

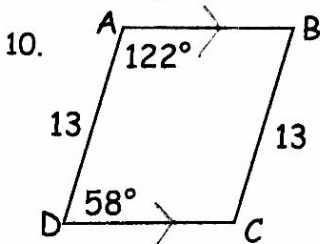
Complete with *always*, *sometimes*, or *never*.

1. A square is always a rectangle.
2. The diagonals of a rectangle are always congruent.
3. A rhombus always has consecutive congruent sides.
4. The diagonals of a rhombus always bisect each other.
5. The diagonals of a square are always perpendicular.

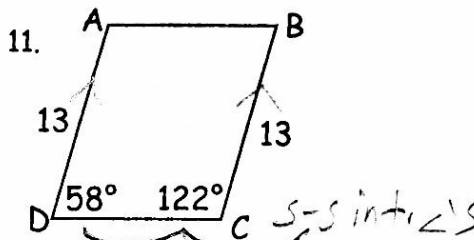
Complete each of the following statements.

6. A Square is both a rhombus and a rectangle.
7. The diagonals of a rhombus are perpendicular.
8. The median of a trapezoid is parallel to the bases and has a length equal to half the sum of the lengths of the bases.
9. A rhombus is a quadrilateral with four congruent sides.

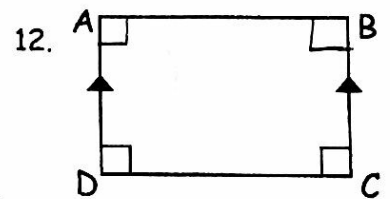
Study the markings (or Numbers) on each figure and decide whether **ABCD** must be a parallelogram. Explain your reasoning.



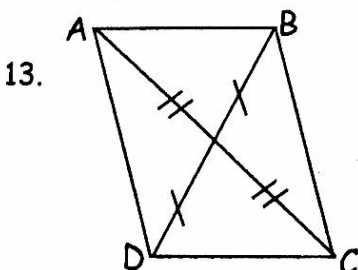
No; the pair of opp. sides that are \cong and \parallel are not the same



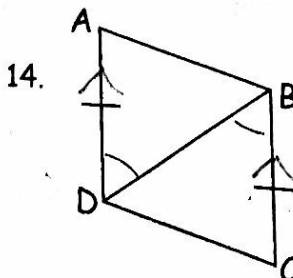
Yes; There is one pair of opp. sides that are both \cong and \parallel .



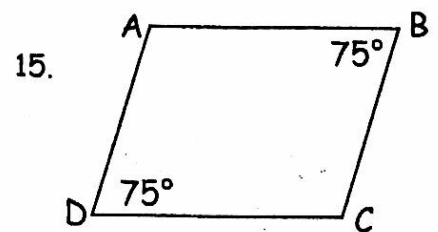
Yes; both pairs of opp. angles are \cong .



Yes; The diagonals bisect each other.



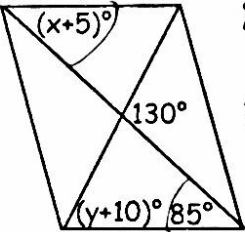
Yes; There is one pair of opp. sides that are both \cong and \parallel .



No; we only know that 1 pair of opp. \angle 's are \cong .

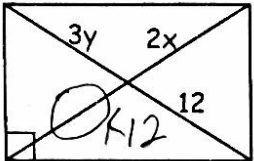
Write an equation and solve for each value in each of the following parallelograms.

Explain your reasoning.

16.  $85 = x + 5$
 $80 = x$
 $85 + y + 10 = 130$
 $y + 95 = 130$
 $y = 45$

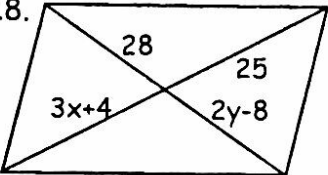
$x = 80$ because _____

$y = 45$ because _____

17.  $2x = 12, x = 6$
 $3y = 12$
 $y = 4$

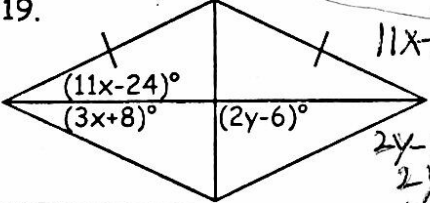
$x = 6$ because Diagonals bisect each other.

$y = 4$ because Diagonals bisect each other

18.  $3x + 4 = 25$
 $3x = 21$
 $x = 7$
 $2y - 8 = 28$
 $2y = 36$
 $y = 18$

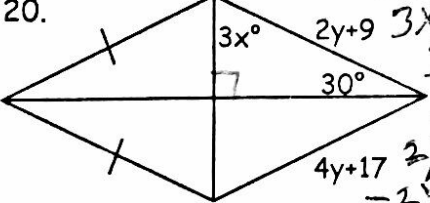
$x = 7$ because Diagonals bisect each other

$y = 18$ because _____

19.  $11x - 24 = 3x + 8$
 $8x = 32$
 $x = 4$
 $2y - 6 = 96$
 $2y = 96$
 $y = 48$

$x = 4$ because Diagonals bisect angles (in a Rhombus)

$y = 48$ because Diagonals are perpendicular (in a Rhombus)

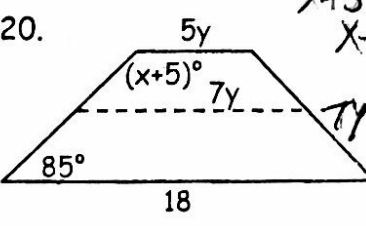
20.  $2y + 9$
 $3x + 30 = 90$
 $3x = 60$
 $x = 20$
 $2y + 9 = 4y + 17$
 $-2y = 8, y = -4$

$x = 20$ because _____

$y = -4$ because Opp. sides are \cong

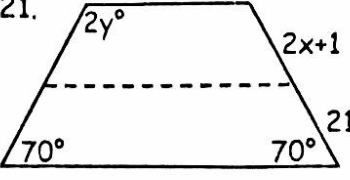
Write an equation and solve for each value in each of the following trapezoids.

The median is drawn as a dashed line. Explain your reasoning.

20.  $x + 5 + 85 = 180$
 $x + 90 = 180$
 $x = 90$
 $7y = \frac{1}{2}(5y + 18)$
 $14y = 5y + 18$
 $9y = 18$
 $y = 2$

$x = 90$ because Consec. \angle 's are supp. along the legs of a trapezoid

$y = 2$ because the median length is the average of the bases.

21.  $2x + 1 = 21$
 $2x = 20$
 $x = 10$

$x = 10$ because the median bisects the legs.

$y = 55$ because consecutive \angle 's are supp. along the legs of a trapezoid

$70 + 2y = 180$
 $2y = 110, y = 55$