

CHAPTER TEST: LINES AND ANGLES (HOTS)

Mathematics | Class IX | (2026/L-A-HOTS/09/001)

Time: 1.5 Hours

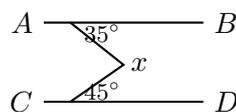
Max. Marks: 40

General Instructions:

- All questions are compulsory.
- Section A: 8 MCQs (1 mark each).
- Section B: 4 Short Answer Questions (2 marks each).
- Section C: 3 Short Answer Questions (3 marks each).
- Section D: 3 Long Answer/HOTS questions (5 marks each).

Section A: Multiple Choice Questions (1 Mark Each)

1. An angle is 14° more than its complementary angle. The measure of the angle is:
(a) 38° (b) 52° (c) 50° (d) 40°
2. If two interior angles on the same side of a transversal intersecting two parallel lines are in the ratio $2 : 3$, then the greater of the two angles is:
(a) 54° (b) 108° (c) 120° (d) 136°
3. In $\triangle ABC$, the bisectors of $\angle B$ and $\angle C$ intersect at O . If $\angle A = x$, then $\angle BOC$ is:
(a) $90^\circ - \frac{x}{2}$ (b) $90^\circ + \frac{x}{2}$ (c) $180^\circ - \frac{x}{2}$ (d) $180^\circ + \frac{x}{2}$
4. If a transversal intersects two parallel lines, the bisectors of the four interior angles enclose a:
(a) Parallelogram (b) Rhombus (c) Rectangle (d) Square
5. Two lines l and m are perpendicular to the same line n . Then l and m are:
(a) Perpendicular (b) Intersecting (c) Parallel (d) Coincident
6. If one angle of a triangle is equal to the sum of the other two, then the triangle is:
(a) Isosceles (b) Obtuse-angled (c) Equilateral (d) Right-angled
7. The angle which is five times its supplement is:
(a) 150° (b) 155° (c) 144° (d) 30°
8. In the figure, if $AB \parallel CD$, then the value of x is:



- (a) 80° (b) 100° (c) 280° (d) 260°

Section B: Short Answer Questions (2 Marks Each)

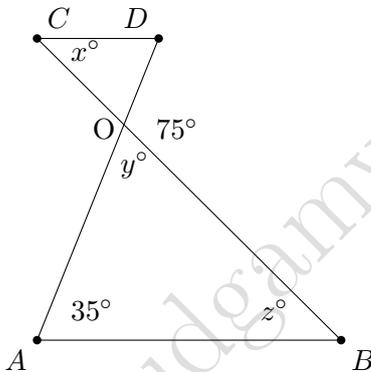
1. If the difference between two supplementary angles is 40° , find the angles.
2. In the figure, OP bisects $\angle BOC$ and OQ bisects $\angle AOC$. Show that $\angle POQ = 90^\circ$ if AOB is a straight line.
3. If a ray OC stands on a line AB such that $\angle AOC = \angle BOC$, then show that $OC \perp AB$.
4. Of the three angles of a triangle, one is twice the smallest and another is three times the smallest. Find the angles.

Section C: Short Answer Questions (3 Marks Each)

1. Prove that if two lines intersect, the bisectors of the vertically opposite angles are in the same straight line.
2. In $\triangle ABC$, $\angle B > \angle C$. If AM is the bisector of $\angle BAC$ and $AN \perp BC$, prove that $\angle MAN = \frac{1}{2}(\angle B - \angle C)$.
3. Two parallel lines l and m are intersected by a transversal p . Show that the quadrilateral formed by the bisectors of interior angles is a rectangle.

Section D: Long Answer / HOTS Questions (5 Marks Each)

1. In the given figure find x , y and z , if $AB \parallel CD$



Justify all your answers clearly.

2. In $\triangle PQR$, the side QR is produced to a point S . If the bisectors of $\angle PQR$ and $\angle PRS$ meet at point T , then prove that $\angle QTR = \frac{1}{2}\angle QPR$.
3. Prove that if the arms of two angles are respectively parallel, then the angles are either equal or supplementary. Illustrate both cases with neat diagrams.