

CLASS 9 SCIENCE

CHAPTER 9 • GRAVITATION

MCQs • Multiple-Choice Practice

1. The force of attraction between any two objects having mass is called:

- A. Friction
- B. Gravitation
- C. Buoyancy
- D. Magnetism

3. The gravitational force between two bodies is inversely proportional to the:

- A. Product of their masses
- B. Square of the distance between their centres
- C. Sum of their masses
- D. Difference of their masses

5. The constant G in the universal law of gravitation is called:

- A. Acceleration due to gravity
- B. Universal gravitational constant
- C. Gravitational potential
- D. Weight constant

2. According to the universal law of gravitation, gravitational force is directly proportional to:

- A. Product of the masses
- B. Sum of the masses
- C. Distance between the masses
- D. Square of distance

4. The universal law of gravitation is expressed as:

- A. $F = ma$
- B. $F = G \frac{m_1 m_2}{r^2}$
- C. $W = mg$
- D. $P = W/t$

6. The gravitational force between two masses acts along the:

- A. Tangent to their paths
- B. Line joining their centres
- C. Vertical direction only
- D. Horizontal direction only

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CHAPTER 9 • GRAVITATION

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7. The force with which the Earth attracts an object towards its centre is called:

- A. Friction
- B. Gravity
- C. Buoyancy
- D. Thrust

9. The approximate value of acceleration due to gravity near Earth's surface is:

- A. 1.8 m/s^2
- B. 9.8 m/s^2
- C. 98 m/s^2
- D. 0.98 m/s^2

11. During ideal free fall near Earth's surface, the acceleration of an object is:

- A. Zero
- B. Approximately constant and equal to g
- C. Dependent on its mass
- D. Always negative regardless of chosen direction

8. The acceleration produced in a freely falling object due to Earth's gravity is called:

- A. G
- B. g
- C. a
- D. v

10. An object falling only under the influence of Earth's gravity is said to be in:

- A. Uniform circular motion
- B. Free fall
- C. Forced motion
- D. Rest

12. The acceleration due to gravity near Earth's surface is approximately independent of the object's:

- A. Mass
- B. Height
- C. Position
- D. Direction

CLASS 9 SCIENCE

CHAPTER 9 • GRAVITATION

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13. Mass of an object is a measure of its:

- A. Gravitational force only
- B. Amount of matter
- C. Weight only
- D. Pressure

14. The SI unit of mass is:

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

15. Weight of an object is the:

- A. Amount of matter in it
- B. Gravitational force acting on it
- C. Volume of the object
- D. Density of the object

16. The relation between weight W , mass m and acceleration due to gravity g is:

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

17. If the mass of an object is doubled at the same place, its weight:

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

18. Compared with its weight on Earth, an object's weight on the Moon is approximately:

- A. The same
- B. One-sixth
- C. Six times
- D. Zero

CLASS 9 SCIENCE

CHAPTER 9 • GRAVITATION

MCQs • Multiple-Choice Practice

19. Which quantity remains unchanged when an object is taken from Earth to the Moon?

- A. Weight
- B. Mass
- C. Gravitational force
- D. Value of g

20. Thrust is the force acting:

- A. Parallel to a surface only
- B. Perpendicular to a surface
- C. Only upward
- D. Only downward

21. Pressure is defined as:

- A. Force $\times$ area
- B. Force per unit area
- C. Area per unit force
- D. Mass per unit volume

22. The SI unit of pressure is:

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

23. For the same force, pressure increases when the area of contact:

- A. Increases
- B. Decreases
- C. Remains unchanged
- D. Becomes infinite

24. Pressure exerted by a liquid generally:

- A. Decreases with depth
- B. Increases with depth
- C. Is always zero
- D. Does not depend on depth

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CHAPTER 9 • GRAVITATION

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25. The upward force exerted by a fluid on an immersed object is called:

- A. Thrust
- B. Buoyant force or upthrust
- C. Friction
- D. Weight

27. Archimedes' principle states that the buoyant force on an immersed object is equal to the:

- A. Weight of the object
- B. Weight of the fluid displaced by the object
- C. Mass of the object
- D. Volume of the object

29. Relative density of a substance is the ratio of its density to the density of:

- A. Air
- B. Water
- C. Mercury always
- D. The substance itself

26. An object tends to float in a liquid when the buoyant force is:

- A. Less than its weight
- B. Equal to or able to balance its weight
- C. Always zero
- D. Opposite to gravity but never equal

28. A ship made of steel can float because its overall average density is:

- A. Greater than water
- B. Less than water
- C. Equal to iron only
- D. Zero

30. If the relative density of an object is less than 1, it will generally:

- A. Sink in water
- B. Float in water
- C. Have zero mass
- D. Have no buoyant force

ANSWER KEY

Chapter 9 • Gravitation

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	B	2	A	3	B	4	B	5	B
6	B	7	B	8	B	9	B	10	B
11	B	12	A	13	B	14	B	15	B
16	B	17	B	18	B	19	B	20	B
21	B	22	B	23	B	24	B	25	B
26	B	27	B	28	B	29	B	30	B

Quick Revision: Universal law of gravitation • Gravity • Free fall • Acceleration due to gravity • Mass & weight • Weight on the Moon • Thrust & pressure • Pressure in fluids • Buoyancy • Archimedes' principle • Floating & sinking • Relative density