CLASS 11 MATHS EXTRA QUESTIONS

Class 11 Maths Chapter 11 Introduction to Three Dimensional Geometry – Extra Questions with Answers

Extra practice questions for Class 11 Maths Chapter 11 (Introduction to Three Dimensional Geometry), beyond the textbook. These Class 11 Maths Chapter 11 important questions are handy for last-minute exam practice.

Contents

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Very Short Answer Questions (1 mark)

Q1. How many coordinate planes are there in 3D space?
Ans: 3 (xy-plane, yz-plane, zx-plane).

Q2. Write the coordinates of the origin in 3D.
Ans: (0,0,0).

Q3. Find the distance between (0,0,0) and (1,2,2).
Ans: $\sqrt{(1+4+4)} = \sqrt{9} = 3$.

Q4. On which axis does a point (0,0,z) lie?
Ans: The z-axis.

Q5. How many quadrants exist in 2D, and how many octants in 3D?
Ans: 4 quadrants in 2D; 8 octants in 3D.

Short Answer Questions (2–3 marks)

Q6. Find the distance between the points (1,2,3) and (4,6,3).
Ans: $\sqrt{[(4-1)^2+(6-2)^2+(3-3)^2]} = \sqrt{[9+16+0]} = \sqrt{25} = 5$.

Q7. Find the midpoint of the line segment joining (2,4,6) and (4,8,10) using the section formula (ratio 1:1).
Ans: Midpoint = [(2+4)/2, (4+8)/2, (6+10)/2] = (3, 6, 8).

Q8. Explain how the 3D distance formula is a natural extension of the 2D (Pythagoras-based) distance formula.
Ans: The 2D distance formula, $\sqrt{[(x2-x1)^2+(y2-y1)^2]}$, comes from applying the Pythagoras theorem to the horizontal and vertical differences between two points. In 3D, an additional dimension (z) is added, and applying the Pythagoras theorem principle again (essentially twice, once in a plane and once out of it) gives the extended formula with a third squared-difference term added under the square root.

Higher-Order Thinking / Application Questions

Q9. A drone is positioned at coordinates (2,3,10) (with z representing height above ground), and needs to fly to a charging station at (8,3,0). Find the straight-line distance it must travel, and explain what the z-coordinate difference represents physically.
Ans: Distance = $\sqrt{[(8-2)^2+(3-3)^2+(0-10)^2]} = \sqrt{[36+0+100]} = \sqrt{136} \approx 11.66$ units. The z-coordinate difference (10−0=10) represents the vertical drop in height the drone must descend as part of its straight-line path to the ground-level charging station.

Q10. Three points A(1,1,1), B(3,3,3), and C(2,2,2) are given. Using the distance formula, determine whether C lies exactly on the line segment AB (i.e., is the midpoint), and justify your answer with a calculation.
Ans: Using the midpoint (section formula with ratio 1:1) of A and B: [(1+3)/2, (1+3)/2, (1+3)/2] = (2,2,2), which exactly matches point C. This confirms C is indeed the midpoint of segment AB, lying exactly on the

line between them.

Class 11 Maths Chapter 11 – Solutions and Notes

For complete step-by-step answers and a quick summary, check the Class 11 Maths Chapter 11 Solutions and Class 11 Maths Chapter 11 Revision Notes.

See also: Chapter 2 | Chapter 3 | Chapter 4 | Chapter 5 | Chapter 6 | Chapter 7 | Chapter 8 | Chapter 9 | Chapter 10 | Chapter 11

Practice more: Chapter 2 | Chapter 3 | Chapter 4 | Chapter 5 | Chapter 6 | Chapter 7 | Chapter 8 | Chapter 9 | Chapter 10

Quick revision: Chapter 2 | Chapter 3 | Chapter 4 | Chapter 5 | Chapter 6 | Chapter 7 | Chapter 8 | Chapter 9 | Chapter 10