INDIAN SCHOOL AL WADI AL KABIR		
CLASS: VIII	**DEPARTMENT: SCIENCE** **2026 - 2027**	**DATE: 05/11/2026**
WORKSHEET NO: 10 **WITH ANSWERS**	**TOPIC:** **EXPLORING FORCES**	**NOTE: A4 FILE FORMAT**
NAME OF THE STUDENT:	**CLASS & SEC:**	**ROLL NO.**

I. OBJECTIVE-TYPE QUESTIONS:

1. When a wooden box is suspended from a spring balance, the spring stretches because:

(a) Earth's gravity pulls the box.

(b) Earth's magnetic field attracts the spring.

(c) The frictional force acts between the box and the spring.

(d) The electrostatic force acts between the box and the spring.

2. 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.

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 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.

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. When two balloons are rubbed with a woollen cloth and brought close to each other, what does it reveal about the electrical charges on the balloons?

(a) One balloon has positive charge, and the other has no charge.

(b) Both balloons have acquired similar or like charges.

(c) The balloons lost all their charges during the experiment.

(d) The charge on the balloons cannot be determined from this observation.

7. Based on the spring balance experiments, which statement correctly describes the relationship between the mass and weight of objects?

(a) An object's mass and weight are always equal in numerical value.

(b) Mass and weight are the same quantity measured in the same units.

(c) Mass remains constant everywhere, but weight varies depending on gravitational force.

(d) Weight is always greater than mass for any object.

For question numbers 8-10, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below -

(A) Both A and R are true, and R is the correct explanation of the assertion.

(B) Both A and R are true, but R is not the correct explanation of the assertion.

(C) A is true, but R is false.

(D) A is false, but R is true.

8. Assertion (A): When an object is thrown upwards, the speed of the object reduces gradually and becomes zero at the highest point.

Reason (R): The force of gravity works in the opposite direction of the force that pushes the object upward, which causes the constant reduction in the speed of the object.

9. Assertion (A): Rubbing two certain materials together will cause formation of charges on the surfaces of those materials.

Reason (R): Electrostatic force is an example of a non-contact force.

10. Assertion (A): The SI unit of both force and weight is the newton (N).

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

II. VERY SHORT ANSWER TYPE QUESTIONS (2M):

1. Write one point of difference between contact and non-contact forces with an example.

[Hint: Contact force: The force between two objects that are in physical contact. e.g., lifting a bucket of water. (Muscular force)

Non-contact force: The force whose effect can be experienced even if the objects are not in contact. e.g., A plastic comb gets charged when it is run through dry hair. This charged comb attracts small bits of paper. (Electrostatic force)]

2. What are the effects of the application of force on an object?

[Hint: A force may make an object move from rest, may change the speed of an object if it is moving, may change the direction of motion of an object, or may bring about a change in the shape of an object.]

3. Explain how friction is both a necessity and a problem. Give examples.

[Hint: Friction helps us walk without slipping and allows vehicles to stop when brakes are applied. However, friction wears out the soles of shoes, tyres and machine parts over time. Friction produces heat and wastes energy in machines, which reduces their efficiency.]

4. Define magnetic force. Why is it considered a non-contact force?

[Hint: The force exerted by a magnet on another magnet or a magnetic material is called magnetic force. Since a magnet can exert a force from a distance without being in contact, it is called a non-contact force.]

5. What are the two types of static charges, and what is the rule of attraction and repulsion between them?

[Hint: The two types of static charges are positive and negative. The rule of attraction and repulsion is: similar (like) charges repel each other, while opposite (unlike) charges attract each other.]

III. <u>SHORT ANSWER TYPE QUESTIONS (3M):</u>

1. State the differences between mass and weight.

[Hint:

Mass	Weight
Mass is the amount of matter in an object.	**Weight is the gravitational force with which the Earth or another planet pulls an object.**
It is measured in grams (g) or kilograms (kg).	**It is measured in newtons (N).**
Its value remains the same everywhere.	**Its value can vary from place to place because gravitational force varies.**

2. Describe Archimedes Principle with an example. (WB.II.B-5)

[Hint: Archimedes, a famous Greek scientist, discovered that when an object is fully or partially immersed in a liquid, it experiences an upward force which is equal to the weight of the liquid it displaces. This is known as Archimedes' Principle. If the weight of a liquid displaced by an object is smaller than the weight of the object, the object will sink in the liquid. If the weight of the liquid displaced is equal to the weight of the object, the object will float in the liquid.]

3. What is a spring balance? How is it used to measure weight? (WB-II.B-3)

[Hint: A spring balance is a simple device used to measure weight (force). It consists of a spring fixed at one end, with a hook attached at the other end. When we hang an object from the hook, the spring stretches, and the amount of stretching gives the weight of the object. There is a scale on the balance which is marked to show the weight (force) in newtons. Usually, there is also another scale to show the corresponding values of mass in grams (g).]

4. Neha visits a swimming pool and notices that her younger brother floats easily with inflated arm bands, while their heavy metal water bottle sinks to the bottom. Explain why.

[Hint: The inflated arm bands are full of air, which has a very low density. When the boy wears them, the average density of the boy together with the bands becomes less than the density of water, so the upward buoyant force is able to support him and he floats.
The metal bottle sinks because metal is much denser than water. Its weight is greater than the buoyant force acting upwards, so the net force is downwards and it goes to the bottom of the pool.]

5. i. What is Friction? Why is it called a contact force?

[Hint: The force that comes into play when an object moves or tries to move over another surface is called the force of friction or simply friction. Friction always acts in a direction opposite to the direction in which the object is moving or trying to move. The force of friction is a contact force since it arises due to two surfaces in contact.]

ii. How does friction affect a rolling ball on different surfaces?

[Hint: Rough surfaces increase friction, stopping the ball sooner. Smooth surfaces have less friction, so the ball rolls farther.]

IV. LONG ANSWER TYPE QUESTIONS (5M):

1. Explain the various types of contact and non-contact forces.

[Hint: Muscular force is the force that is caused by the action of muscles. It is a contact force. e.g., Athletes use muscular force for running.
Frictional force is the force that opposes the motion of one body over the surface of another body. It is a contact force. e.g., A bicycle eventually comes to rest when you stop pedalling it.
Magnetic force is the force exerted by a magnet on another magnet or on magnetic materials like iron. It can be either attractive or repulsive. e.g., A magnet attracts magnetic materials.
Electrostatic force is the force exerted by a charged body on another charged body or an uncharged body. It can be either attractive or repulsive. e.g., A straw rubbed with paper attracts another straw but repels it if it has also been rubbed with a sheet of paper.
Gravitational force is the force exerted by Earth's gravity on all objects. It is always attractive. e.g., the falling of an apple from a tree or the falling of any object when we throw it up.)

V. CASE STUDY- BASED /PASSAGE-BASED QUESTIONS:

Read the following passage and answer the questions:

Force is a push or pull that affects objects and occurs when two objects interact. We use force in daily activities like opening doors, lifting weights, squeezing bottles, cutting vegetables, and shaping clay. Sports also involve force - hitting carrom strikers, kicking footballs, and catching balls. Force has both magnitude and direction. It can make stationary objects move, change an object's shape, increase or decrease speed, change direction, and bring moving objects to rest.
All physical interactions around us involve forces, making it a fundamental concept that explains how we manipulate and interact with our environment through pushes and pulls.

i) What is force?

[Hint: A push or a pull on an object is called a force.]

ii) How does an applied force change the speed of an object?

[Hint: If the applied force is in the direction of motion, the speed of the object increases. But if the force is applied in the direction opposite to the motion, then it decreases the speed of the object.]

iii) In the following situations, state the effect of the force in each case.

a) Kicking a Football

[Hint: The force makes the stationary object move and also changes its direction]

b) Squeezing a Stress Ball

[Hint: The force changes the shape of the ball, compressing it from its original round form to a flattened shape.]

c) Applying brakes on a bicycle

[Hint: The force decreases the speed of the bicycle and eventually brings the moving object to rest.]

ANSWERS FOR OBJECTIVE TYPE QUESTIONS [1 to 10]

1. **(a) Earth's gravity pulls the box.**
2. **(c) The force of friction between the tyres and the road opposes the motion.**
3. **(b) Without any physical contact.**
4. **(b) The applied muscular force is balanced by the force of friction.**
5. **(b) 1.6 N**
6. **(b) Both balloons have acquired similar or like charges.**
7. **(c) Mass remains constant everywhere, but weight varies depending on gravitational force.**
8. **(A) Both A and R are true, and R is the correct explanation of the assertion.**
9. **(B) Both A and R are true, but R is not the correct explanation of the assertion.**
10. **(A) Both A and R are true, and R is the correct explanation of the assertion.**

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