University of Imam Muhammad

College of Science

General Physics 101
(1435-1436)

| Student Name | Student ID | Section |
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Choose the correct answer

1- Acceleration is always in the direction:

A. of the displacement
B. of the initial velocity
C. of the final velocity
D. of the net force

2- When a certain force is applied to the standard kilogram its acceleration is $5.0 m/s^2$. When the same force is applied to another object its acceleration is one-fifth as much. The mass of the object is:

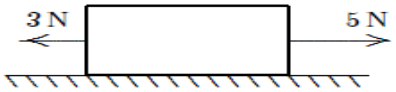
A. 0.2kg
B. 0.5kg
C. 1.0kg
D. 5.0kg

3- Mass differs from weight in that:

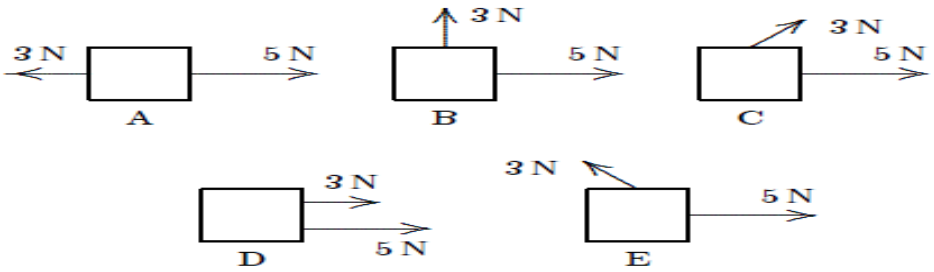
A. all objects have weight but some lack mass
B. weight is a force and mass is not
C. the mass of an object is always more than its weight
D. mass can be expressed only in the metric system

4- The block shown moves with constant velocity on a horizontal surface. Two of the forces on it are shown. A frictional force exerted by the surface is the only other horizontal force on the block. The frictional force is:

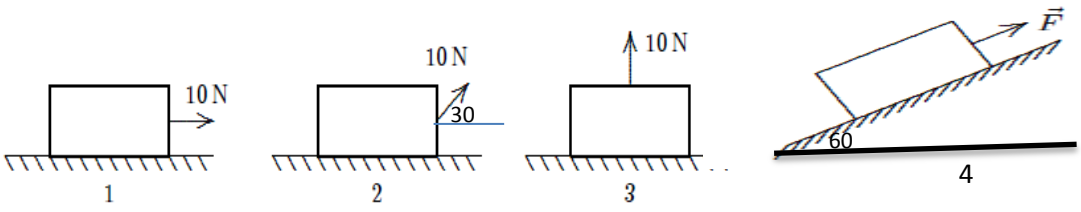
A. 0
B. 2N, leftward
C. 2N, rightward
D. slightly more than 2N, leftward




5- Two forces, one with a magnitude of 3N and the other with a magnitude of 5N, are applied to an object. For which orientations of the forces shown in the diagrams is the magnitude of the acceleration of the object the least?




6- A crate of 10 kg rests on a horizontal surface and a woman pulls on it with a 10-N force. Calculate the normal force according in each situation




A. ( 98, 103, 88, 84.9) N
B. ( -98, 93, 88, 84.9) N
C. ( 98, 93, 88, 49) N
D. ( -98, 103, 88, 49) N

7- Equal forces F N act on isolated bodies A and B. The mass of B is three times that of A. The magnitude of the acceleration of A is:

A. three times that of B
B. 1/3 that of B
C. the same as B
D. nine times that of B

8- A 6-kg object is moving south. A net force of 12N north on it results in the object having an acceleration of:

A. $2m/s^2$, north
B. 2m/s2, south
C. $6m/s^2$, north
D. $18m/s^2$, north

9- An object rests on a horizontal frictionless surface. A horizontal force of magnitude F is applied. This force produces an acceleration:

A. only if F is larger than the weight of the object
B. only while the object suddenly changes from rest to motion
C. always
E. only if F is increasing

10- A 400-N steel ball is suspended by a light rope from the ceiling. The tension in the rope is:

A. 400N
B. 800N
C. zero
D. 200N

11- A block slides down a frictionless plane that makes an angle of 30◦ with the horizontal. The acceleration of the block is:

A. 980 $cm/s^2$
B. 566 $cm/s^2$
C. 849 $cm/s^2$
D. 490 $cm/s^2$

12- A 32-N force, parallel to the incline, is required to push a certain crate at constant velocity up a frictionless incline that is 30◦ above the horizontal. The mass of the crate is:

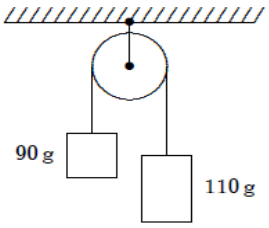
A. 3.3kg
B. 3.8kg
C. 5.7kg
D. 6.5kg

13- The “reaction” force does not cancel the “action” force because:

A. the action force is greater than the reaction force
B. they are on different bodies
C. they are in the same direction
D. the reaction force exists only after the action force is removed

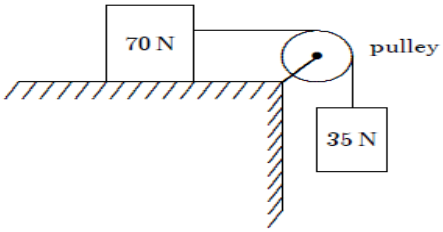
14 - Two blocks are connected by a string and pulley as shown. Assuming that the string and pulley are massless, the magnitude of the acceleration of each block is:

A. 0.049 $m/s^2$
B. 0.020 $m/s^2$
C. 0.0098 $m/s^2$
D. 0.98 $m/s^2$



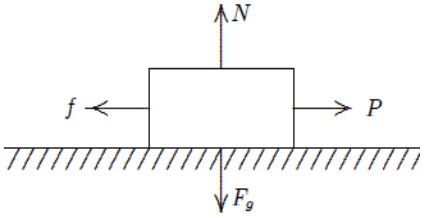

15- A 70-N block and a 35-N block are connected by a string as shown. If the pulley is massless and the surface is frictionless, the magnitude of the acceleration of the 35-N block is:

A. 1.6 $m/s^2$
B. 3.3 $m/s^2$
C. 4.9 $m/s^2$
D. 6.7 $m/s^2$



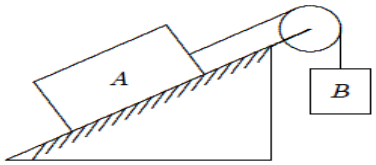

16 - A boy pulls a wooden box 0f 4.2 kg along a rough horizontal floor at constant speed by means of a force P as shown. Calculate the magnitude of the friction force if the coefficient of static friction force is 0.2 ?

A. 8.23 N
B. 8.4 N
C. 0.84 N
D. 21 N




17 - Block A, with a mass of 10 kg, rests on a 35◦ incline. The coefficient of static friction is 0.40. An attached string is parallel to the incline and passes over a massless, frictionless pulley at the top. The largest mass mB of block B, attached to the dangling end, for which A begins to slide down the incline is:

A. 2.5kg
B. 3.5kg
C. 5.9kg
D. 9.0kg



Solution

Best wishes

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