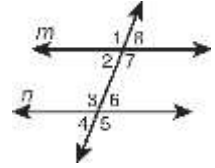


Parallel Lines III

Use the figure for Problems 1–4. Tell whether lines m and n must be parallel from the given information. If they are, state your reasoning (use a converse).



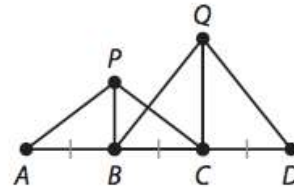
1. $\angle 5 \cong \angle 1$

2. $\angle 8 \cong \angle 6$

3. $m\angle 4 + m\angle 3 = 180$

4. $m\angle 2 + m\angle 3 = 180$

Use the diagram to find the lengths. \overline{BP} is the perpendicular bisector of \overline{AC} . \overline{CQ} is the perpendicular bisector of \overline{BD} . $AB = BC = CD$.



5. Suppose $AP = 5$ cm. What is the length of \overline{PC} ?

6. Suppose $AP = 5$ cm and $BQ = 8$ cm. What is the length of \overline{QD} ?

Write the equation described in each case. The first one is done for you.

7. a line perpendicular to $y = \frac{1}{3}x + 6$

through $(3, 2)$

slope of the new line: -3

equation: $y = -3x + 11$

8. a line perpendicular to $y = 5x - 2$

through $(-10, 6)$

slope of the new line:

equation:

9. a line perpendicular to $y = 2x + 4$

through $(4, 2)$

slope of the new line:

equation:

10. a line parallel to $y = -\frac{1}{4}x - 11$

through $(4, -5)$

slope of the new line:

equation:

11. a line parallel to $y = 3x + 4$

through $(12, 10)$

slope of the new line:

equation:

12. a line parallel to $y = 4x + 2$

through $(-1, 3)$

slope of the new line:

equation: