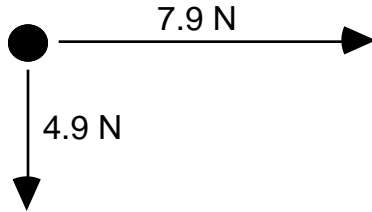


Phys12 Dynamics 2D : Quiz - 20

1)



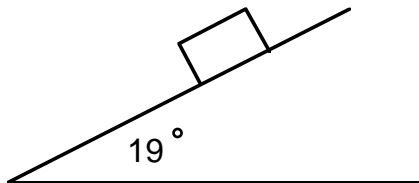
An object of mass 0.50 kg has the forces shown exerted upon it. Find the magnitude of the object's acceleration in m/s^2 .

- a) 26 b) 19 c) 12 d) 6.0

2) A pendulum consisting of a mass of 1.3 kg suspended from a string of length 1.9 m is pulled aside so that the string makes an angle of 28° with the vertical. At the instant the pendulum is released, what is the magnitude of the unbalanced force on the object in Newtons?

- a) 0.61 b) 6.0 c) 6.8 d) 11

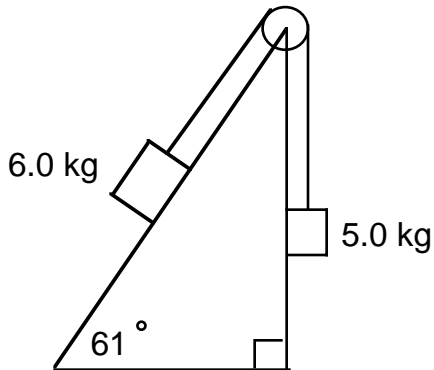
3)



The block shown has a mass of 2.5 kg. If friction is negligible, what is the magnitude of the unbalanced force on the block ?

- a) 8.0 N b) 8.4 N c) 23 N d) 25 N

4)



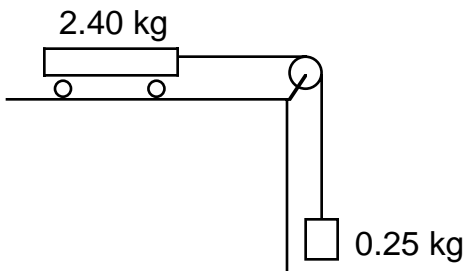
What will happen to the 5.0 kg block at the instant the above system is released, if there is no friction ?

- a) It will not move.
- b) It will accelerate upward.
- c) It will accelerate downward
- d) It will move upward at a constant speed.

5) A box of mass 14.5 kg slides at a constant speed of 4.70 m/s down a ramp at 35.3° below the horizontal. What is the force of friction on the box ?

- a) 39.3 N
- b) 68.2 N
- c) 82.1 N
- d) 142 N

6)



Find the acceleration of the cart above in m/s^2 (friction is not significant).

- a) 0.92
- b) 1.0
- c) 1.1
- d) 9.8

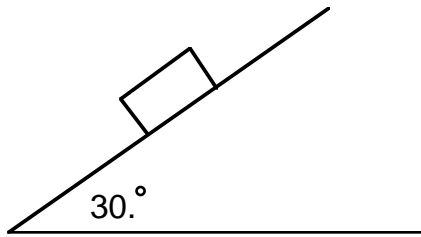
7) A block of wood of mass M is accelerating down a plane surface at an angle of θ to the horizontal. The coefficient of kinetic friction between the block and the surface is μ . Upon which of these three variables does the acceleration of the block depend ?

- a) θ only
- b) θ and μ only
- c) θ , μ and M only
- d) θ and M only

8) A book is on a table. Which statement most accurately describes the situation ?

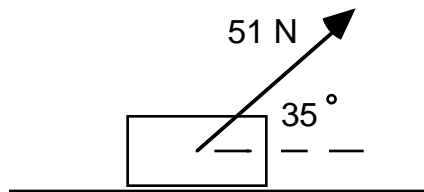
- a) There are no forces acting on the book.
- b) The forces acting on the book are balanced.
- c) Only gravity is acting on the book
- d) The normal force is zero.

9)



A 5.0 kg block slides down an incline. The coefficient of friction is 0.20. Find the acceleration.

10)

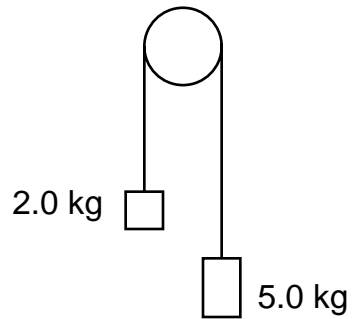


The above diagram shows a box of mass 4.6 kg being pulled along a sidewalk by a force of 51 N directed upward at 35° to the horizontal. The coefficient of friction between the box and the sidewalk is 0.70.

a) Find the magnitude of the vertical (normal) force exerted by the sidewalk on the box.

b) Find the magnitude of the net (unbalanced force) on the box.

11)



Find the acceleration and tension.

Answers : 1) b, 2) b, 3) a, 4) b, 5) c, 6) a, 7) b) 8) b, 9) 3.2 m/s^2 , 10a) 16N , b) 31N , 11) $a = 4.2 \text{ m/s}^2$, $T = 28 \text{ N}$.