



Class 11 Physics | Gravitation

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. The gravitational force between two masses is F . Doubling their separation makes it:

A. $F/2$ B. $2F$ C. $4F$ D. $F/4$

2. The value of g at height equal to Earth's radius is:

A. $g_0/8$ B. $2g_0$ C. $g_0/2$ D. $g_0/4$

3. At Earth's centre, assuming spherical symmetry, g is:

A. g_0 B. Zero C. Infinite D. $2g_0$

4. Gravitational potential energy of masses M and m separated by r , zero at infinity, is:

A. GMm/r^2 B. GMm/r C. $-GMm/r^2$ D. $-GMm/r$

5. Escape speed from a planet depends on the projectile's:

A. Neither mass nor launch direction for fixed location and no drag
B. Density only
C. Mass only
D. Volume only

6. A planet has twice Earth's mass and twice Earth's radius. Surface g is:

A. $g_0/4$ B. $2g_0$ C. $g_0/2$ D. g_0

7. Orbital speed in a circular orbit of radius r is:

A. GM/r^2 B. $2\pi r$ C. $\sqrt{GM/r}$ D. $\sqrt{2GM/r}$

8. If orbital radius becomes four times, circular orbital speed becomes:

A. Half B. One-fourth C. Double D. Four times

9. For circular orbits, T^2 is proportional to:

A. r B. r^2 C. $1/r$ D. r^3

10. A satellite's orbital radius becomes four times. Its period becomes:

A. Two times B. Eight times
C. Four times D. Sixteen times

11. A satellite in orbit appears weightless because it is:

A. In continuous free fall
B. At zero potential
C. Outside all gravitational fields
D. Of zero mass

12. For a circular orbit, total mechanical energy is:

A. $-GMm/(2r)$ B. 0 C. $-GMm/r$ D. $GMm/(2r)$

13. Escape speed is how many times circular speed at the same radius?

A. $\sqrt{2}$ B. 4 C. 2 D. $1/\sqrt{2}$

14. For a uniform-density Earth, g at depth $R/2$ is:

A. $g_0/2$ B. $g_0/4$ C. $2g_0$ D. 0

15. Kepler's equal-area law follows from conservation of:

A. Kinetic energy alone
B. Angular momentum
C. Linear momentum of the planet alone
D. Linear speed

ANSWER KEY — check after completing all 15 questions

1.D 2.D 3.B 4.D 5.A 6.C 7.C 8.A 9.D 10.B 11.A 12.A 13.A 14.A 15.B