Force Brain Pop

Laws of Motion Brain Pop

Ch. 3 Forces in Motion

Name _____

Page F58-F61

1. Newton's First Law of Motion

_____

_____

2. Inertia _____

Examples of Inertia

If you are standing in the aisle on a moving bus and all of a sudden the bus driver slams on the brakes. What will happen to you and why?

_____

_____

If you are standing in the aisle of bus that is not moving and all of a sudden the bus driver slams on the gas. What will happen to you and why?

_____

_____

Name 4 developments that scientists and auto makers have installed in cars to keep drivers and passengers safe in the event of a crash.

1) _____ 2) _____ 3) _____ 4) _____

Page F61 Investigation 1 Wrap Up

Airbag Brain Pop

1. In terms of inertia, compare a car sitting in a driveway with a car rolling along a level street.

_____

_____

2. What is Newton's first law of motion?

Smash lab airbag video

_____

_____

3) You bump into a table, and a glass vase on the table tips towards you. What made the vase tip? Why did it tip toward you and not away from you?

_____

_____

4) In a head on collision of two cars, occupants first move forward and then backward. Explain.

_____

_____

Page F65-F69

1. Newton's Second Law of Motion

_____

_____

2. Force _____

Examples of this law

If a rock is pushed down hill, what will happen to the rock as it rolls and when if at all will it stop rolling?

_____

_____

A billiard ball is rolling on a pool table, what might cause the ball to speed up, slow down or change direction?

_____

_____

Force = Mass x Acceleration

Force - Newtons Mass - Kilograms Acceleration - meters per second per second

Newton _____

_____

Calculating Force What is the force needed for a 2 kg object to accelerate at 5 m/sec^2 ?

f = m x a m = 2 kg a = 5 m/sec^2 F = 10 N

Calculating Mass What is the mass of an object that had a force of 15 N applied to it at a rate of 5m/sec^2?

f = m x a m = ? a = 5 m/sec^2 F = 15 N 15/5 = mass of 3 kg

Mass is a measure of_____

If a large force is required to get an object moving it must have a _____mass.

If a small force is required to get an object moving, it must have a _____mass.

Page F69 Investigation 2 Wrap Up

1. What is Newton's second law of motion?

_____

_____

2. When a force is applied to an object, what determines the object's accleration?

_____

_____

3) What can you infer about the force needed for a baseball pitcher to accelerate a ball at a rate of 5 m/s^2 compared to the force needed to accelerate the same ball at a rate of 10 m/sec^2 ?

_____

_____

4) Two children ride in a wagon having the mass of 20 kg. Once child has a mass of 30 kg and the other child has a mass of 40 kg. What force is needed to accelerate the wagon and its passengers at a rate of 5 m/sec^2 ?

_____

_____

Page F73-F76

Friction

_____

Friction resists the motion of one surface over another. There is _____friction between the car's tires and the road when the car is not in motion. _____begins when the car starts to move between the tires and the road.

Friction depends on:

- _____
- _____
- _____

How do skiers reduce friction?

_____

How do runners increase friction?

_____

Give examples of shoes that help athletes increase their friction

1._____ 2. _____ 3. _____ 4. _____

Does the amount of friction necessary for each sport vary?

_____

Explain the difference between a snow tire and a regular tire.

_____

Page F76 Investigation 3 Wrap Up

1. How does friction help the movement of a car? How does friction hinder the movement of a car?


car

_____

_____

2. During the winter, road crews often spread sand on icy roads. Why do they do this?

_____

_____

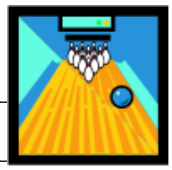
3) As a skater glides across the ice, a thin film of water forms beneath the blades of his or her skates. How might this affect the skater's speed? Explain.

_____

_____

4) How might the soles of a pair of bowling shoes be different from the soles of a pair of basketball shoes?

_____ bowl



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