Name_____ Block_____ Date _____

Ch 5 Newton's 2nd Law Practice Problems

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$a = \frac{F}{m}$ $F = ma$ $w = mg$ $F_f = \mu F_n$ $A = \pi r^2$ $P = \frac{F}{A}$

1. What acceleration will result when a 12N net force is applied to a 3kg object?

2. A net force of 16N causes a mass to accelerate at the rate of 5 m /s^2. What is the mass?

3. An object is accelerating at 2 m/ s^2.

a. If the F_{net} is doubled & the mass stays the same, what is the acceleration?

$$a = \frac{F_{net}}{m}$$

b. If the mass is doubled & the F_{net} stays the same, what is the acceleration?

$$a = \frac{F_{net}}{m}$$

c. If the F_{net} is doubled & the mass is doubled, what is the acceleration?

$$a = \frac{F_{net}}{m}$$

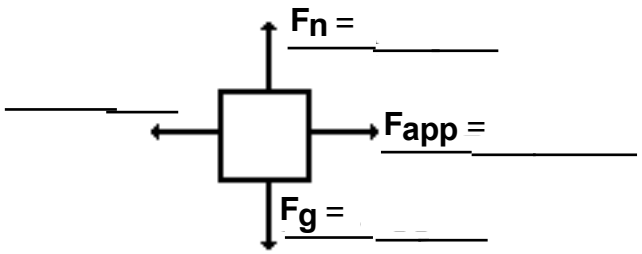
d. If the mass is halved & the F_{net} stays the same, what is the acceleration?

$$a = \frac{F_{net}}{m}$$

e If the F_{net} is tripled & the mass is doubled, what is the acceleration?

$$a = \frac{F_{net}}{m}$$

4. A pull of 3N causes a 0.6 kg object to move at a constant velocity. Complete the following.

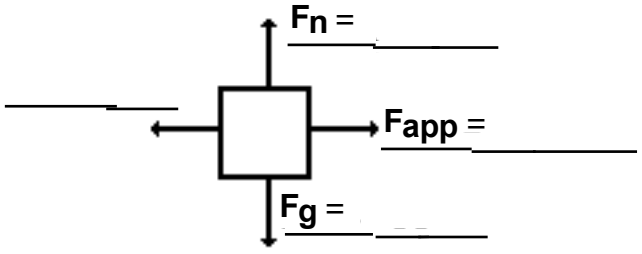


m = _____

F_{net} = _____

a = _____

5. An applied force of 50N is used to accelerate an object with a weight of 80N to the right across a frictional (with friction) surface. The object encounters 10N of friction.

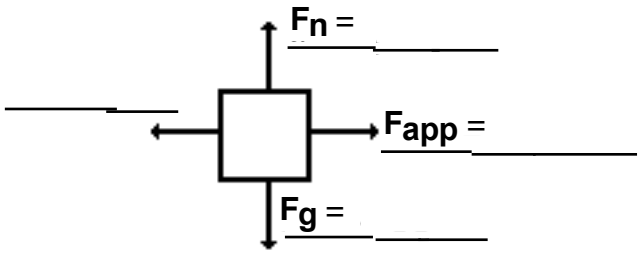


m = _____

F_{net} = _____

a = _____

6. An applied force of 20N is used to accelerate an 10kg object to the right across a frictional surface. The object encounters 10N of friction. Complete the following.

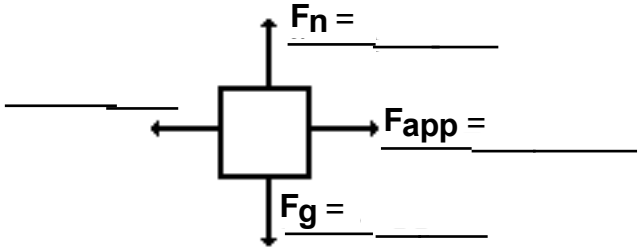


m = _____

F_{net} = _____

a = _____

7. A rightward force is applied to a 6 kg object to move it across a rough surface at a constant velocity. The object encounters a 15N of frictional force. Complete the following.

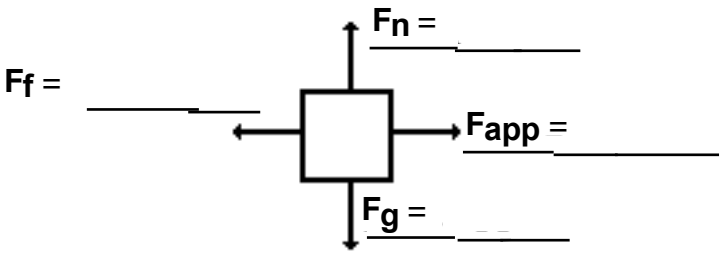


m = _____

F_{net} = _____

a = _____

8. A rightward 20N force is applied to a 10kg object to move it across a rough surface at a constant velocity. Complete the following.

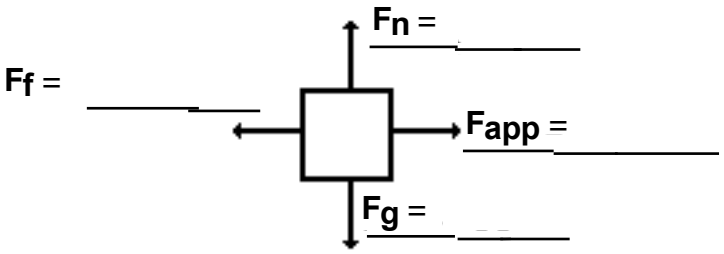


m = _____

F_{net} = _____

a = _____

9. A rightward force of 15N is applied to a 5kg object to move it across a rough surface with a rightward acceleration of 2 m/ s^2. Complete the following.

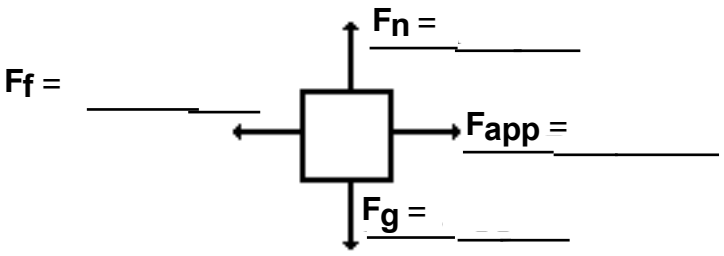


m = _____

F_{net} = _____

a = _____

10. A rightward force of 25N is applied to 4kg object to move it across arough surface with a rightward acceleration of 2.5 m/ s^2. Complete the following.



m = _____

F_{net} = _____

a = _____

11. If the forces acting on an object are not balanced then a net force is being exerted on the object. Then the object:

a. must not be moving

b. must be moving with a constant velocity

c. must be accelerating

d. none of the above

e. all of the above

12. While driving, Luke observed a bug striking the windshield of the car.

a. Which undergoes the greatest force? the bug or the car windshield

b. Which has the greatest mass? the bug or car

c. Which has the greatest acceleration? the bug or car