

St. Andrews Scots School

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Session: 2026-2027 – Answer Key

Class: VIII

Subject: Science

Chapter : Exploring Forces

Big Question: Page No. 61

Forces help us in almost every activity we do in our daily lives. A force can move things, stop them or change their direction and shape. For example, we use force to push a door open, pull a drawer, kick a ball or lift our school bag. Even simple actions like walking, writing or squeezing a sponge involve force. Without force, we would not be able to start or stop motion, hold objects or perform tasks that require effort. Thus, forces are essential because they make movement and work possible in our surroundings.

Think Beyond: Page No. 63

Yes, both pushes and pulls can change how an object moves or looks. A push can make an object move away, speed up, slow down or change its direction. A pull can bring an object closer or stretch or bend it.

For example: Push: closing a drawer, kicking a football, pushing a swing.

Pull: opening a door, drawing water from a well, pulling a toy car with a string.

These actions show that pushes and pulls — both forms of force — can change an object's motion, direction or shape.

Self-Assessment: Page No. 64

Multiple Choice Questions: Tick (✓) the correct options:

1. (c) 2. (a) 3. (d)

Think Within: Page No. 66

Yes, some forces can act without touching the object. These are called non-contact forces. Examples include: Gravitational force: pulls objects towards the Earth (e.g. an apple falling from a tree).

Magnetic force: attracts or repels magnetic materials like iron and steel.

Electrostatic force: causes tiny pieces of paper to stick to a charged comb.

These forces act from a distance — they do not need direct contact to show their effect.

Self-Assessment: Page No. 67

A. Multiple Choice Questions:

Tick (✓) the correct options:

1. (c) 2. (b)

B. Assertion-Reason Based Questions:

1. (c) Explanation: The assertion is true because friction is the force that opposes motion and causes a rolling ball to slow down. However, the reason is false because friction acts in the opposite direction to motion, not in the same direction.

2. (d) Explanation: The assertion is false because muscular force is a contact force — it requires physical contact between objects. The reason is true since muscles of humans or animals apply this force when they push, pull or lift objects.

Self-Assessment: Page No. 70

A. Multiple Choice Questions:

Tick (✓) the correct options:

1. (b) 2. (c) 3. (b)

B. Assertion-Reason Based Questions:

1. (a) 2. (a)

SECTION-A

A. Oral Questions:

1. A push or a pull is called a force. It can make an object move, stop or change its shape or direction.
2. Example: Gravitational force pulls objects towards the Earth.
3. Example: Pressing or stretching a rubber band changes its shape.

B. Multiple Choice Questions:

Tick (✓) the correct options:

1. (c) 2. (c) C. 3. (b) 4. (c) 5. (a)

Assertion-Reason Based Questions:

1. (c) Explanation: Friction always acts opposite to the direction of motion, which is true. The reason is false because friction slows down a moving object, it does not make it move faster.
2. (a)

D. Case-Based Questions:

1. Frictional force made the ball slow down.
2. This was a contact force because it acted between the ball and the grass.
3. The magnetic force made the pins move.
4. Example: A magnet attracts iron nails or paper clips without touching them.

SECTION-B

A. Very Short Answer Questions:

1. Friction is the force that opposes the motion of an object when it moves over a surface.
2. Spring balance is used to measure weight.
3. The SI unit of force is Newton (N).

B. Short Answer Questions:

1. A spring balance measures weight by stretching a spring according to the force applied by an object's weight. The greater the weight, the more the spring stretches.
2. Objects sink when their weight is greater than the buoyant force acting on them.
3. The effects of force include:
 - Changing the state of motion (starting or stopping motion)
 - Changing the direction of motion
 - Changing the shape or size of an object
4. Mass is the amount of matter in an object and remains constant. Weight is the force with which gravity pulls an object and changes with location.

C. Long Answer Questions:

1. Three effects of force
 - Change in motion: A football starts moving when kicked.
 - Change in direction: A bat changes the direction of a moving ball.
 - Change in shape: A rubber band stretches when pulled.
2. Contact forces: Require physical contact, e.g. frictional force (sliding a book), muscular force (pushing a door).

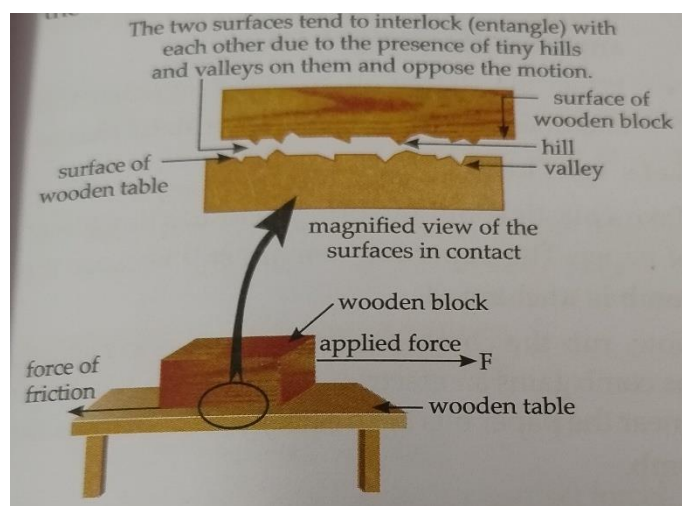
Non-contact forces: Act from a distance, e.g. gravitational force (apple falling), magnetic force (magnet attracting pins).
3. Forces are due to interaction: When two objects interact, they apply forces on each other. For example, when you push a wall, the wall pushes you back with equal force.

4. Friction helps us:

- Walk without slipping
- Hold objects firmly.
- Stop vehicles using brakes.

5. Causes of friction:

Friction is caused by the roughness of surfaces in contact. Even smooth surfaces have tiny irregularities that interlock when rubbed together, producing resistance to motion.



D. Application-Based Questions:

1. The weight of the object on the Moon = $\frac{1}{6}$ of its weight on Earth.

So, the object will weigh about 1.67 N on the Moon.

2. The frictional force stops the moving trolley. Example: The wheels of a trolley slow down and stop due to friction between the wheels and the ground.

E. Picture-Based Questions:

1. The maximum weight it can measure is 100 N.

2. The pointer shows the weight of the object as 10 N (approximate from the image).

3. The measurement is showing weight, not mass, because it is measured using a spring balance in newtons (N).

F. Life Skills:

Children should:

1. Take turns on the swing instead of pushing each other to avoid accidents.
2. Ask an adult to help push the swing gently and safely to enjoy the ride without harm.