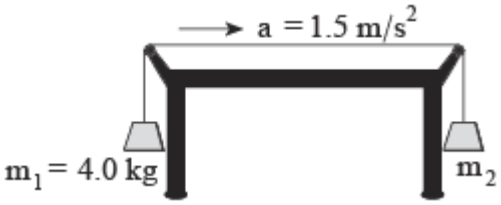
Name: _____ Practice Ph12 1-4

**Use the following diagram to answer the next 1 questions.**

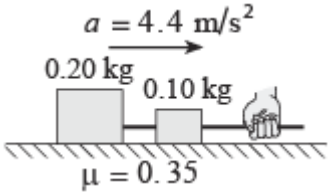
Two masses are connected by a light cord passing over frictionless pulleys as shown in the diagram below.




1. What is $m_2$ (in kg) if the system accelerates as shown.

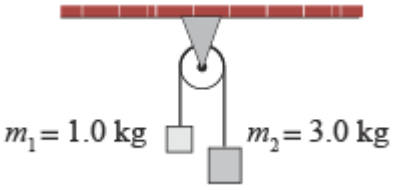
2. A 2.0 kg frictionless puck resting on a level table is attached to a mass by a nylon thread over a frictionless pulley. This mass is hanging over the edge of the table and is also 2.0 kg. The mass is released and pulls the puck along the table. The acceleration of the puck is:
   A. 2.0 x 10 m/s$^2$
   B. zero
   C. 5.0 m/s$^2$
   D. 10.5 m/s$^2$

3. The system of blocks shown in the diagram below is being accelerated to the right at 4.4 m/s$^2$.



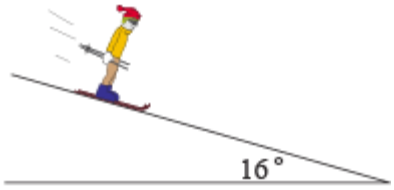

   What pulling force is applied by the hand?
   A. 2.3 N
   B. 1.3 N
   C. 1.0 N
   D. 0.3 N

4. Two masses, one of 1.0 kg, the other of 3.0 kg, are suspended from the ends of a light string passing over a frictionless pulley.



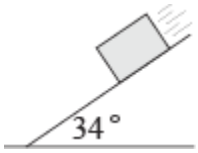

   What is the magnitude of the acceleration of these masses?
   A. 9.8 m/s$^2$
   B. 2 m/s$^2$
   C. 4.9 m/s$^2$
   D. 7.4 m/s$^2$

5. A 75 kg Olympic skier takes 20 s to reach a speed of 25 m/s from rest while descending a uniform 16° slope.




What is the coefficient of friction between the skis and the slope surface?

6. A 5.0 kg concrete block accelerates down a $34^o$ slope at 4.2 $m/s^2$ . Find the coefficient of friction between the block and the slope.

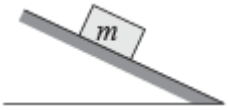



A. 0.67
B. 0.43
C. 0.16
D. 0.13

7. An object is sliding down a smooth incline. If friction is negligible, the object has
   A. constant momemtum
   B. constant acceleration
   C. constant displacement
   D. constant velocity

8. If friction is negligible, what is the acceleration of an object sliding down a slope inclined at 25° to the horizontal?
   A. 9.8$m/s^2$
   B. 4.1 $m/s^2$
   C. 4.6$m/s^2$
   D. 8.9$m/s^2$

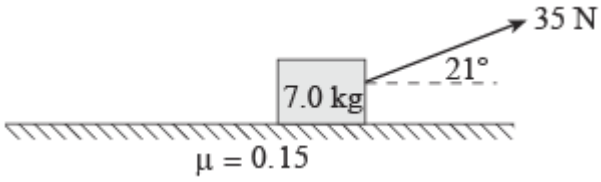
9. A block of mass *m* remains at rest on an incline as shown in the diagram.




The force acting up the ramp on this block is
   A. *mg*
   B. 0
   C. more than *mg*
   D. less than *mg*

**Use the following question to answer question(s) 10-10.**

A 35 N force applied at 21° to the horizontal is used to pull a mass as shown.




The coefficient of friction between the floor and the mass is 0.15.

10. What is the acceleration of the mass (in $m/s^2$)?

11. What is the **horizontal component** of a force of 95 N directed at an angle of 22° above the horizontal?

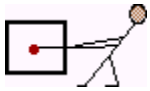
A. 95 N
B. 88 N
C. 59 N
D. 36 N

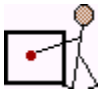
12. A 4.0 kg model boat is pulled by two ropes. One has a tension of 40 N directed at 45° north of east and the other 30 N at 37° south of east.

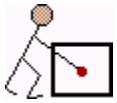
What is the magnitude of the boat's acceleration?

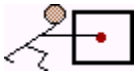
A. 17.5 $m/s^2$
B. 13 $m/s^2$
C. 8.75 $m/s^2$
D. 2.5 $m/s^2$

13. The following diagrams show the same box being moved horizontally to the right along the ground at the same, constant velocity. Which of the people shown will have to exert the greatest force?

A. 

B. 

C. 

D. 

14. A pendulum consisting of an object of mass 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?

A. 11 N
B. 6.8 N
C. 6.0 N
D. 0.61 N