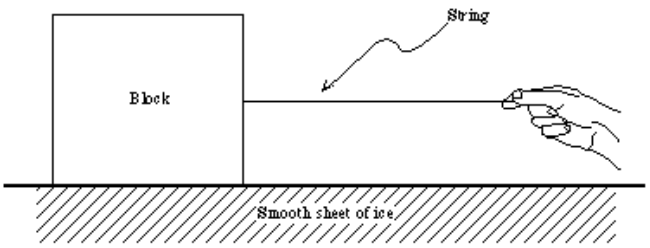
Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. p = d = q = e

Q23: Explain. Since both objects are at rest and there is no movement, the forces in both direction should be equal to once another. Also, both blocks are the same therefore, mg is equal.

END OF RESPONSE

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

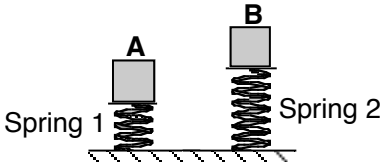
Q5. Explain. The force the student apply is a acceleration on the block.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. There is a decceleration

Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 6

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

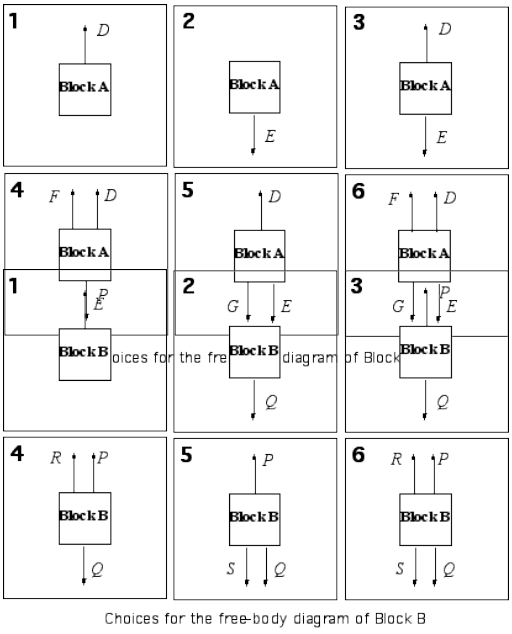
Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	earth	gravity
F	normal	unanswered	spring
G	gravitational	earth	earth

Q21: Which figure best represents the free-body diagram for block B? 6

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. S>Q=R=p

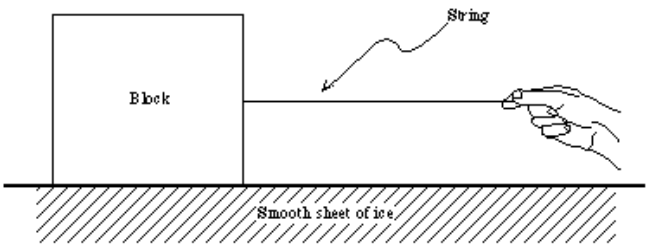
Q23: Explain. Spring is excerting force

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

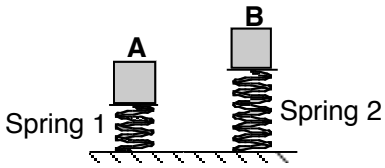
Q5. Explain. applied force creates acceleration. so if force is applied over that distance than the block accelerates

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. the block accelerates still because a force is applied, it just does so at a slower rate.

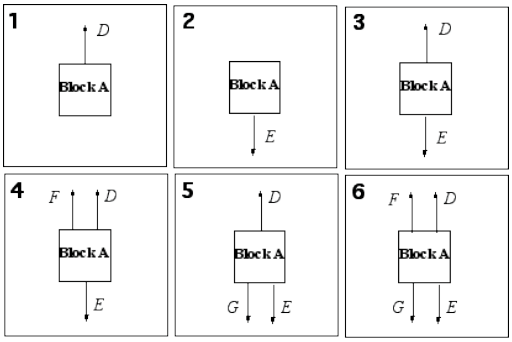
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	tension	block	spring
E	gravitational	spring	block
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



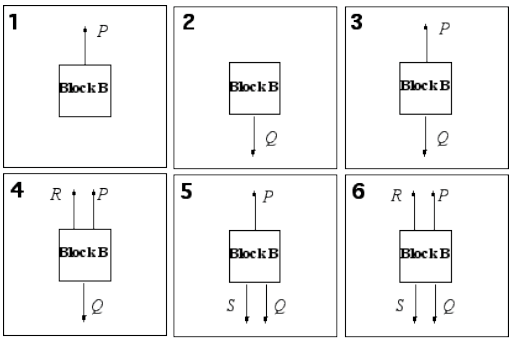
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. d, e=q, p

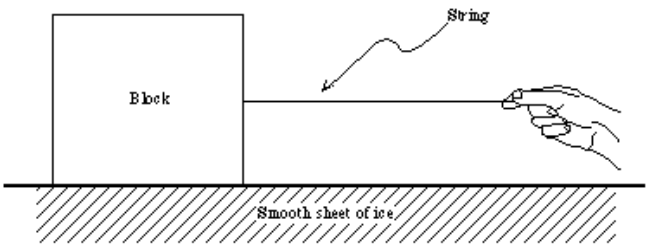
Q23: Explain. tension of spring on A is the greatest force, then gravity of blocks is the same because size/mass i assume is the same. finally, the force of the extended spring iss relatively small on B.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

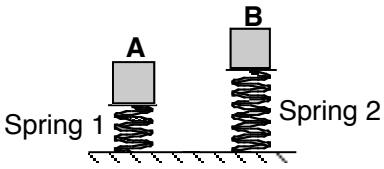
Q5. Explain. constant force means no acceleration.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. decrease in magnitude of force equals deceleration.

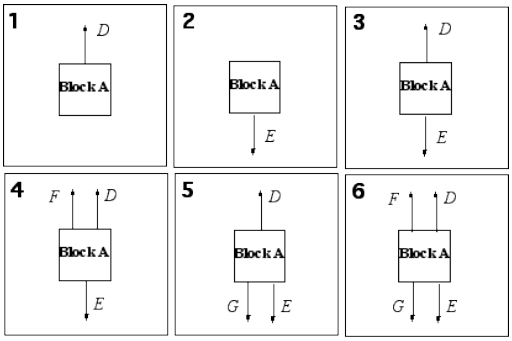
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	spring	block
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



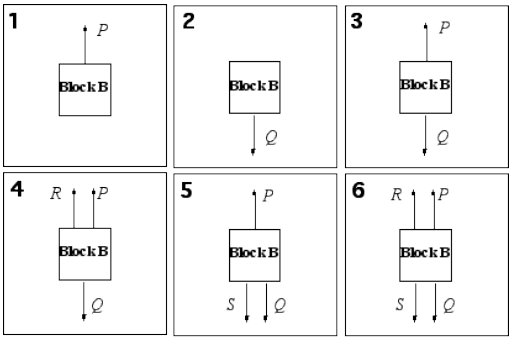
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. B=E=P=Q

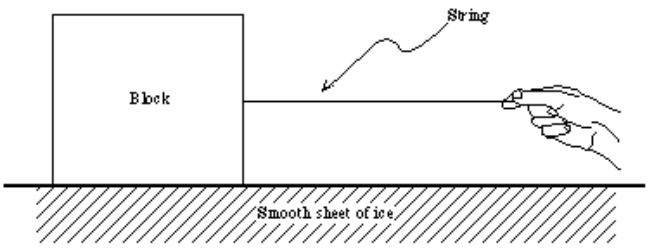
Q23: Explain. the blocks and the force of gravity acting on them are identical. The only thing different between the two diagrams is the height of the springs. This has no affect on the forces involved as long as neither of the blocks is accelerating.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

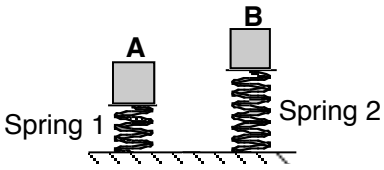
Q5. Explain. F=MA, F is constant, M is constant, therefore A is constant, so the the block increases it's velocity while traveling from 0.0 to 4.0m.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. F=MA, F decreases but stays positive, so A decreases but does not reach 0, therefore, the block continues to increase in velocity, just not as rapidly as it did from 0.0 to 4.0m

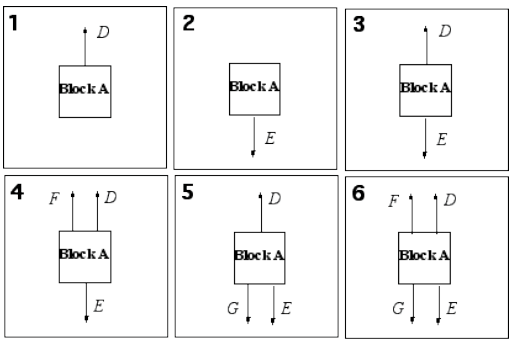
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	block	earth
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



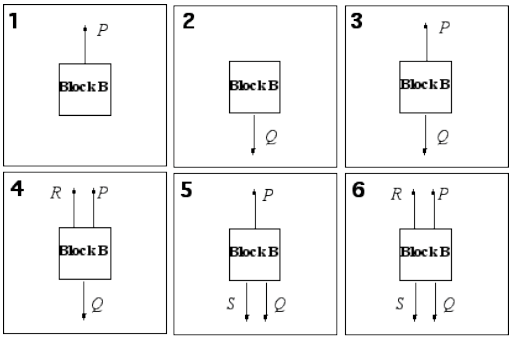
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. D = E = P = Q

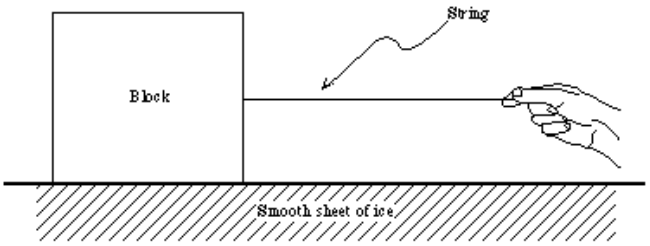
Q23: Explain. the blocks are at rest, so opposing forces must be equal, the blocks are of an equal mass so the forces suspending them above the table must be equal.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

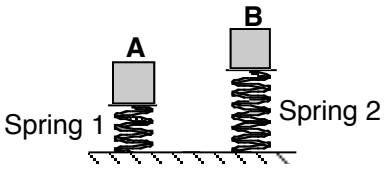
Q5. Explain. The block starts at rest and there is a constant force that is exerted on it to cause the object to move because of the formula F=ma.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. By using the f F=ma, the acceleration of the object decreases by a half when the force is decreased by a half. If the acceleration decreases, it means that the velocity is decreasing.

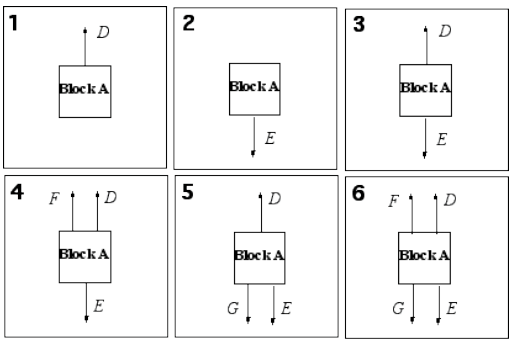
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	block	gravity
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



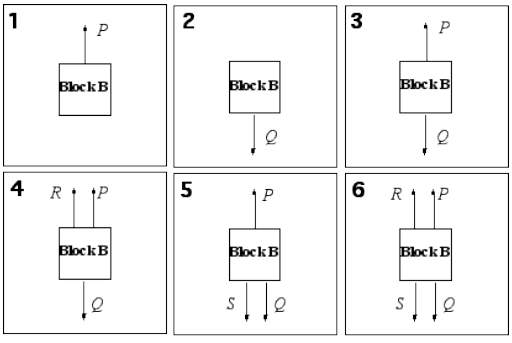
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. P=Q=D=E

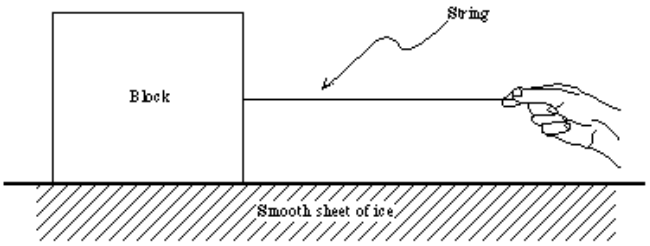
Q23: Explain. The blocks are identical meaning the weight/gravitational forces are equal. Since the objects are at rest, the net force that is being exerted on the blocks should be zero. In order for the net force to equal zero, the normal force needs to be equal to the gravitational force.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

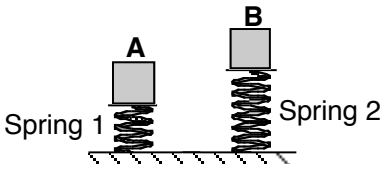
Q5. Explain. The force applied equals the mass of the block times its acceleration, therefore it must have a constant acceleration to have a constant force, meaning it is speeding up.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. Even though the force is decreasing, an acceleration is still present due to the formula F=ma. The acceleration is still positive even though it also decreases.

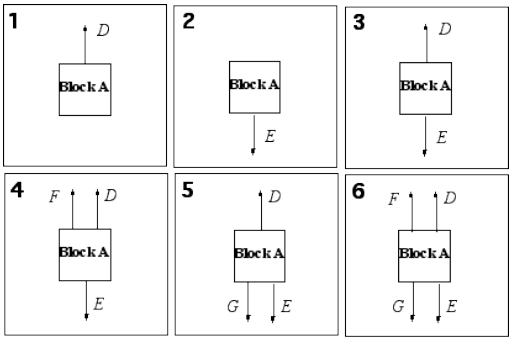
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	spring	block
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



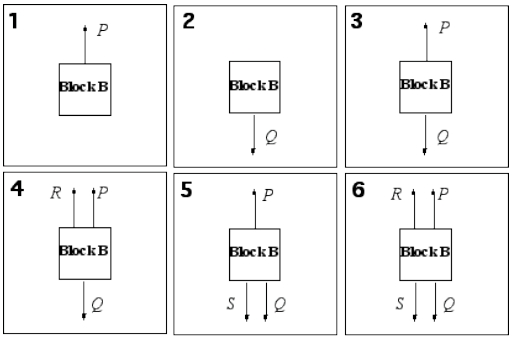
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. D=E=P=Q

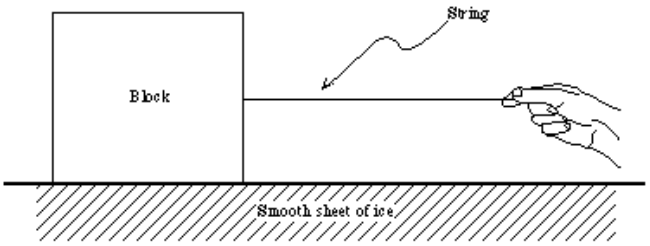
Q23: Explain. The blocks are identical, so the gravitational force of them onto the spring is identical, which also means that the normal force of each spring on the block is identical.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

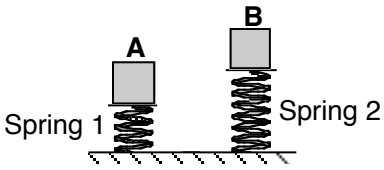
Q5. Explain. Since the block has a constant force, and the force needs a constant acceleration to stay constant, the block speeds up.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. Since the force is half what it was the acceleration must be slowing down. So if the acceleration is decreasing the velocity is also decreasing.

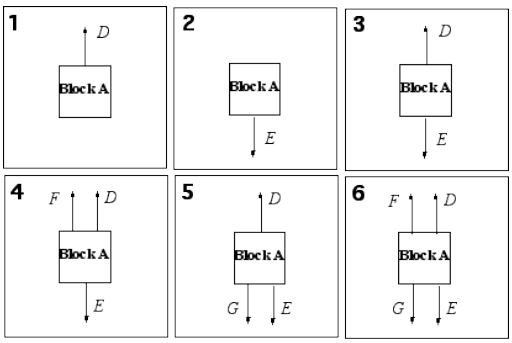
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	spring	earth
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



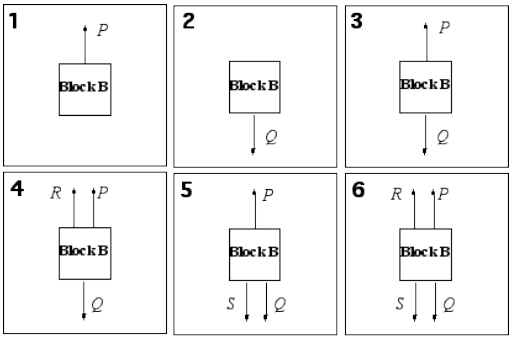
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. D=P=E=Q

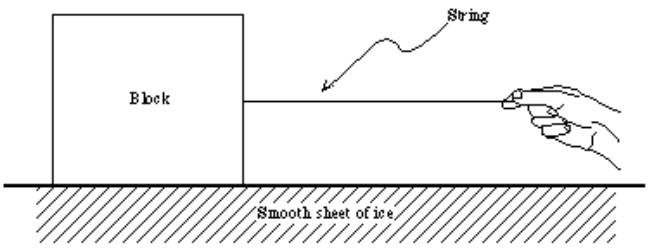
Q23: Explain. The blocks are not accelerating so all the forces are equal to each other. The don't move up or down they are at rest.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

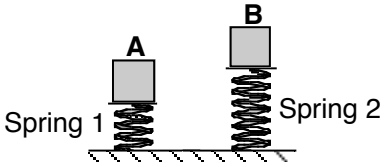
Q5. Explain. force = mass * acceleration. force is applied. therefore acceleration, hence speed up.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. The block is still being accelerated due to the applied force. Not as much acceleration as before.

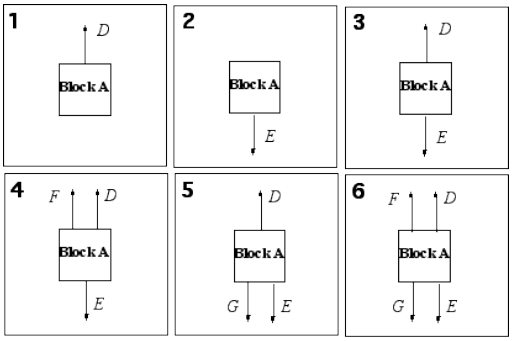
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 4

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	tension	block	spring
E	gravitational	block	gravity
F	normal	block	earth
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A

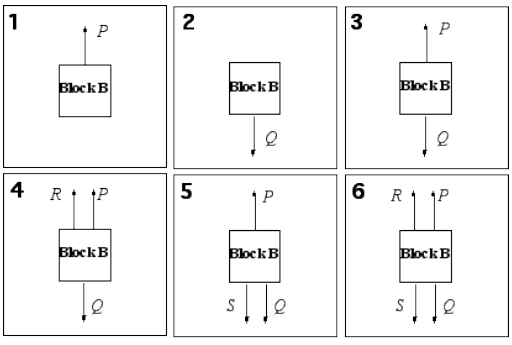


Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 4

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. d=e=f=r=p=q

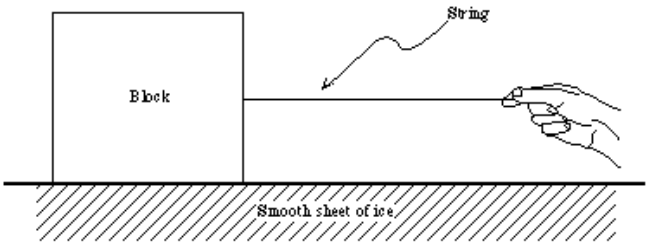
Q23: Explain. the blocks are not moving. so net forces are zero. and the same.



Choices for the free-body diagram of Block B

END OF RESPONSE

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

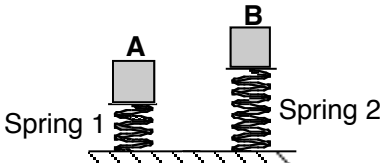
Q5. Explain. The object should speed up by the equation F=ma. Since the force and mass are constant then the object should accelerate at a constant rate.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. None of the choices above correctly describes the motion of the block.

Q7. Explain. The block should continue to accelerate, but its acceleration should decrease. This is because the mass is constant and by decreasing the force, the acceleration is less.

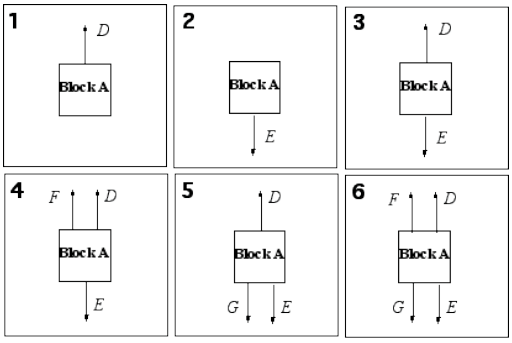
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 6

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	spring	spring
F	tension	block	unanswered
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



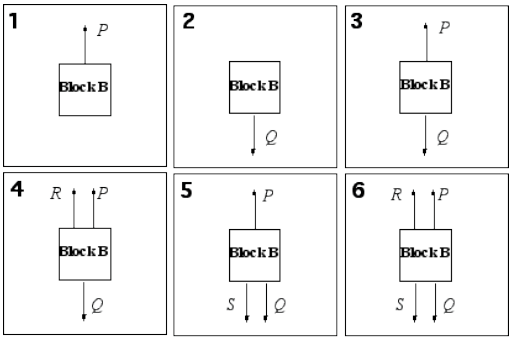
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. p=q=e>f=d

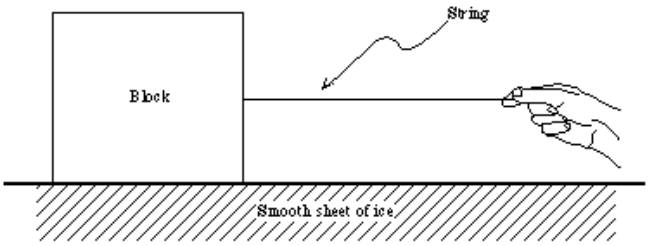
Q23: Explain. The blocks exert the same force on the springs, but the spring under block B does not compress, thus the normal vector is the only force working against the weight of the object. The spring under block A though does compress, thus there are two smaller forces working against the weight of the block.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

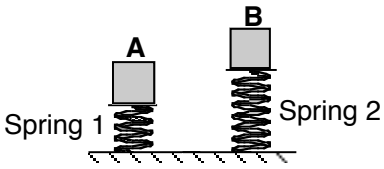
Q5. Explain. The block is accelerating

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. the block is decelerating

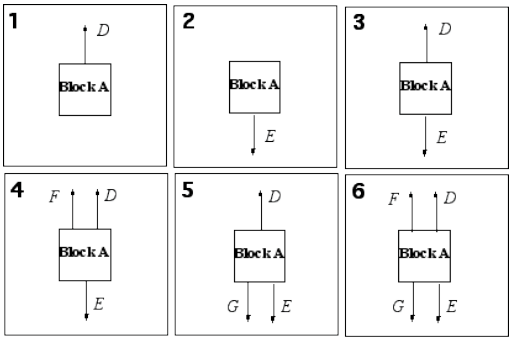
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	spring	block
F	no such force in the free-body diagram for A	unanswered	unanswered
G	no such force in the free-body diagram for A	unanswered	unanswered



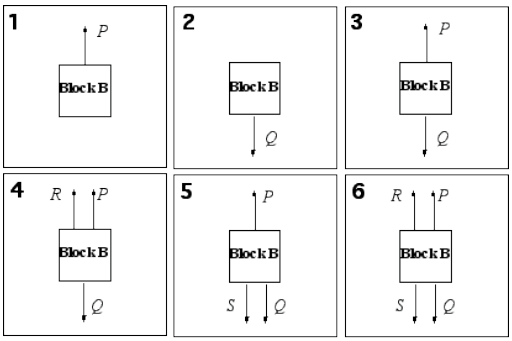
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. D=E, P=Q

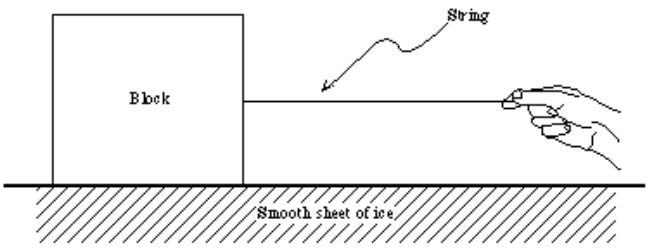
Q23: Explain. the force exerted by the block on the spring is exactly equal to the force exerted by the spring on the block

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

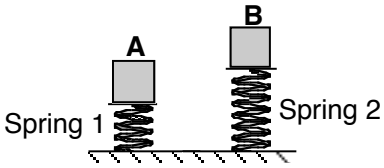
Q5. Explain. The block speeds up because there is no friction to counter the force of the student pulling the block.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block moves with constant velocity.

Q7. Explain. The block will move with a constant velocity because the change in force will keep pulling the block with the force it would need to maintain speed on a frictionless surface.

Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 6

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

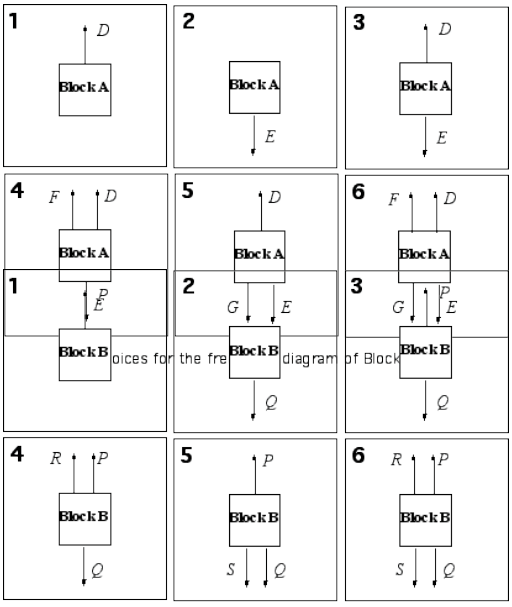
Force	Description	Exerted on	Exerted by
D	normal	earth	block
E	gravitational	block	gravity
F	tension	block	spring
G	tension	spring	block

Q21: Which figure best represents the free-body diagram for block B? 6

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. R=S>P=Q>F=G>D=E

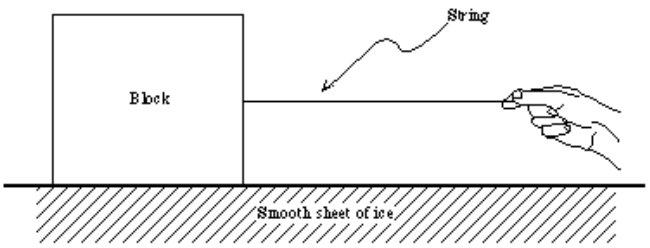
Q23: Explain. The forces in block B are going to be greater because they are on a taller spring. I said the tension would be greater than the normal and gravitational forces because I just guessed that they would be.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

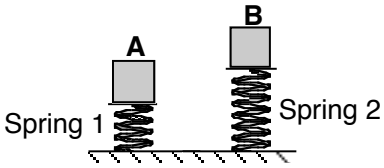
Q5. Explain. the description says that the hand is pulling with a constant force so that means that there must be acceleration.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. There is not enough information given.

Q7. Explain. the hand is no longer applying a force with constant magnitude however we donot know if the hand is pulling with a smaller force now or what.

Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.

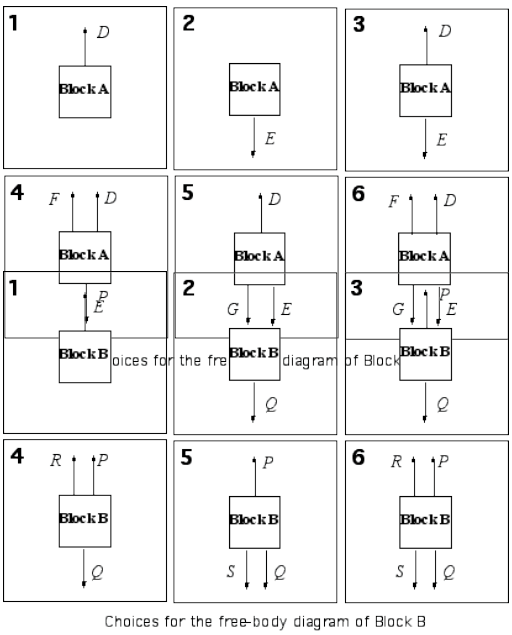


Q8: Which figure best represents the free-body diagram for block A? 6

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	unanswered	spring	block
F	tension	spring	earth
G	tension	earth	block

Q21: Which figure best represents the free-body diagram for block B? 6



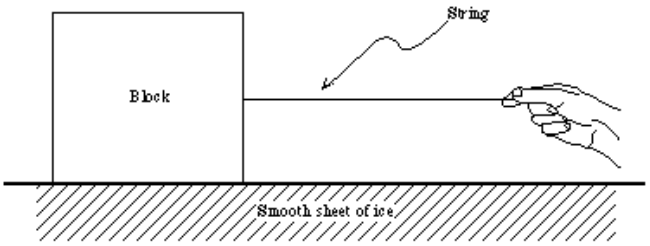
Choices for the free-body diagram of Block B

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. G=S, Q>E, P>D

Q23: Explain. The forces on block B are going to be larger in magnitude than for block A because the spring for block B is bigger and will have more elasticity.

END OF RESPONSE

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

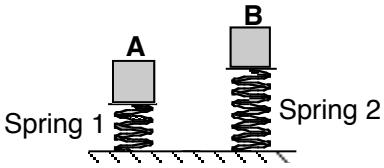
Q5. Explain. f=mathe force stays constant and the mass stays constant. since acceleration is the change in velocity over time, velocity must increase with time as well to keep the acceleration the same.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. the force decreases but the mass stays the same so acceleration must decrease. the speed also decreases.

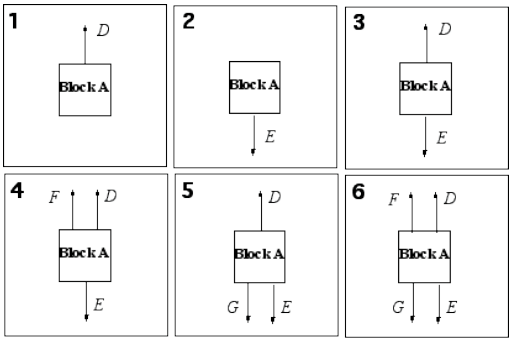
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	block
E	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	gravitational	block	earth



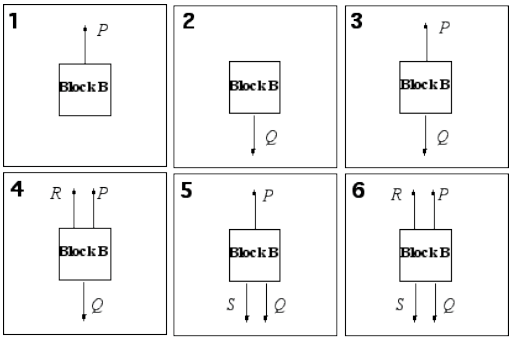
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. Q=G, P=D

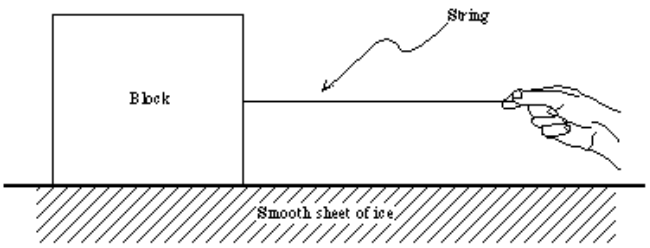
Q23: Explain. the gravitational force is mass times gravity. i'm assuming both blocks have the same mass so their gravitational force should be the same and the normal force opposing this force should be the same as well.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

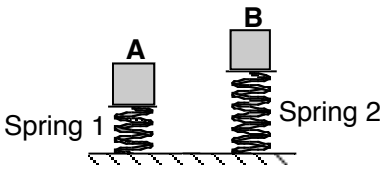
Q5. Explain. The student exerts a constant force on the block, so the block moves with constant velocity.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. The student continuously decreases the magnitude of the force, so the block must be slowing down.

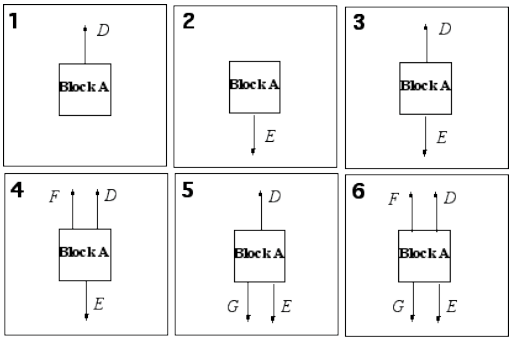
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 4

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	spring	earth
E	gravitational	spring	earth
F	friction	block	spring
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



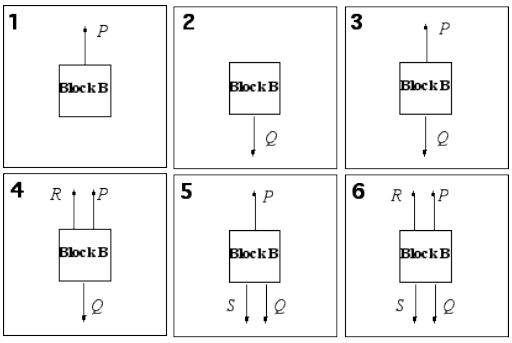
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 4

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. Q>P=R

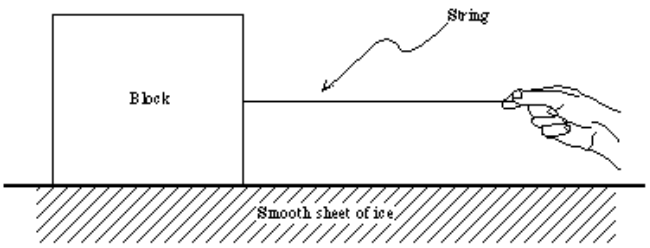
Q23: Explain. The Gravitational force is the greatest force in block B because the gravitational force must equal the normal and the friction force acted on the block since the block is at rest, and the normal force would be equal to the friction force.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

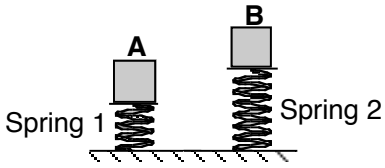
Q5. Explain. There is a change in the velocity of the block initially at rest. Otherwise it would not have covered the four meters.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain.

Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.

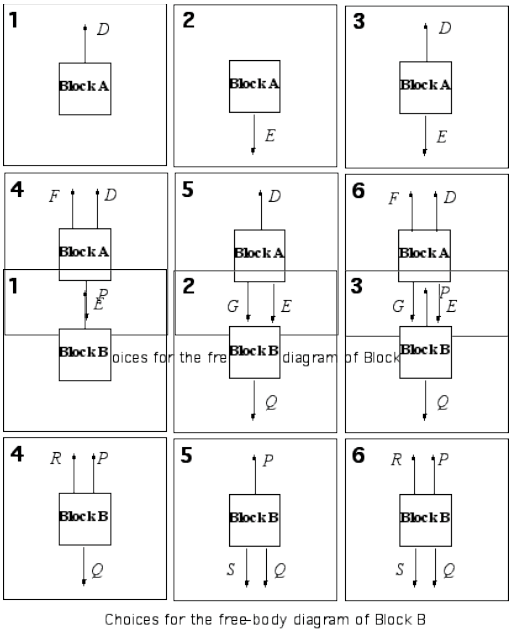


Q8: Which figure best represents the free-body diagram for block A? 6

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	tension	block	spring
F	gravitational	spring	block
G	tension	earth	spring

Q21: Which figure best represents the free-body diagram for block B? 6

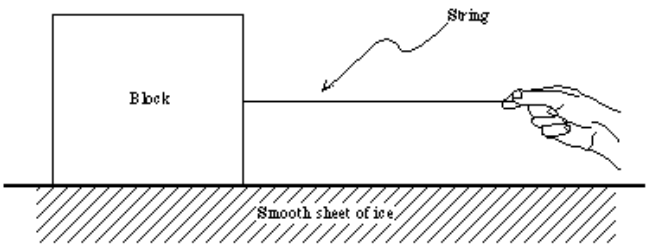


Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. Gravitational force (R)= (S) Normal force Tension exerted on block by spring (P) = (Q) Tension exerted on earth by spring

Q23: Explain. The gravitational force on the block equals that of the normal force exerted on the block by the spring, otherwise the block would fly off the spring or fall through it. The tension of the spring on the block and the tension of the spring on the earth must equal eachother or else the block would not rest on the top.

END OF RESPONSE

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

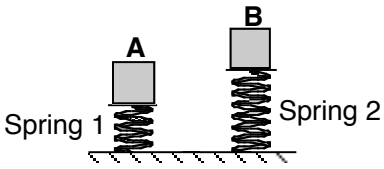
Q5. Explain. Because there is a constant force.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. Because there is less of a force moving the block its acceleration will decrease.

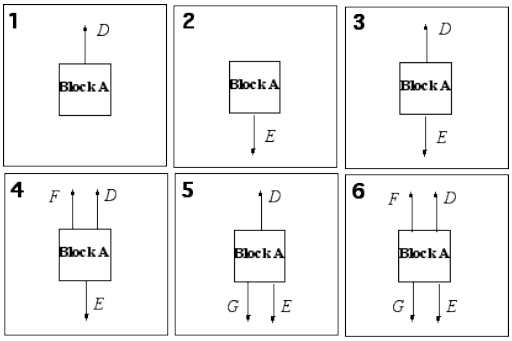
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 4

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	tension	block	spring
E	gravitational	block	gravity
F	normal	block	earth
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



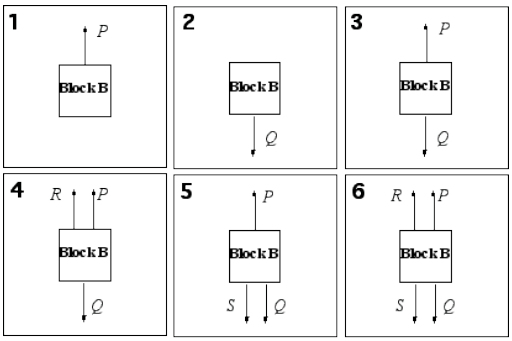
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 4

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. Q=E>P>D>R=F

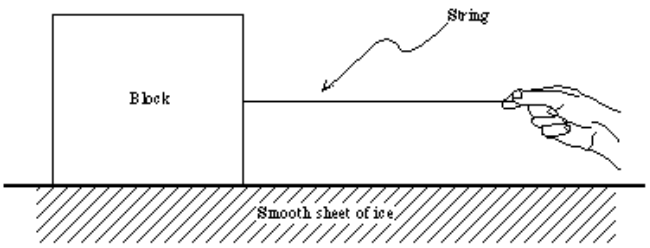
Q23: Explain. the gravitational forces for both blocks would be the same because they have to same mass and the other forces exerted on the block would have to equal the gravitational force so they would be less.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

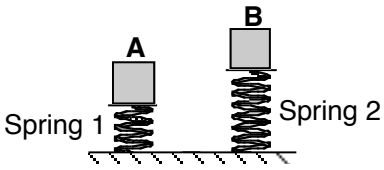
Q5. Explain. The block starts with a velocity of 0 m/s, so when a force is applied to it, there is acceleration, therefore there is a change in velocity.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to $0.5\ F_O$.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. Force is proportional to the acceleration, so if you decrease the force then the acceleration must also decrease.

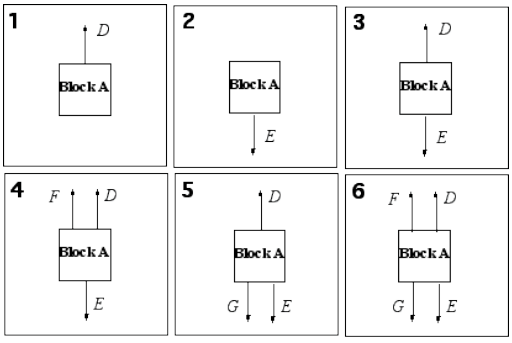
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 5

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	spring	block
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	gravitational	block	gravity



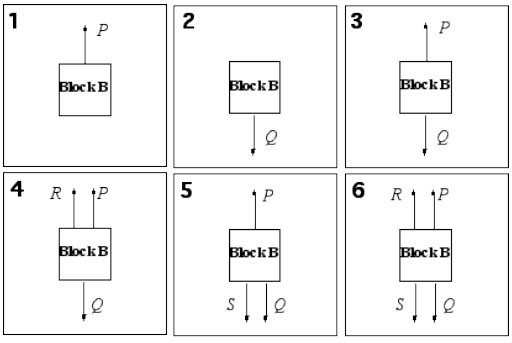
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 5

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. E=Q>-D=-P=S=G

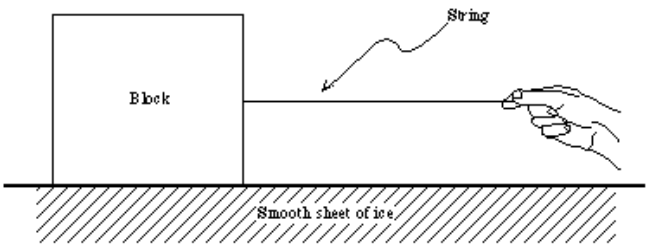
Q23: Explain. The lowest forces are the forces of gravity and the normal forces. These two forces are equal because the objects aren't moving. And they are smaller than the force of the weight of the block, because if they were greater then the block would be pushed up on the spring.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

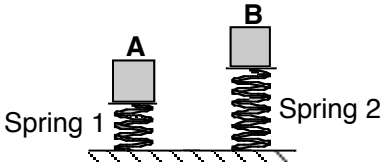
Q5. Explain. The block speeds up because it is accelerated by the force that the student exerts on it.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. The block still speeds up because there is a force applied by the student accelerating it.

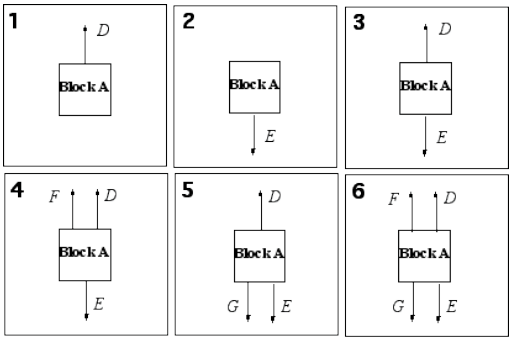
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 4

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	unanswered
E	gravitational	block	gravity
F	tension	block	spring
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



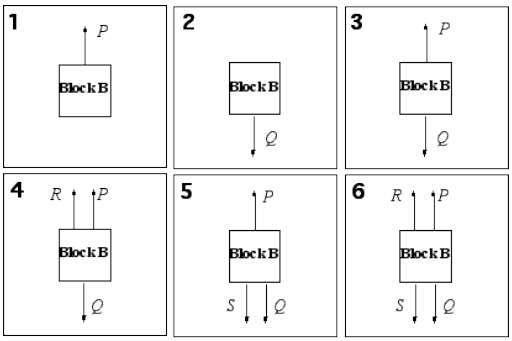
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 4

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. E=Q>D=F=R=P

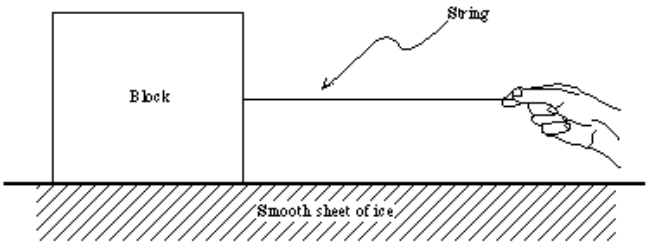
Q23: Explain. The net force on the object is zero since it is not accelerating. The sum of the forces acting on the object must therefor be zero. The sum of the forces in the upward dirction

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

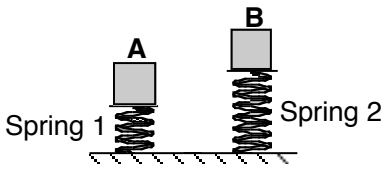
Q5. Explain. The student used a constant force from when the block was at rest to the point of 4.0 meters. The block will move with a constant velocity because of this.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block moves with constant velocity.

Q7. Explain. The block is already moving with a constant velocity across a frictionless surface at the point of 4.0m. Unless the student pushes on the block in the opposite direction the block's velocity should remain constant because of the initial pull.

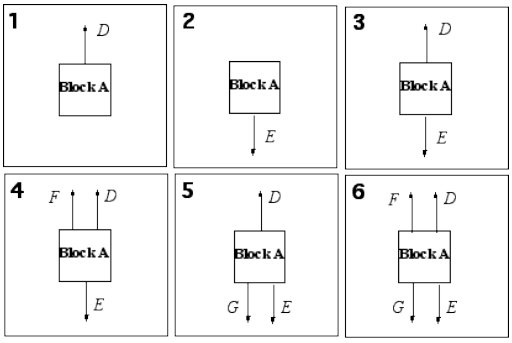
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	spring	earth
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



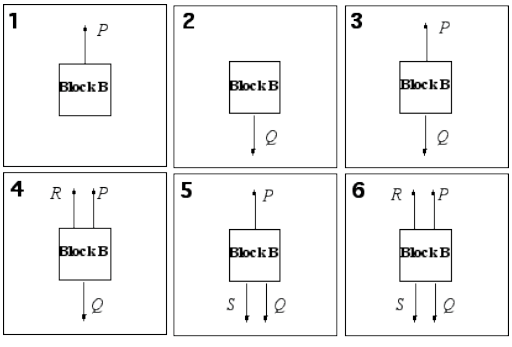
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. P=Q

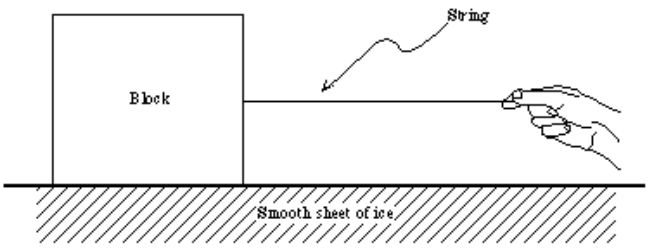
Q23: Explain. The normal force and the gravitational forces are equal on the block. This is why the spring is compressed a certain amount. If the normal force had been greater the spring would be less compressed.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

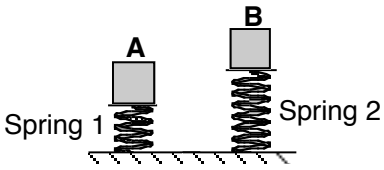
Q5. Explain. Since friction is negligible, as long as the student is pulling the object, the object is going to speed up.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to $0.5\ F_O$.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. It is still speeding up. The force is still more than zero, which means, even though acceleration is decreasing, velocity is still increasing.

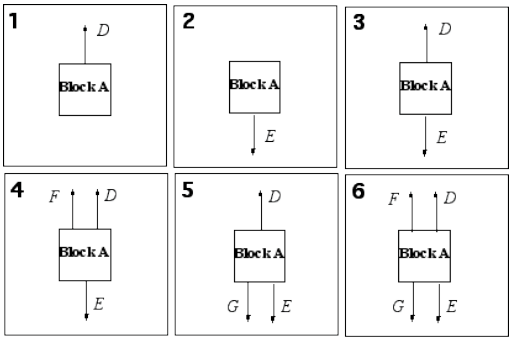
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 5

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	tension	spring	block
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	gravitational	block	earth

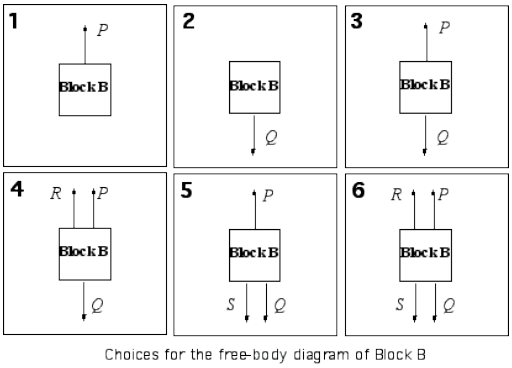


Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 5

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. S>Q=P>G>D>E

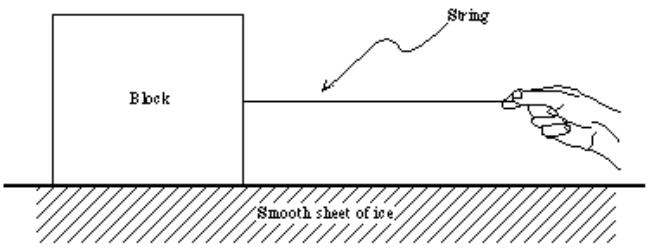
Q23: Explain. The question is not clear.



Choices for the free-body diagram of Block B

END OF RESPONSE

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block moves with constant velocity.

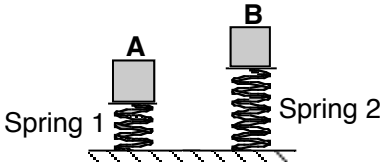
Q5. Explain. If a constant force is applied over an even, smooth surface the velocity will be the same.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. With less force applied the velocity will ultimately slow down.

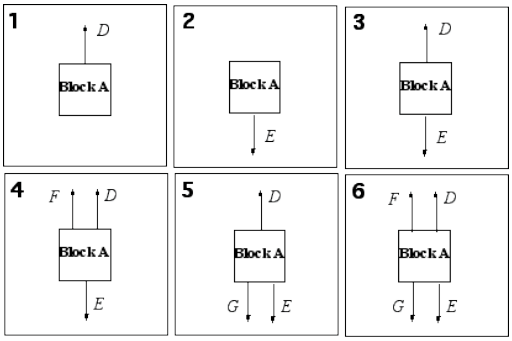
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 5

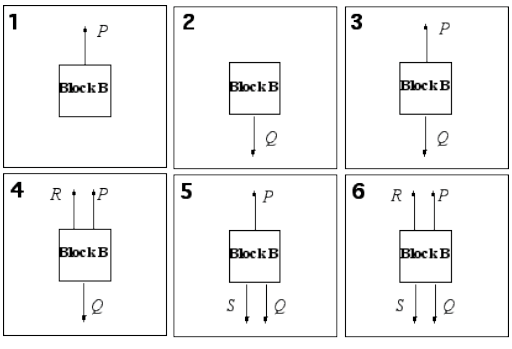
Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	gravitational	block	gravity
E	normal	earth	spring
F	tension	spring	spring
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3



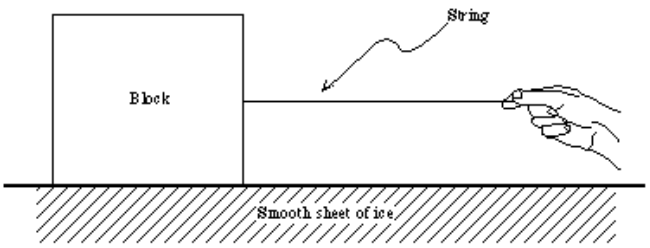
Choices for the free-body diagram of Block B

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. spring>normal>gravity

Q23: Explain. the spring exerts the most energy because it is coiled, the normal force is also great because the spring is pushing hard against the earth. I think gravity is a lesser force because some may be canceled out by the normal force.

END OF RESPONSE

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

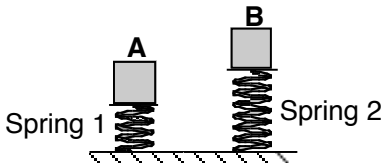
Q5. Explain. F=MA. A consistent force mean a consistent acceleration which speeds up the object.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. The block will continue to speed up but acceleraton will be less. Because the friction is very minimal and the ice will speed even with minimal force.

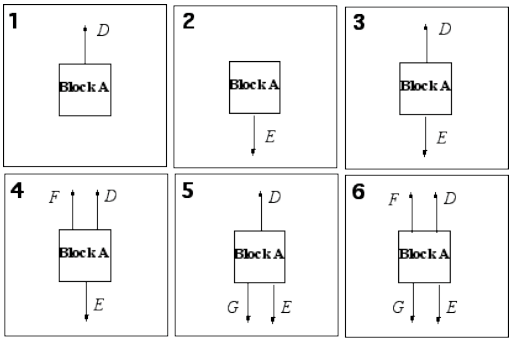
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 4

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	earth
E	gravitational	earth	gravity
F	tension	spring	spring
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



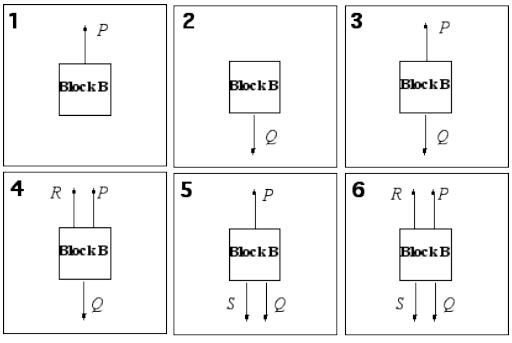
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 4

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. R>F>P=Q=E=D

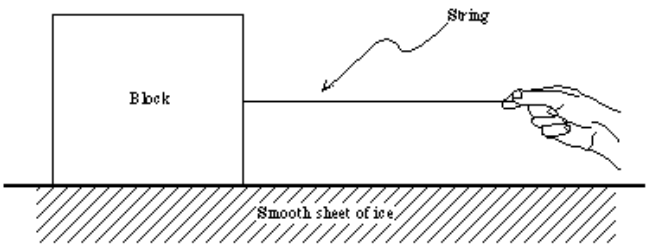
Q23: Explain. The tension force of B is greater than A. The normal force is equal to gravity and mass.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. None of the choices above correctly describes the motion of the block.

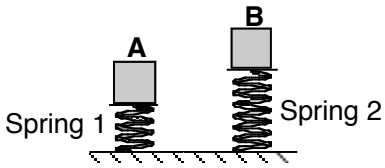
Q5. Explain. The block has a constant force acting on it, which means that its acceleration is constant.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. Since less force is acting on the object, its velocity will decrease with time.

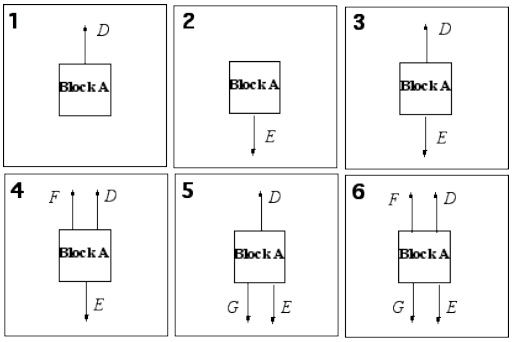
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 4

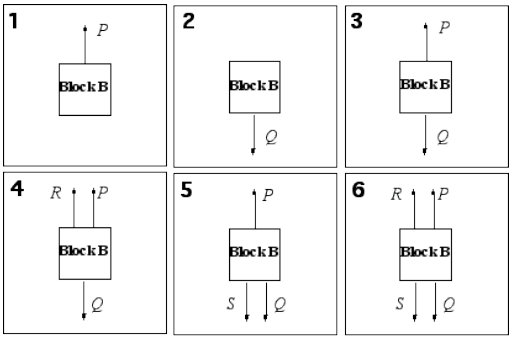
Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	tension	block	spring
E	gravitational	spring	block
F	normal	block	earth
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 4



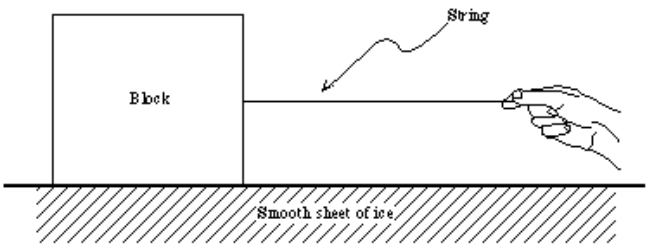
Choices for the free-body diagram of Block B

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. D=F>E

Q23: Explain. The tension has to equal the force of gravity to be stationary.

END OF RESPONSE

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

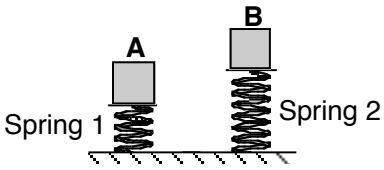
Q5. Explain. since F = ma and F does not equal 0, neither m nor a can be 0. Thus clearly, there must be acceleration.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block speeds up.

Q7. Explain. Even though during this period the student is applying less force, there is still a net force (F doesn't equal 0), so there must still be acceleration.

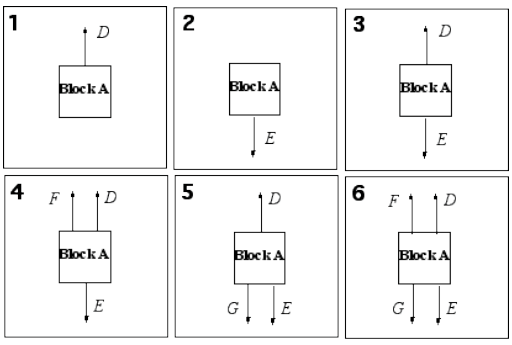
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 4

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	block	earth
F	tension	block	spring
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



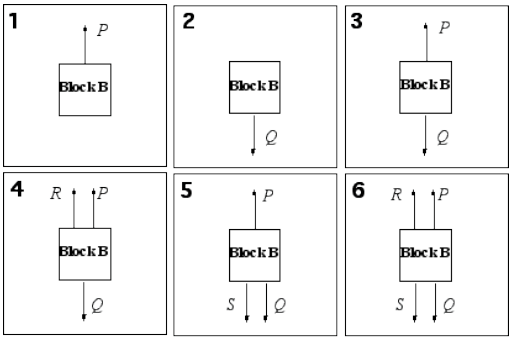
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 4

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. D=E=P=Q<F<R

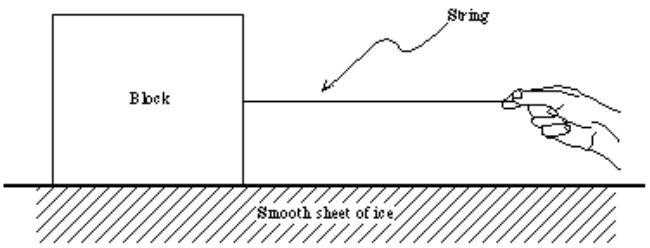
Q23: Explain. the two blocks have the same masses, so gravity would have the same force on both. As a result, their normal forces are also equal. However, as B is higher than A, the spring for B must be exerting more force.

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

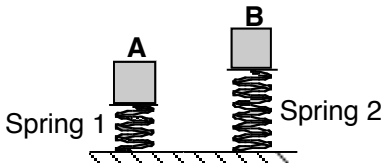
Q5. Explain. There is a constant force and a constant mass so that means Acceleration is also constant

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. Since force is decreasing and mass is same, acceleration is also decreasing to keep the F=ma balanced. Acceleration points in the other direction of velocity.

Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 6

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

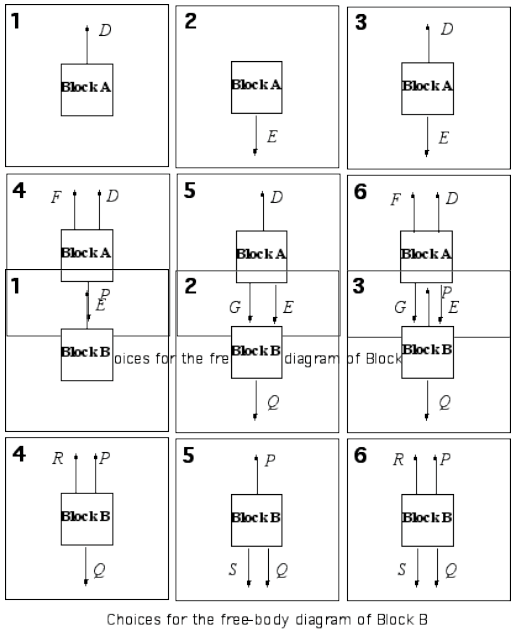
Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	spring	earth
F	normal	earth	spring
G	gravitational	block	earth

Q21: Which figure best represents the free-body diagram for block B? 6

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. R=S<P=Q

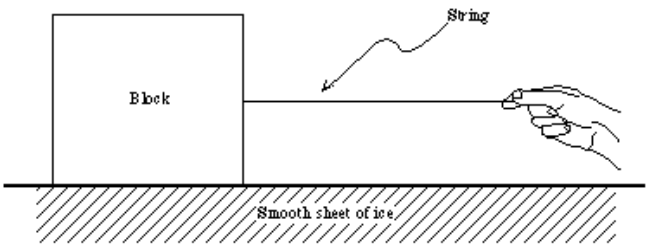
Q23: Explain. uhhh

END OF RESPONSE



Choices for the free-body diagram of Block B

Part I: A student pulls a block, initially at rest at $x = 0.0$ m, a distance of 8.0 m across a smooth, level ice surface. Assume friction is negligible. As the block covers the first 4.0 m, the student exerts a constant force of magnitude F_O.



Q4. Describe the motion of the block between 0.0 m and 4.0 m. The block speeds up.

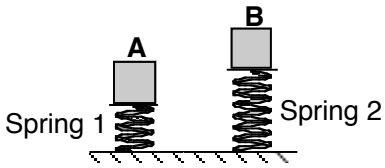
Q5. Explain. the ball was at rest at x=0. as the ball moves, the velocity changes and it speeds up.

As the block moves between the 4.0 m and 8.0 m marks, the student continuously decreases the magnitude of the force from F_O to 0.5 F_O.

Q6. Describe the motion of the block between the 4.0 m mark and the 8.0 m mark. The block slows down.

Q7. Explain. as the magnitude of the force decreases from Fo to 0.5 Fo, the acceleration decreases, therefore, the ball slows down

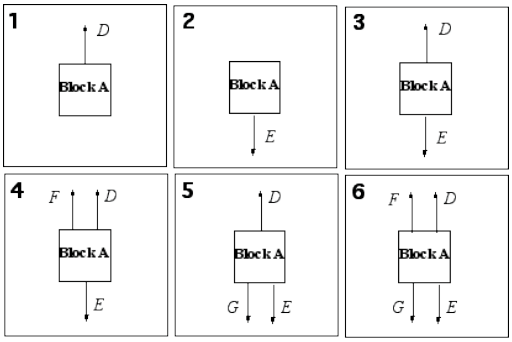
Part II: Blocks A and B are at rest on springs. The blocks are identical but the springs are different.



Q8: Which figure best represents the free-body diagram for block A? 3

Q9-20: For each force on your free-body diagram for block A, give the following information. (If you more than one answer could be correct, select the best choice.

Force	Description	Exerted on	Exerted by
D	normal	block	spring
E	gravitational	block	gravity
F	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A
G	no such force in the free-body diagram for A	no such force in the free-body diagram for A	no such force in the free-body diagram for A



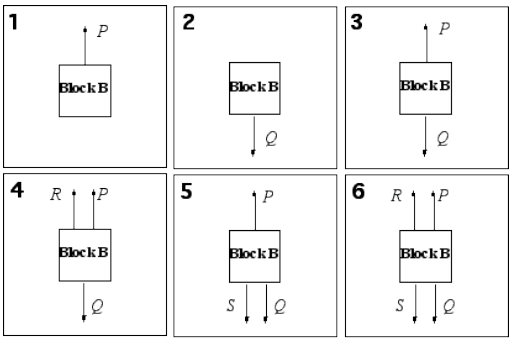
Choices for the free-body diagram of Block A

Q21: Which figure best represents the free-body diagram for block B? 3

Q22: Rank the magnitudes of all the forces in your free-body diagrams from largest to smallest. Q=E, P>D

Q23: Explain. using the same block, therefore the gravitional force is the sama, as normal force on both spring, the spring P pushes block to a higher level than spring D, thus P>D.

END OF RESPONSE



Choices for the free-body diagram of Block B