

WHICH LAW?

We're told that Sir Isaac Newton discovered some things about motion when an apple dropped on his head. Whatever "force" was behind his discoveries, we have benefited from his discoveries.

Here are his three laws of motion. You should be familiar with them. Fill in the missing words in each of the three laws. Then tell which law fits each example below.



Which law? First, Second, or Third?

- _____ 1. A frog leaping upward off his lily pad is pulled downward by gravity and lands on another lily pad instead of continuing on in a straight line.
- _____ 2. As the fuel in a rocket ignites, the force of the gas expansion and explosion pushes out the back of the rocket and pushes the rocket forward.
- _____ 3. When you are standing up in a subway train, and the train suddenly stops, your body continues to go forward.
- _____ 4. After you start up your motorbike, as you give it more gas, it goes faster.
- _____ 5. A pitched baseball goes faster than one that is gently thrown.
- _____ 6. A swimmer pushes water back with her arms, but her body moves forward.
- _____ 7. As an ice skater pushes harder with his leg muscles, he begins to move faster.
- _____ 8. When Bobby, age 5, and his dad are skipping pebbles on the pond, the pebbles that Bobby's dad throws go farther and faster than his.
- _____ 9. When you paddle a canoe, the canoe goes forward.
- _____ 10. A little girl who has been pulling a sled behind her in the snow is crying because when she stopped to tie her hat on, the sled kept moving and hit her in the back of her legs.

NEWTON'S FIRST LAW OF MOTION:

An object at _____ stays at _____
or an object that is moving at a
constant rate in a straight _____ keeps
moving at that _____ unless another
_____ acts on it.

NEWTON'S SECOND LAW OF MOTION:

The amount of _____ needed to
make an object change its _____
depends on the _____ of the object
and the _____.

NEWTON'S THIRD LAW OF MOTION:

For every _____ (or force), there is an
_____ and _____ action (or force).

Name _____

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Which law? First, Second, or Third?

1st

1. A frog leaping upward off his lily pad is pulled downward by gravity and lands on another lily pad instead of continuing on in a straight line.

3rd

2. As the fuel in a rocket ignites, the force of the gas expansion and explosion pushes out the back of the rocket and pushes the rocket forward.

1st

3. When you are standing up in a subway train, and the train suddenly stops, your body continues to go forward.

2nd

4. After you start up your motorbike, as you give it more gas, it goes faster.

2nd

5. A pitched baseball goes faster than one that is gently thrown. or 3rd

3rd

6. A swimmer pushes water back with her arms, but her body moves forward.

2nd

7. As an ice skater pushes harder with his leg muscles, he begins to move faster.

2nd

8. When Bobby, age 5, and his dad are skipping pebbles on the pond, the pebbles that Bobby's dad throws go farther and faster than his.

1st

3rd

9. When you paddle a canoe, the canoe goes forward.

1st

10. A little girl who has been pulling a sled behind her in the snow is crying because when she stopped to tie her hat on, the sled kept moving and hit her in the back of her legs.

NEWTON'S FIRST LAW OF MOTION:

An object at rest stays at rest or an object that is moving at a speed in a straight line keeps moving at that rate unless another force acts on it.

$$F = m \times A$$

NEWTON'S SECOND LAW OF MOTION:

The amount of force needed to make an object change its position depends on the mass of the object and acceleration rate.

NEWTON'S THIRD LAW OF MOTION:

For every action (or force), there is an equal and opposite action (or force).

Note - arguments for any -
Name of Newton's Law could be made for all the above.