



Class 12 Mathematics | Three-Dimensional Geometry

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

1. Direction cosines l, m, n satisfy:

- A. $l^2 + m^2 + n^2 = 1$ B. $l^2 + m^2 + n^2 = 0$
C. $lmn = 1$ D. $l + m + n = 1$

2. A line with direction ratios 2, -1, 2 has direction cosines:

- A. $1/3, 2/3, 2/3$ B. $2, -1, 2$
C. $2/5, -1/5, 2/5$ D. $2/3, -1/3, 2/3$

3. The line through (1, 2, 3), parallel to (2, 1, -1), is:

- A. $r = (1, 2, 3) + t(1, 2, 3)$ B. $r = (1, 2, 3) + t(2, 1, -1)$
C. $r = (2, 1, -1) + t(1, 2, 3)$ D. $r = t(1, 2, 3)$

4. For $r = (1, 2, 3) + t(2, -1, 1)$, the point at $t = 2$ is:

- A. (3, 1, 4) B. (2, 4, 6) C. (5, 4, 1) D. (5, 0, 5)

5. Lines with direction ratios (1, 2, 3) and (2, 4, 6) are:

- A. Parallel B. Always intersecting
C. Perpendicular D. Always coincident

6. Lines with direction ratios (1, 1, 0) and (1, -1, 0) have angle:

- A. 45° B. 60° C. 90° D. 0°

7. The angle between directions (1, 0, 0) and (1, 1, 0) is:

- A. 90° B. 60° C. 30° D. 45°

8. Direction ratios of the line joining (1, 2, 3) to (3, 5, 7) are:

- A. 2, 3, 4 B. 3, 5, 7 C. 4, 7, 10 D. 1, 2, 3

9. The line $(x-1)/2 = (y+1)/3 = (z-2)/4$ passes through:

- A. (2, 3, 4) B. (1, 1, 2) C. (-1, 1, -2) D. (1, -1, 2)

10. A line parallel to the z-axis has direction ratios:

- A. 1, 1, 0 B. 0, 1, 0 C. 0, 0, 1 D. 1, 0, 0

11. The shortest distance between the x-axis and $r = (0, 2, 3) + t(1, 0, 0)$ is:

- A. 2 B. 5 C. 3 D. $\sqrt{13}$

12. The lines $r = (t, 0, 0)$ and $r = (0, s, 1)$ are:

- A. Skew B. Coincident C. Intersecting D. Parallel

13. The shortest distance between $r = (t, 0, 0)$ and $r = (0, s, 2)$ is:

- A. 2 B. 0 C. 1 D. $\sqrt{2}$

14. The lines $r = (t, t, 0)$ and $r = (1+s, 1-s, 0)$ intersect at:

- A. (1, 0, 0) B. (0, 1, 0) C. (0, 0, 0) D. (1, 1, 0)

15. If a direction has $l = 3/5, m = 4/5$, then n equals:

- A. -1 B. $1/5$ C. 1 D. 0

ANSWER KEY — check after completing all 15 questions

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