

State whether the following conjectures are true or false. If false, provide a counter example or change the statement to make it true.

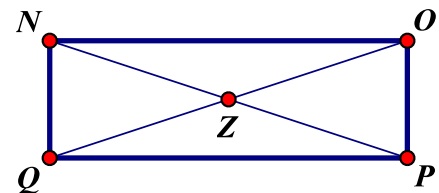
1. If a quadrilateral is a parallelogram, then two pairs of opposite sides are congruent.
2. If a quadrilateral is a parallelogram, then the diagonals bisect each other.
3. If a quadrilateral is a parallelogram, then the diagonals are perpendicular.
4. If a quadrilateral is a rectangle, then at least one angle is a right angle.
5. If a quadrilateral is a square, then the diagonals are congruent.
6. If a quadrilateral is a rhombus, then the interior triangles are all isosceles.
7. If a parallelogram is a rhombus, then the opposite sides are parallel.
8. If a quadrilateral is a parallelogram, then the diagonals bisect the opposite angles.
9. If a quadrilateral is a square, then consecutive angles are supplementary.
10. If a quadrilateral is a rectangle, then the diagonals bisect the opposite angles.

11. Rectangle NOPQ

$m\angle PNO = 25^\circ$

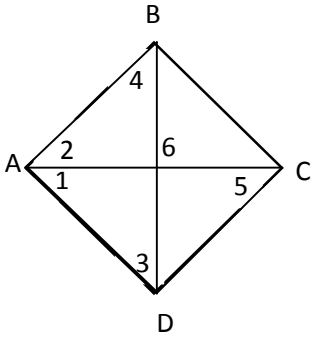
$m\angle QNO = \underline{\hspace{2cm}}$   $m\angle NPQ = \underline{\hspace{2cm}}$

$m\angle QNP = \underline{\hspace{2cm}}$   $m\angle NPO = \underline{\hspace{2cm}}$



12. Use rhombus ABCD and the given information to solve. If  $m\angle 3 = (2x + 30)^\circ$  and  $m\angle 4 = (3x - 1)^\circ$ .

Find  $x$ .



Name all the quadrilaterals (parallelogram, rectangle, rhombus, or square) that have each property.

13. All angles are congruent.
14. Both pairs of opposite sides are parallel.
15. All sides are congruent.
16. Both pairs of opposite sides are congruent.
17. It is equiangular and equilateral.

18. Given:  $DCBT$  is a rhombus;

$$\angle RTD \cong \angle FCD$$

Prove:  $\overline{RD} \cong \overline{DF}$

Statements

Reasons

