

Class 9 Science Chapter 6 – Important MCQs

How Forces Affect Motion

 **New NCERT *Exploration* | 2026–27**

These MCQs are aligned with the **new Chapter 6** and cover force, balanced and unbalanced forces, friction, inertia, Newton's three laws, momentum, $\mathbf{F = ma}$, action–reaction pairs, systems of objects and motion graphs.

SECTION A – FORCE

1. A force can cause an object to:

- A. Change its motion
- B. Change its shape
- C. Change its speed or direction
- D. All of these

 **Answer: D. All of these**

2. The SI unit of force is:

- A. Joule
- B. Newton
- C. Watt
- D. Pascal

 **Answer: B. Newton (N)**

3. Force is a quantity that has:

- A. Only magnitude
- B. Magnitude and direction
- C. Only direction
- D. Neither magnitude nor direction

 **Answer: B. Magnitude and direction**

4. Which of the following is a contact force?

- A. Gravitational force
- B. Frictional force
- C. Magnetic force
- D. Electrostatic force

 **Answer: B. Frictional force**

5. Which is a non-contact force?

- A. Friction
- B. Muscular force
- C. Gravitational force
- D. Push by hand

 **Answer: C. Gravitational force**

6. When forces acting on an object are equal and opposite, the net force is:

- A. Maximum
- B. Zero
- C. Infinite
- D. Always negative

 **Answer: B. Zero**



SECTION B – BALANCED & UNBALANCED FORCES

7. Balanced forces produce:

- A. Zero net force
- B. Maximum acceleration
- C. Continuous acceleration
- D. A change in mass

☒ **Answer: A. Zero net force**

8. If the net force on an object is zero, its acceleration is:

- A. Zero
- B. 1 m/s^2
- C. Maximum
- D. Negative

☒ **Answer: A. Zero**

9. An unbalanced force can:

- A. Change the state of motion
- B. Never change velocity
- C. Always keep an object at rest
- D. Change mass only

☒ **Answer: A. Change the state of motion**

10. Two forces of 10 N and 6 N act in opposite directions. The net force is:

- A. 16 N
- B. 4 N
- C. 60 N
- D. 0 N

✓ Answer: B. 4 N

$$\text{Net force} = 10 - 6 = 4 \text{ N}$$



SECTION C – FRICTION

11. The force that opposes relative motion between surfaces in contact is:

- A. Gravitational force
- B. Friction
- C. Magnetic force
- D. Electrostatic force

✓ Answer: B. Friction

12. Friction generally acts:

- A. In the direction of relative motion
- B. Opposite to relative motion
- C. Only upward
- D. Only downward

✓ Answer: B. Opposite to relative motion

13. Which factor affects friction between two surfaces?

- A. Nature of the surfaces
- B. Colour of the surfaces
- C. Time of day
- D. Shape of Earth

✓ Answer: A. Nature of the surfaces

14. Friction between rough surfaces is generally:

- A. Greater than between smoother surfaces
- B. Always zero
- C. Independent of surfaces
- D. Always equal to weight

✓ **Answer: A**

15. Friction is useful when:

- A. Walking
- B. Writing
- C. Applying brakes
- D. All of these

✓ **Answer: D. All of these**

16. A bicycle slows down when the rider stops pedalling mainly because of:

- A. Friction
- B. Magnetism
- C. Buoyancy
- D. Nuclear force

✓ **Answer: A. Friction**



SECTION D – INERTIA

17. Newton's first law is closely associated with:

- A. Energy
- B. Inertia
- C. Power
- D. Pressure

✓ **Answer: B. Inertia**

18. Inertia is the tendency of an object to:

- A. Change its state automatically
- B. Resist a change in its state of rest or uniform motion
- C. Increase its mass
- D. Produce energy

 **Answer: B**

19. Newton's first law states that an object at rest remains at rest unless:

- A. Its mass changes
- B. A net external force acts on it
- C. Time stops
- D. Its temperature changes

 **Answer: B**

20. When a moving bus suddenly stops, passengers tend to move forward because of:

- A. Friction
- B. Inertia of motion
- C. Gravity
- D. Pressure

 **Answer: B. Inertia of motion**

21. Seat belts are important because they:

- A. Increase the passenger's inertia
- B. Prevent all motion
- C. Restrain the passenger when the vehicle changes motion suddenly
- D. Reduce the passenger's mass

 **Answer: C**

22. Which object has greater inertia?

- A. A tennis ball
- B. A cricket ball
- C. A loaded truck
- D. A feather

✅ **Answer: C. A loaded truck**

💡 **Greater mass → greater inertia**



SECTION E – NEWTON'S SECOND LAW

23. Newton's second law relates force to:

- A. Mass and acceleration
- B. Mass and temperature
- C. Distance and time only
- D. Energy and power

✅ **Answer: A. Mass and acceleration**

24. The mathematical form of Newton's second law is:

- A. $F = ma$
- B. $F = m/a$
- C. $F = a/m$
- D. $F = m + a$

✅ **Answer: A. $F = ma$**

25. If the mass of an object is doubled while the applied force remains constant, its acceleration becomes:

- A. Double
- B. Half
- C. Four times
- D. Zero

✓ Answer: B. Half

26. If the force acting on an object is doubled while its mass remains constant, its acceleration:

- A. Becomes half
- B. Doubles
- C. Becomes zero
- D. Remains unchanged

✓ Answer: B. Doubles

27. A force of 10 N acts on a 2 kg object. Its acceleration is:

- A. 2 m/s²
- B. 5 m/s²
- C. 10 m/s²
- D. 20 m/s²

✓ Answer: B. 5 m/s²

$$a = F / m = 10 / 2 = 5 \text{ m/s}^2$$

28. A 5 kg object accelerates at 3 m/s². The force acting on it is:

- A. 8 N
- B. 15 N
- C. 2 N
- D. 1.67 N

✓ Answer: B. 15 N

$$F = ma = 5 \times 3 = 15 \text{ N}$$



SECTION F – MOMENTUM

29. Momentum is given by:

- A. $p = m + v$
- B. $p = mv$
- C. $p = m/v$
- D. $p = v/m$

✓ Answer: B. $p = mv$

30. The SI unit of momentum is:

- A. kg m/s
- B. N/m
- C. J/s
- D. kg/m

✓ Answer: A. kg m/s

31. The direction of momentum is the same as the direction of:

- A. Acceleration
- B. Velocity
- C. Friction
- D. Weight

✓ Answer: B. Velocity

32. A 4 kg object moves with a velocity of 3 m/s. Its momentum is:

- A. 1.33 kg m/s
- B. 7 kg m/s
- C. 12 kg m/s
- D. 24 kg m/s

✓ Answer: C. 12 kg m/s

$$p = mv = 4 \times 3 = 12 \text{ kg m/s}$$

33. If an object is at rest, its momentum is:

- A. Maximum
- B. Zero
- C. Negative
- D. Infinite

☒ **Answer: B. Zero**

SECTION G – NEWTON'S THIRD LAW

34. Newton's third law states that forces between two interacting objects are:

- A. Equal and opposite
- B. Equal and in the same direction
- C. Unequal and opposite
- D. Always zero

☒ **Answer: A. Equal and opposite**

35. Action and reaction forces act on:

- A. The same object
- B. Two different objects
- C. No object
- D. Only stationary objects

☒ **Answer: B. Two different objects**

36. A person can walk forward because:

- A. The person pushes the ground forward.
- B. The foot pushes the ground backward and the ground pushes the foot forward.

- C. Gravity pushes the person forward.
- D. There is no reaction force.

✓ **Answer: B**

37. When a canoeist pushes water backward, the water pushes the canoeist:

- A. Backward
- B. Forward
- C. Downward only
- D. With no force

✓ **Answer: B. Forward**

38. A rocket moves upward because:

- A. It pushes exhaust gases upward.
- B. It pushes exhaust gases downward and receives an upward reaction force.
- C. Gravity pushes it upward.
- D. There is no reaction force.

✓ **Answer: B**

39. Recoil of a gun is an example of:

- A. Newton's first law
- B. Newton's second law only
- C. Newton's third law
- D. Law of conservation of energy only

✓ **Answer: C. Newton's third law**



SECTION H – GRAVITATIONAL FORCE

40. The force with which Earth attracts an object is called:

- A. Friction
- B. Gravitational force
- C. Magnetic force
- D. Muscular force

✓ Answer: B. Gravitational force

41. Near Earth's surface, acceleration due to gravity is approximately:

- A. 1.8 m/s^2
- B. 5.0 m/s^2
- C. 9.8 m/s^2
- D. 98 m/s^2

✓ Answer: C. 9.8 m/s^2

42. The weight of an object is given by:

- A. $W = m/g$
- B. $W = mg$
- C. $W = m + g$
- D. $W = g/m$

✓ Answer: B. $W = mg$

43. The weight of a 30 kg object on Earth is approximately:

- A. 30 N
- B. 98 N
- C. 294 N
- D. 3000 N

✓ Answer: C. 294 N

$$W = mg = 30 \times 9.8 = 294 \text{ N}$$



SECTION I – SYSTEMS OF OBJECTS

44. Two connected objects can be treated as a single system when we want to find:

- A. Their common acceleration
- B. Their colours
- C. Their temperatures only
- D. Their volumes only

☒ **Answer: A. Their common acceleration**

45. For a system of connected objects, internal forces can:

- A. Cancel when considering the whole system
- B. Never cancel
- C. Always be greater than external forces
- D. Never exist

☒ **Answer: A**

46. Tension between two connected objects is an example of:

- A. An external force on the whole system
- B. An internal force within the system
- C. Gravitational force only
- D. Magnetic force

☒ **Answer: B. An internal force**



SECTION J – MOTION GRAPHS

47. The slope of a velocity-time graph represents:

- A. Force
- B. Acceleration

- C. Mass
- D. Momentum

✓ **Answer: B. Acceleration**

48. When an object is at rest, its velocity-time graph is:

- A. A horizontal line at zero velocity
- B. A vertical line
- C. A curved line
- D. A line with increasing velocity

✓ **Answer: A**

49. A horizontal velocity-time graph above the time axis indicates:

- A. Constant positive velocity
- B. Increasing velocity
- C. Zero acceleration only with zero velocity
- D. Negative velocity

✓ **Answer: A**

50. If the velocity-time graph has a positive slope, the object has:

- A. Positive acceleration
- B. Zero acceleration
- C. Negative acceleration
- D. Zero velocity

✓ **Answer: A. Positive acceleration**



SECTION K – HIGHER-ORDER MCQs

51. Two objects experience the same force. Which object will have greater acceleration?

- A. The object with greater mass
- B. The object with smaller mass
- C. Both always have the same acceleration
- D. Neither accelerates

✓ **Answer: B. The object with smaller mass**

Because:

$$a = F / m$$

52. A passenger falls forward when a moving bus suddenly stops. Which law explains this?

- A. Newton's first law
- B. Newton's second law
- C. Newton's third law
- D. Law of gravitation

✓ **Answer: A. Newton's first law**

53. A swimmer pushes water backward and moves forward. Which law explains this?

- A. First law
- B. Second law
- C. Third law
- D. Law of inertia only

✓ **Answer: C. Newton's third law**

54. A 10 kg object is acted upon by forces of 50 N to the right and 20 N to the left. Its acceleration is:

- A. 2 m/s² right
- B. 3 m/s² right
- C. 5 m/s² left
- D. 7 m/s² right

✓ Answer: B. 3 m/s^2 right

$$\text{Net force} = 50 - 20 = 30 \text{ N}$$

$$a = 30 / 10 = 3 \text{ m/s}^2 \text{ right}$$

55. If the net force on an object is zero, the object:

- A. Must be at rest
- B. Must be accelerating
- C. May be at rest or moving with constant velocity
- D. Must be moving in a circle

✓ Answer: C

56. Why do action and reaction forces not cancel each other?

- A. They are unequal.
- B. They act on different objects.
- C. They act in the same direction.
- D. One force does not exist.

✓ Answer: B. They act on different objects

57. Which situation demonstrates the usefulness of friction?

- A. Walking without slipping
- B. Sliding on ice
- C. A machine losing energy due to friction
- D. Wearing out of tyres

✓ Answer: A. Walking without slipping

58. Which statement is correct?

- A. Friction is always harmful.
- B. Friction is always useful.

- C. Friction can be useful as well as undesirable.
- D. Friction has no effect on motion.

✓ **Answer: C**

59. For the same force, if the mass of an object is increased, its acceleration:

- A. Increases
- B. Decreases
- C. Remains exactly the same
- D. Becomes infinite

✓ **Answer: B. Decreases**

60. For a fixed mass, acceleration is:

- A. Directly proportional to net force
- B. Inversely proportional to net force
- C. Independent of force
- D. Always zero

✓ **Answer: A. Directly proportional to net force**



QUICK ANSWER KEY

Q	Ans.	Q	Ans.	Q	Ans.
1	D	21	C	41	C
2	B	22	C	42	B
3	B	23	A	43	C
4	B	24	A	44	A
5	C	25	B	45	A
6	B	26	B	46	B

7	A	27	B	47	B
8	A	28	B	48	A
9	A	29	B	49	A
10	B	30	A	50	A
11	B	31	B	51	B
12	B	32	C	52	A
13	A	33	B	53	C
14	A	34	A	54	B
15	D	35	B	55	C
16	A	36	B	56	B
17	B	37	B	57	A
18	B	38	B	58	C
19	B	39	C	59	B
20	B	40	B	60	A

★ MUST-REMEMBER FORMULAS

⚡ Newton's Second Law

$$F = ma$$

🏃 Acceleration

$$a = F / m$$

📏 Momentum

$$p = mv$$

🌍 Weight

$$W = mg$$

Net Force

For forces in opposite directions:

$$\text{Net force} = \text{Larger force} - \text{Smaller force}$$

For forces in the same direction:

$$\text{Net force} = \text{Sum of forces}$$

Key Laws

Newton's First Law → Inertia

Newton's Second Law → $F = ma$

Newton's Third Law → Equal and opposite forces on two different objects

Highest-Priority Topics

-  **Force and its effects**
-  **Balanced and unbalanced forces**
-  **Friction**
-  **Inertia and Newton's First Law**
-  **Newton's Second Law and $F = ma$**
-  **Momentum**
-  **Newton's Third Law**
-  **Gravitational force and weight**
-  **Systems of objects and internal forces**
-  **Velocity-time graphs**

These are the core areas emphasized in the chapter and its practice material.