Greek Orthodox Patriarchate School
Amman

Worksheet 1

Name:		Subject:	Science
Class:	Fifth grade	Date:	

Forces

- **What is a Force?**

—> A force is a push or pull that causes an object to move, speed up, slow down, stop,or change direction.

- **What can a force do to an object?**

—> A force can make an object move, speed up, slow down, stop, or change direction.

- **How is a force applied?**

—> A force is applied by pushing or pulling an object.

- **What is Newton's first law of motion?**

—> Newton's first law states (that objects at rest will stay at rest, and objects in motion will continue moving at the same speed and direction unless acted upon by an external force).

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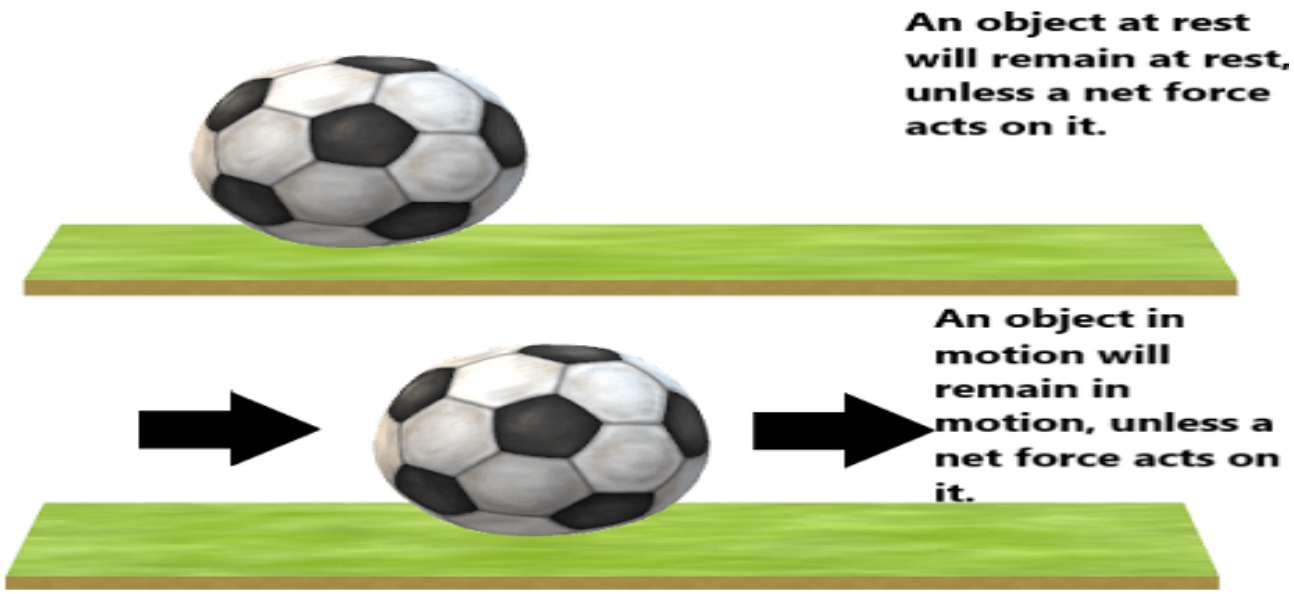


- **What are the two classes of forces?**

1. contact forces
2. non-contact forces.

- **What are contact forces?**

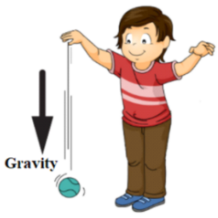
—> Contact forces require physical contact to act on an object.
Example: pushing or pulling a door.

- **What are non-contact forces?**

—> Non-contact forces act without physical contact.
Example: gravity and magnetism.

- **What type of force is used when a boy pushes a lawnmower?**

—> Pushing force.

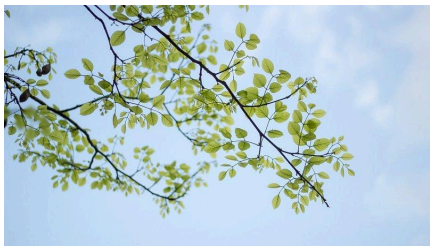


Examples of contact forces

- **What causes the branches to move in the wind?**

—> The wind force moves the branches.

- **What happens to a tennis ball when it's held underwater and released?**



—> It shoots up due to the buoyant force of water.

- **What happens when a tennis ball is held underwater and released?**

—> It shoots up to the surface.

Is Force Affected by Mass?

- **Does mass affect the force needed to accelerate an object?**

—> Yes, objects with greater mass need more force to accelerate.

- **What happens to an object when a force is applied?**

—> It will accelerate as long as the force is applied.

- **What happens when the applied force is removed?**

—> The object continues to move at a constant velocity until another force slows it down or stops it.

- **What is impulse?**

—> Impulse is the effect of a force applied over a very short period of time.

- **What tool is used to measure force?**

—> A Newton meter.

- **In what unit is force measured?**

—> Force is measured in newtons (N).

Practice

Part A: Define the Following:

1. **Force:**

   _____
   _____

2. **Newton's first law of motion:**

   _____
   _____

3. **Impulse:**

   _____
   _____

4. **contact forces:**

   _____
   _____

5. **non-contact forces:**

   _____
   _____

Part B: Fill in the Blanks:

Physical contact - stay - push - Newtons - pull - force - speed - direction

1. A force is a _____ or _____ that causes an object to move, speed up, slow down, stop, or change direction.

2. Newton's first law states that objects at rest will _____ at rest, and objects in motion will continue moving at the same _____ and _____ unless acted upon by an external force.

3. Contact forces require _____ _____ to act on an object.

4. A Newton meter is used to measure _____.
5. Force is measured in _____ (N).

Part C: Multiple Choice:

1.What type of force is used when a boy pushes a lawnmower?

a) Gravitational force
b) Magnetic force
c) Pushing force
d) Buoyant force

2.Which of the following is a non-contact force?

a) Friction
b) Tension
c) Gravity
d) Applied force

3.What happens to a tennis ball when held underwater and released?

a) It sinks further
b) It stays in place
c) It shoots up due to buoyant force
d) It dissolves

4.What happens when the applied force on an object is remove

a) It stops immediately
b) It continues to move at a constant velocity
c) It accelerates faster
d) It falls apart

5.Does mass affect the force needed to accelerate an object?

a) No, mass has no effect
b) Yes, greater mass needs more force
c) Only in a vacuum
d) Only if the object is stationary

Gravity

Notes:

- Gravity pulls objects towards the Earth.
- The greater the mass, the stronger the gravitational pull.
- Gravity is a non-contact force; objects don't need to touch.
- Gravitational Force

- **What is gravity?**

—> A force that pulls objects towards the Earth.

- **How does mass affect gravity?**

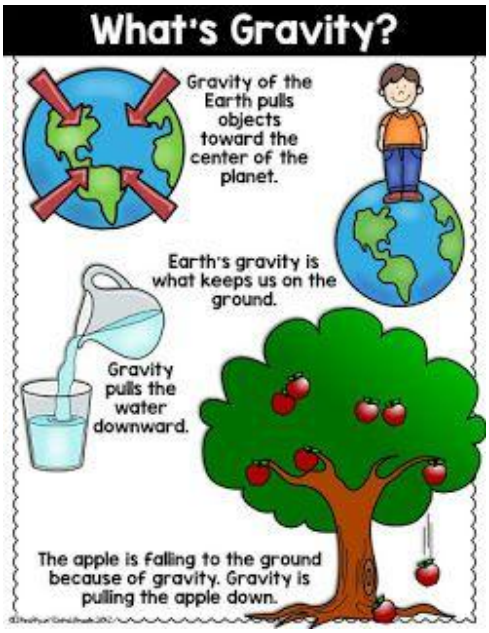
—> More mass means a stronger gravitational pull.

- **Does gravity require objects to touch?**

—> No, it's a non-contact force.

- **Why do objects fall to the ground?**

—> Because of the pull of gravity.



Friction

Notes:

- Friction opposes motion between two contacting surfaces.
- Rougher surfaces create more friction.
- Smoother surfaces create less friction.
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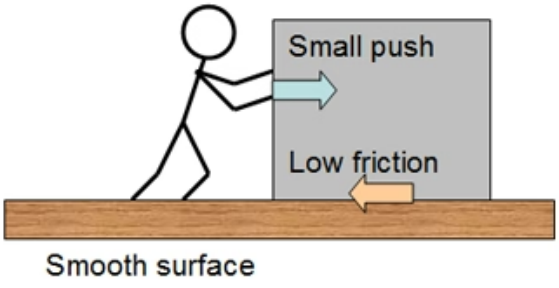

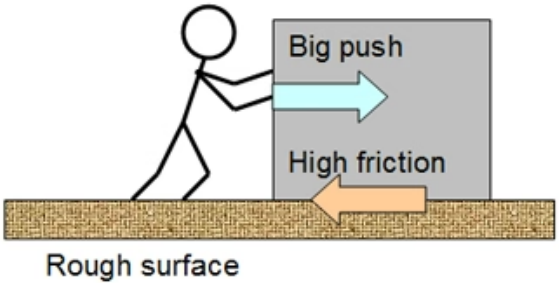

- **What is friction?**

—> Friction is the force that opposes motion between two surfaces in contact.

- **How does surface texture affect friction?**

—> Rougher surfaces create more friction, while smoother surfaces create less.

Part A: Define the Following:

1. **Gravity:**

   _____
   _____

2. **Friction:**

   _____
   _____

Part B: Fill in the Blanks:

1. Gravity is a _____ that pulls objects towards the _____.
2. The greater the _____, the stronger the gravitational _____.
3. Friction _____ motion between two _____ surfaces.
4. _____ surfaces create more friction, while _____ surfaces create less.

Part C: Multiple Choice:

1. What does gravity do?

a) Pushes objects away
b) Pulls objects towards the Earth
c) Makes objects float
d) Stops objects from moving

2. Which of the following increases gravitational pull?

a) Less mass
b) No mass
c) More mass
d) Smooth surfaces

3. Friction is:

a) A force that pulls objects to the ground
b) A force that opposes motion between surfaces
c) A type of gravity
d) A force that increases speed

4. Which surface will create the most friction?

a) Ice
b) Glass
c) Sandpaper
d) Polished metal

Balanced and Unbalanced Forces

Notes:

Balanced Forces: Equal forces acting on an object in opposite directions.
Effect: No change in the object's motion; it stays still or moves at a constant speed.

- **What are balanced forces?**

—> Equal forces acting on an object in opposite directions.

- **What happens when forces are balanced?**

—> The object remains stationary or moves at a constant speed.

- **Do balanced forces cause a change in motion?**

—> No, they do not cause any change in motion.

Notes:

- **Unbalanced Forces:** Forces that are not equal in size and opposite in direction, causing a change in an object's motion.
- **Effects of Unbalanced Forces:** They can make an object:
  a. Speed up
  b. Slow down
  c. Change direction

- **What are unbalanced forces?**

—> Forces that cause a change in the speed, direction, or shape of an object because they are not equal and opposite.

- **What can unbalanced forces do to an object?**

—> They can cause an object to speed up, slow down, or change direction.

- **Give an example of unbalanced forces.**

—> A parachutist slowing down after opening the parachute due to increased air resistance.

Part A: Define the Following:

1. balanced forces:

   _____

   _____

2. unbalanced forces:

   _____

   _____

Part B: Fill in the Blanks:

unbalanced /direction, shape/ still, constant speed / size, opposite

1. Balanced forces are equal in _____ and act in _____ directions.
2. When forces are balanced, an object will either stay _____ or move at a _____ speed.
3. Unbalanced forces cause a change in an object's _____, _____, or _____.
4. A parachutist slowing down after opening a parachute is an example of _____ forces.

Part C: Multiple Choice:

1. What happens when forces on an object are balanced?

a) The object speeds up
b) The object stays still or moves at a constant speed
c) The object changes direction
d) The object slows down

2. Which of the following is an example of unbalanced forces?

a) A book resting on a table
b) A car moving at a constant speed on a straight road
c) A ball accelerating down a hill
b) A picture hanging on a wall

3. Unbalanced forces can cause an object to:

a) Stay in place
b) Move at a constant speed
c) Remain motionless
d) Speed up, slow down, or change direction

4. If two people are pushing a box with equal force in opposite directions, the forces are:

a) Balanced
b) Unbalanced
c) Changing direction
d) Causing motion

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