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## Forces and Simple Machines

A force is a push or a pull that can make an object move, stop, or change direction. Forces are all around us – when you throw a ball, open a door, or ride a bike, you are using force. Some common forces include gravity, which pulls objects toward the Earth, and friction, which slows things down when two surfaces rub together. Without forces, nothing would move!

A push happens when you apply force to move something away from you, like when you push a swing or a shopping cart. A pull happens when you bring something closer, like pulling a rope or opening a drawer. Both pushes and pulls can make objects speed up, slow down, or change direction.

Gravity is an invisible force that attracts everything toward the center of the Earth. It keeps us on the ground and makes dropped objects fall. Without gravity, things would float away into space!

The strength of gravity depends on the mass of the object – heavier objects have stronger gravity.

Friction is the force that happens when two surfaces rub against each other. It can slow objects down or stop them from moving. For example, friction helps your shoes grip the ground when you walk, but it can also make it harder to slide a heavy box. Engineers often find ways to reduce friction, like using oil in machines or smooth wheels on cars.

To make work easier, people use simple machines. These include levers, pulleys, wheels and axles, inclined planes, screws, and wedges. Each one helps change the size or direction of a force. For example, a lever (like a seesaw) can lift heavy things with little effort, and a pulley can raise a flag or move heavy objects upward easily. Simple machines are found everywhere – from playgrounds to construction sites – helping us do work with less effort.

Questions:

1-What is a force, and how does it affect objects?

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2-What is the difference between a push and a pull?

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3-How does gravity affect objects on Earth?

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4-What are some examples of friction in everyday life?

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5-Name three examples of simple machines and explain how they make work easier.

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## Multiple-Choice Questions:

6-What type of force makes objects fall toward the ground?

- a) Friction
- b) Gravity
- c) Push
- d) Pull

7-Which of the following is an example of a push?

- a) Tugging a rope
- b) Pulling open a drawer
- c) Closing a door
- d) Picking up a pencil

8-What does friction do when two surfaces rub together?

- a) Speeds them up
- b) Makes them float
- c) Slows them down
- d) Turns them into heat

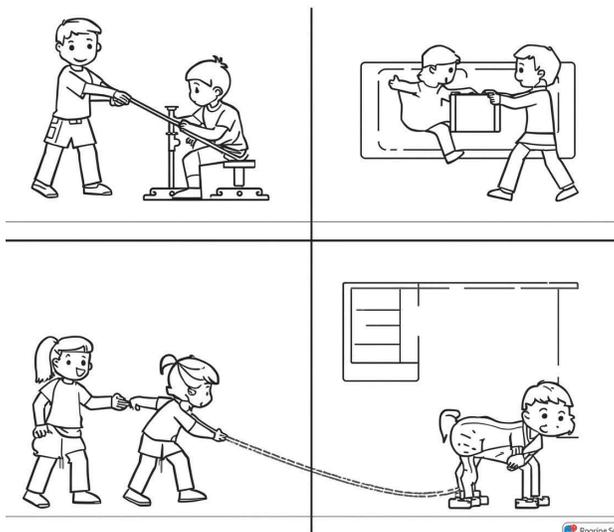
9-Which simple machine uses a rope and wheel to lift objects?

- a) Wedge
- b) Pulley
- c) Lever
- d) Screw

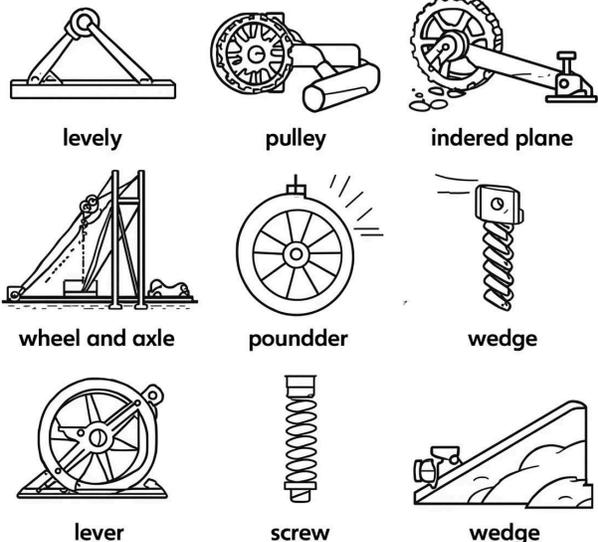
10-Why do people use simple machines?

- a) To make work harder
- b) To change colors of objects
- c) To make work easier
- d) To stop motion completely

## Forces



## Simple Machines



## **Forces and Simple Machines : Answer Key**

### **Comprehension Questions**

1-A force is a push or a pull that makes objects move, stop, or change direction.

2-A push moves something away from you, while a pull brings something closer.

3-Gravity pulls objects toward the Earth and keeps everything on the ground.

4-Friction appears when two surfaces rub together, like shoes on the ground or a box sliding on a floor.

5-Examples: levers, pulleys, inclined planes — they help make work easier by changing the direction or amount of force needed.

### **Multiple-Choice Answers**

b) Gravity

c) Closing a door

c) Slows them down

b) Pulley

c) To make work easier