

Name _____

On which surface would a travel the farthest?

Wood carpet ice concrete

_____ **is why a rolling object slows down?**

Force friction inertia momentum

Two dogs are pulling on a rope in opposite directions. Neither dog is moving the other. Which must be true?

They are using no force.

They are forcing the rope to bend.

They are creating an unbalanced force.

They are using the same amount of force. (balanced force)

In class we tested a toy car by releasing it at the top of a ramp.

Which factor would make the biggest difference in how quickly the car reaches the bottom?

the size of the tires

the length of the car

the angle of the ramp

the amount of air in the tires

The ramp we used was an example of which simple machine?

wheel and axle lever wedge inclined plane

A wheelbarrow is used to lift and move some concrete. Which simple machines make a wheelbarrow work?

screw and lever wheel and wedge lever and wheel pulley and inclined plane

This diagram shows devices called cogs. Gears are often used in machinery to change the direction of energy used in motion as shown by the arrows. A gear is which type of simple machine?



Lever

pulley

screw

wheel

A person uses a screwdriver to pry lid of a bucket. In order to fit between the lid and the bucket, the screwdriver must act as which simple machine?

Lever

pulley

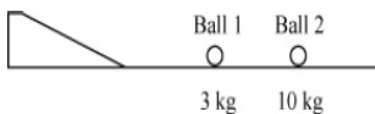
wedge

wheel

Imagine workers moving a large, heavy object onto the second floor of a house.

What simple machine can be used to make the job easier?

Which simple machine is used to raise a flag on a flagpole?



The diagram below shows an investigation. Two balls were released under identical conditions from the same point on the ramp. The balls are the exact same size, but the masses are different. Why does ball 2 stop farther away from the top of the ramp than ball 1 did?

Direction momentum friction gravity

Imagine wind blowing on a sail and moving a boat. Which type of force causes the sailboat to move?

pushing

friction

pulling

gravity

Which factor is needed in order to determine which car has the greatest momentum when traveling down an inclined plane?

size of car

direction

mass of car

friction

The Lever

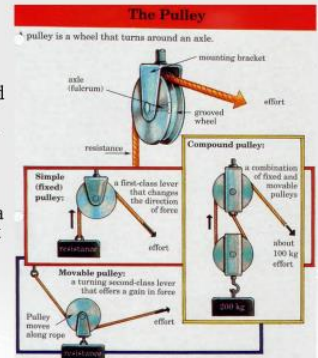
- A lever is a rigid bar that rotates around a fixed point called the fulcrum.
- The bar may be either straight or curved.
- In use, a lever has both an effort (or applied) force and a load (resistant force).



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Pulley

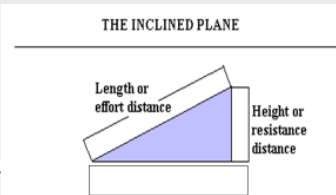
- A pulley consists of a grooved wheel that turns freely in a frame called a block.
- A pulley can be used to simply change the direction of a force or to gain a mechanical advantage, depending on how the pulley is arranged.
- A pulley is said to be a **fixed pulley** if it does not rise or fall with the load being moved. A fixed pulley changes the direction of a force; however, it does not create a mechanical advantage.
- A **moveable pulley** rises and falls with the load that is being moved. A single moveable pulley creates a mechanical advantage; however, it does not change the direction of a force.
- The mechanical advantage of a moveable pulley is equal to the number of ropes that support the moveable pulley.



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Inclined Plane

- An inclined plane is an even sloping surface. The inclined plane makes it easier to move a weight from a lower to higher elevation.



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- The wedge is a modification of the inclined plane. Wedges are used as either separating or holding devices.

Wedge

- A wedge can either be composed of one or two inclined planes. A double wedge can be thought of as two inclined planes joined together with their sloping surfaces outward.



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- The screw is also a modified version of the inclined plane.

Screw

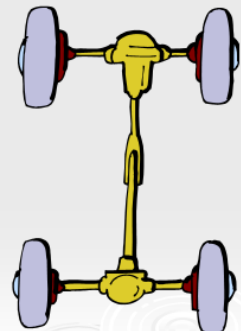
- While this may be somewhat difficult to visualize, it may help to think of the threads of the screw as a type of circular ramp (or inclined plane).



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Wheel and Axle

- The wheel and axle is a simple machine consisting of a large wheel rigidly secured to a smaller wheel or shaft, called an axle.
- When either the wheel or axle turns, the other part also turns. One full revolution of either part causes one full revolution of the other part.



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