1) (3, 3) and (7, –1) are the endpoints of a chord KL. (3, –5) and (7, –1) are the endpoints of a chord MN. Prove that the chords are perpendicular.

2) Equation of a line AB is \( y = 7x + 1 \). A line CD passes through (9, –4) and (8, –11). Prove that the lines AB and CD are parallel.

3) Slope of a line PQ is \( \frac{3}{2} \). The endpoints of QR are (6, 2) and (8, –4). Is triangle PQR a right triangle? Justify.

4) L(2, 1) is the center of a circle. M(5, –2) and N(5, 4) are any points on the circle. Are the line segments LM and LN perpendicular? Justify your answer.

5) The coordinates of S and T are (8, 9) and (6, 5) respectively. Equation of a line UV is \( 2y = 4x – 16 \). Prove that the lines ST and UV are parallel.
1) (3, 3) and (7, –1) are the endpoints of a chord KL. (3, –5) and (7, –1) are the endpoints of a chord MN. Prove that the chords are perpendicular.

\[
\text{slope of KL} = -1 \quad \text{; slope of MN} = 1 \\
\text{slope of KL} \times \text{slope of MN} = -1 \\
\text{The chords are perpendicular.}
\]

2) Equation of a line AB is \( y = 7x + 1 \). A line CD passes through (9, –4) and (8, –11). Prove that the lines AB and CD are parallel.

\[
\text{slope of AB} = 7 \\
\text{slope of AB} = \text{slope of CD} \\
\text{The lines AB and CD are parallel.}
\]

3) Slope of a line PQ is \( \frac{2}{3} \). The endpoints of QR are (6, 2) and (8, –4). Is triangle PQR a right triangle? Justify.

\[
\text{slope of PQ} = \frac{2}{3} \\
\text{slope of PQ} \times \text{slope of QR} = -1 \\
\text{Yes. Product of their slopes equals to \(-1\), the triangle PQR is a right triangle.}
\]

4) L(2, 1) is the center of a circle. M(5, –2) and N(5, 4) are any points on the circle. Are the line segments LM and LN perpendicular? Justify your answer.

\[
\text{slope of LM} = \frac{3}{4} \\
\text{slope of LM} \times \text{slope of LN} = -1 \\
\text{Yes. Product of their slopes equals to \(-1\), the line segments LM and LN are perpendicular.}
\]

5) The coordinates of S and T are (8, 9) and (6, 5) respectively. Equation of a line UV is \( 2y = 4x - 16 \). Prove that the lines ST and UV are parallel.

\[
\text{slope of ST} = 2 \quad ; \quad \text{slope of UV} = 2 \\
\text{slope of ST} = \text{slope of UV} \\
\text{The lines ST and UV are parallel.}
\]