

I. NEWTON'S FIRST LAW OF MOTION

1. Newton's first law of motion is also known as the LAW OF _____.
2. Newton's first law says that
 - a. an object that IS NOT MOVING, or is at _____, will stay at _____, **AND**
 - b. an object that IS MOVING will keep moving with constant _____, which means at the same _____ and in the same _____, **UNLESS**
 - c. an _____ force acts on that object.
3. What is inertia?
4. What property of an object determines how much inertia it has?
5. Which of the following has more inertia?
 - a. Bowling ball or Tennis ball
 - b. Hammer or Feather

II. NEWTON'S SECOND LAW OF MOTION

6. Newton's second law of motion is also known as the LAW OF _____.
7. Newton's second law says that when an _____ force is applied to a _____, it causes it to _____.
8. The greater the force that is applied, the _____ the acceleration.
9. The lesser the force that is applied, the _____ the acceleration.
10. If the same force is applied to an object with a large mass, it will have a _____ acceleration.
11. If the same force is applied to an object with a small mass, it will have a _____ acceleration.
12. The equation that is used to solve second law problems is **$F = ma$** .
 - a. What do each of the variables mean?
 $F =$ _____ $m =$ _____ $a =$ _____
 - b. What unit of measurement must be used with each variable?
 $F =$ _____ $m =$ _____ $a =$ _____

1. How much force is needed to accelerate a 1000-kg car at a rate of 3 m/s²?

GIVEN	WORK
ANSWER:	

2. If a 70-kg swimmer pushes off a pool wall with a force of 250 N, what is her acceleration?

GIVEN	WORK
ANSWER:	

3. Find the mass of a football player who has 1250 N of force and has an acceleration of 1.5 m/s².

GIVEN	WORK
ANSWER:	

4. How much acceleration is given to a 45 kg child with a 0.75N push on a swing?

GIVEN	WORK
ANSWER:	

5. What is the mass of a car that its going 2 m/s² and then hits a tree with a force of 6000N

GIVEN	WORK
ANSWER:	

III. NEWTON'S THIRD LAW OF MOTION

13. Newton's third law of motion is also known as the LAW OF _____.

14. Newton's third law says that every time there is an _____ force, there is also a _____ force that is _____ in size and acts in the _____ direction.

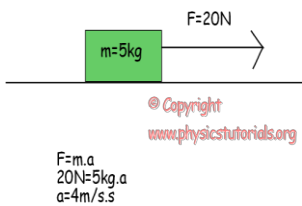
15. Newton's third law states that forces must ALWAYS occur in _____.

16. Listed below are ACTION forces. Tell the REACTION force.

- a. Your bottom pushing on your desk seat
- b. A bat hitting a baseball
- c. Your finger pressing on your phone screen while texting

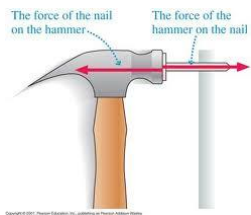
IV. UNDERSTANDING.....

Label each of the following images/descriptions below as being examples of 1st, 2nd, or 3rd law. Then EXPLAIN your answer!



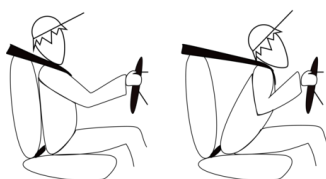
1st law 2nd law 3rd law

Explanation:



1st law 2nd law 3rd law

Explanation:



1st law 2nd law 3rd law

Explanation:



1st law 2nd law 3rd law

Explanation:

Worksheet #1: Free Body Diagrams

In each of the following situations, represent the object with a particle. Sketch all the forces acting upon the object, making the length of each vector represent the magnitude of the force. Then answer the questions for each diagram in the second column.

1. A box lies motionless on a floor.



How many forces are acting on the object?

Do the forces cancel out?

Is the object at equilibrium?

Is there a net force? If so, what direction?

2. A box slides at constant speed without friction.



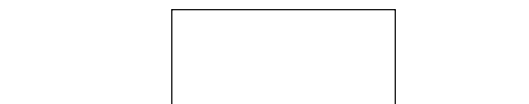
How many forces are acting on the object?

Do the forces cancel out?

Is the object at equilibrium?

Is there a net force? If so, what direction?

3. A box slows due to kinetic friction.



How many forces are acting on the object?

Do the forces cancel out?

Is the object at equilibrium?

Is there a net force? If so, what direction?