

Due date: Sat 28 Aug 2004 08:00:00 AM MDT

2 point(s)

**1110 review**

Below are a number of statements about Physics 1 material. Choose True or False for all statements before submitting!

Choices: **True, False.**

- A. An object moving in a circle with constant (uniform) speed has zero acceleration.
- B. If a light car and a heavy truck collide, the force of the car on the truck will always be exactly equal (in magnitude) to the force of the truck on the car, in all circumstances.
- C. If there is no friction (or other nonconservative forces), the sum of kinetic and potential energy, KE+PE, of a closed system NEVER changes with time.
- D. A ball thrown upwards has non-zero acceleration at the moment when it reaches the highest point
- E. In the absence of friction or any other force besides gravity, heavy objects accelerate downward faster than light objects do.
- F. Right after a firework explodes, the total combined momentum of all the fragments must be exactly the same as the momentum of the firework just before the explosion. (Neglect external air friction and gravity.)

Computer's answer now shown above.

Tries 0/6

2 point(s)

**vectors**

A review of some vector operations from math classes: Choose True or False for *all* statements before submitting this problem.

Choices: **True, False.**

- A. The magnitude of a vector can be positive or negative.
- B. The scalar (or "dot") product of two vectors can never be negative.
- C. The y-component of a vector can be +, -, or zero
- D. If **A** is perpendicular to **B** (which is written  $\mathbf{A} \perp \mathbf{B}$ ) then the scalar (or "dot") product  $\mathbf{A} \cdot \mathbf{B} = 0$
- E. For any pair of vectors **A** and **B**, it must be the case that the cross product  $\mathbf{A} \times \mathbf{B} = -\mathbf{B} \times \mathbf{A}$
- F. If  $\mathbf{A} = \mathbf{B} \times \mathbf{C}$ , and B points purely in the y direction (which we might write as  $\mathbf{B} = b \mathbf{j}$ ), then  $A_y = 0$ .

Computer's answer now shown above.

Tries 0/6

2 point(s)

**practice numerical input area and volume**

Calculate the volume of a spherical balloon which has a surface area of 0.0429 m<sup>2</sup>.

Click here for info on how to input answer in "CAPA-format", or here for area and volume relations.

Enter your answer in the text box:

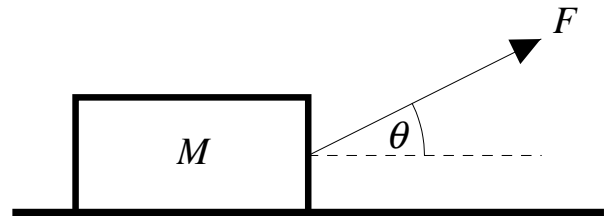
Computer's answer now shown above.

Tries 0/6

2 point(s)

**1110 review Newton**

A 4.18 kg block located on a horizontal floor is pulled by a cord that exerts a force  $F = 10.6$  N at an angle  $\theta = 25.5$  degrees above the horizontal, as shown in the Figure.



The coefficient of kinetic friction between the block and the floor is 0.07. What is the speed of the block 4.5 sec after it starts moving?

Computer's answer now shown above.

Tries 0/6

2 point(s)

**Compare Coulomb with Gravity**

Two particles of masses 1.5 kg and 4.8 kg and charges 1.2 C and -8.3 C respectively are separated by a distance 41 cm. Find the ratio of the magnitudes of the Electric to Gravitational forces between them. That is, what is  $F_{elec}/F_{grav}$ ?

Computer's answer now shown above.

Tries 0/6

4 point(s)

**NewtonII\_III and Coulomb**

Two point-like particles are placed 25.3 cm apart and are given equal and opposite charge. The first particle, of mass 34.4 g, has an initial acceleration of 7.20 m/s<sup>2</sup> towards the second particle. What is the mass of the second particle if its initial acceleration towards the first is 1.00 m/s<sup>2</sup>?

Computer's answer now shown above.

Tries 0/6

What is the magnitude of the charge on each particle?

Computer's answer now shown above.

*Tries 0/6*