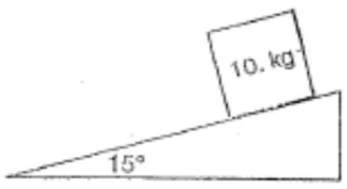
1. Which object has the greatest inertia?
   1) a 5.0-kg object moving at a speed of 5.0 m/s
   2) a 10.-kg object moving at a speed of 3.0 m/s
   3) a 15-kg object moving at a speed of 1.0 m/s
   4) a 20.-kg object at rest

2. In the diagram below, a 10.-kilogram block is at rest on a plane inclined at 15° to the horizontal.



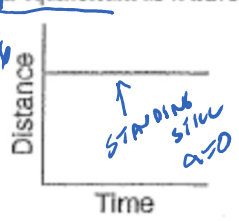
CONSTANT

As the angle of the incline is increased to 30.°, the mass of the block will
   1) decrease
   2) increase
   3) remain the same

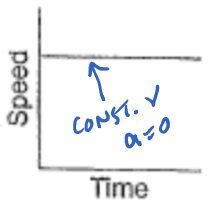
3. Which graph best represents the motion of an object that is not in equilibrium as it travels along a straight line?

ACCELERATING

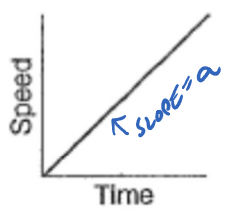
1)



3)



2)



4)

4. A 60-kilogram student jumps down from a laboratory counter. At the instant he lands on the floor, his speed is 3 meters per second. If the student stops in 0.2 seconds, what is the average force on the student?

$v_i = 3\ m/s$, $v_f = 0$, $t = 0.2\ s$, $F = ?$, $m = 60\ kg$

$F = ma = (60\ kg)(15\ m/s^2) = 900\ N$

$a = \frac{\Delta v}{t} = \frac{0 - 3\ m/s}{0.2\ s} = 15\ m/s^2$

5. A spring scale reads 20. Newtons as it pulls a 5.0-kilogram mass across a table. What is the magnitude of the force exerted by the mass on the spring scale?
   1) 49 N
   2) 20. N
   3) 5.0 N
   4) 4.0 N

20 N → 20 N

NEWTON'S 3RD LAW (EQUAL & OPPOSITE)

6. A 2.0-kilogram body is initially traveling at a velocity of 40. meters per second east. If a constant force of 10. newtons due east is applied to the body for 5.0 seconds, the final speed of the body is

$m = 2\ kg$, $v_i = 40\ m/s$, $F = 10\ N$, $t = 5\ s$, $+ \rightarrow$ (E), $v_f = ?$

$v_f = v_i + at = 40\ m/s + (5\ m/s^2)(5\ s) = 65\ m/s$

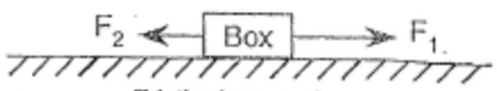
$a = \frac{F}{m} = \frac{10\ N}{2\ kg} = 5\ m/s^2$

7. A net force of 25 Newtons is applied horizontally to a 10.-kilogram block resting on a table. What is the magnitude of the acceleration of the block?

$F = 25\ N$, $m = 10\ kg$, $a = ?$

$a = \frac{F}{m} = \frac{25\ N}{10\ kg} = 2.5\ m/s^2$

8. In the diagram below, a box is on a frictionless horizontal surface with forces F_1 and F_2 acting shown.

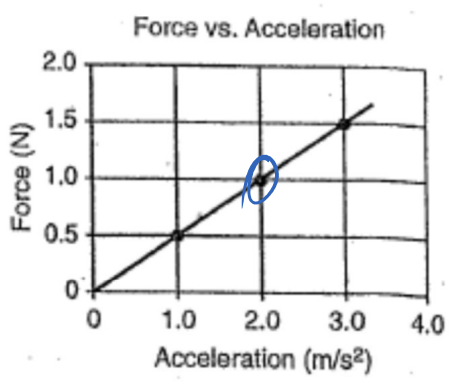


$F_1 > F_2$ SO THERE IS A ΣF_{NET}

$\Sigma F_{NET} = ma$

If the magnitude of F_1 is greater than the magnitude of F_2, then the box is
   1) moving at constant speed in the direction of F_1
   2) moving at constant speed in the direction of F_2
   3) accelerating in the direction of F_1
   4) accelerating in the direction of F_2

9. The graph below represents the relationship between the forces applied to an object and the corresponding accelerations produced.



$F = ma$

$m = \frac{F}{a} = \frac{1\ N}{2\ m/s^2} = 0.5\ kg$

What is the inertial mass of the object?
   1) 1.0 kg
   2) 2.0 kg
   3) 0.50 kg
   4) 1.5 kg