

SCIENCE
WORKSHEET_051226
CHAPTER 05 EXPLORING FORCES

SUBJECT: SCIENCE
CLASS : VIII

MAX. MARKS : 40
DURATION : 1½ hrs

General Instructions:

- (i). All questions are compulsory.
- (ii). This question paper contains 20 questions divided into five Sections A, B, C, D and E.
- (iii). **Section A** comprises of 10 MCQs of 1 mark each. **Section B** comprises of 4 questions of 2 marks each. **Section C** comprises of 3 questions of 3 marks each. **Section D** comprises of 1 question of 5 marks each and **Section E** comprises of 2 Case Study Based Questions of 4 marks each.
- (iv). There is no overall choice.
- (v). **Use of Calculators is not permitted**

SECTION – A

Questions 1 to 10 carry 1 mark each.

- 1. A football player kicks a stationary ball, and it begins to move. Which of the following effects of force is best demonstrated in this scenario?
(a) Change in shape of an object (b) Change in speed of an object
(c) Making an object move from rest (d) Both (b) and (c)
- 2. A person is trying to push a heavy stone but the stone does not move. Which statement best describes the forces acting on the stone?
(a) The applied muscular force is greater than the force of friction.
(b) The applied muscular force is balanced by the force of friction.
(c) There is no force of friction acting on the stone.
(d) The stone has no weight, so it doesn't move.
- 3. A boy is playing with a plastic scale. He rubs the scale vigorously with a polythene sheet and then holds it near some small pieces of paper. The paper pieces are attracted to the scale. This demonstrates a force that acts:
(a) with direct physical contact. (b) without any physical contact.
(c) only when both objects are charged. (d) only when both objects are uncharged.
- 4. A cyclist stops pedalling on a flat, smooth road. Which of the following statements correctly explains why the bicycle eventually comes to a stop?
(a) The cyclist is no longer applying muscular force.
(b) The gravitational force pulls the bicycle down.
(c) The force of friction between the tyres and the road opposes the motion.
(d) The air resistance is the only force acting on the bicycle.
- 5. The weight of an object is 10 N on Earth. What is the approximate weight of the same object on the Moon?
(a) 10 N (b) 1.6 N (c) 3.8 N (d) 9 N
- 6. Which of the following describes the nature of electrostatic force?
(a) Always attractive and non-contact. (b) Always repulsive and non-contact.
(c) Attractive or repulsive and non-contact. (d) Attractive or repulsive and a contact force.
- 7. A spring balance is used to measure the force with which the Earth pulls an object towards itself. What is this force called?
(a) Mass (b) Density (c) Weight (d) Gravity

8. A book is lying on a table. According to the concepts of force, which statement is true?
- (a) No forces are acting on the book.
 - (b) Only the gravitational force is acting on the book.
 - (c) The forces acting on the book are balancing one another.
 - (d) The book has a push force applied to it.

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false.
- (d) A is false but R is true.

9. **Assertion (A):** The SI unit of both force and weight is Newton (N).

Reason (R): Weight is defined as the force with which the Earth pulls an object towards itself.

10. **Assertion (A):** The force of friction always acts in the direction opposite to the direction of motion of an object.

Reason (R): Friction arises due to the irregularities in the two surfaces that are in contact.

SECTION – B

Questions 11 to 14 carry 2 marks each.

- 11. Why do objects moving through liquids and gases need a specific shape to reduce the force of friction?
- 12. Explain how a spring balance works to measure the weight of an object.
- 13. Differentiate between a contact force and a non-contact force with one example each from the chapter.
- 14. What are the two types of static charges, and what is the rule of attraction and repulsion between them?

SECTION – C

Questions 15 to 17 carry 3 marks each.

- 15. Describe three different effects that a force can have on an object. Provide a specific example for each effect from daily life as mentioned in the chapter.
- 16. Explain how friction is both a necessity and a problem. Give one example for each.
- 17. Explain the concept of gravitational force. Is it an attractive or repulsive force? What is the special name for the gravitational force exerted by the Earth?

SECTION – D

Questions 18 carry 5 marks each.

- 18. A boy is playing with a toy car on a carpeted floor. He gives it a push, and the car moves a short distance before stopping. He then takes the same car to a polished wooden floor, gives it an identical push, and finds that it moves a much longer distance. Explain these observations in detail, defining the force responsible for the change in motion. Also, explain what causes this force to be greater on one surface compared to the other.

SECTION – E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. Case Study-1:

During a school fair, a group of students sets up a game stall. They have two trolleys, one made of wood and the other of plastic, both of the same size. The game involves players pushing a trolley over a rough surface to see how far it goes. A student, Rahul, observes that despite applying the same amount of force, the wooden trolley moves a shorter distance than the plastic one. Puzzled, he asks his teacher for an explanation. The teacher explains that the interaction between the two surfaces is causing a force that opposes the motion. This force is different for each trolley, which is why they travel different distances.



- (i) What is the name of the force that opposes the motion of the trolleys? [1]
- (ii) Is this a contact force or a non-contact force? [1]
- (iii) Which trolley experiences a greater force opposing its motion? [1]
- (iv) Based on the information, what can be inferred about the irregularities of the surfaces of the two trolleys? [1]

20. Case Study-2:

An astrophysicist is studying the gravitational pull of different celestial bodies. She has a 1 kg object that she is planning to send to various planets in our solar system. She calculates the weight of the object on Earth to be 10 N. She then projects its weight on the Moon, Mars, and Venus. To her surprise, the object's weight is different on each celestial body, even though the amount of matter in the object remains constant throughout the journey. The astrophysicist concludes that the gravitational force of each planet is unique and that the weight of an object is a direct measure of this force.



- (i) What is the fundamental difference between mass and weight? [1]
- (ii) If the weight of the 1 kg object on Mars is 3.8 N, what can you infer about the gravitational pull of Mars compared to Earth? [1]
- (iii) Does the mass of the object change as it travels from Earth to Venus? Justify your answer. [1]
- (iv) Why is the SI unit of weight also Newton? [1]

.....