# Unit 6 Review Sheet Answers

# Problems 1-5:

- 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.

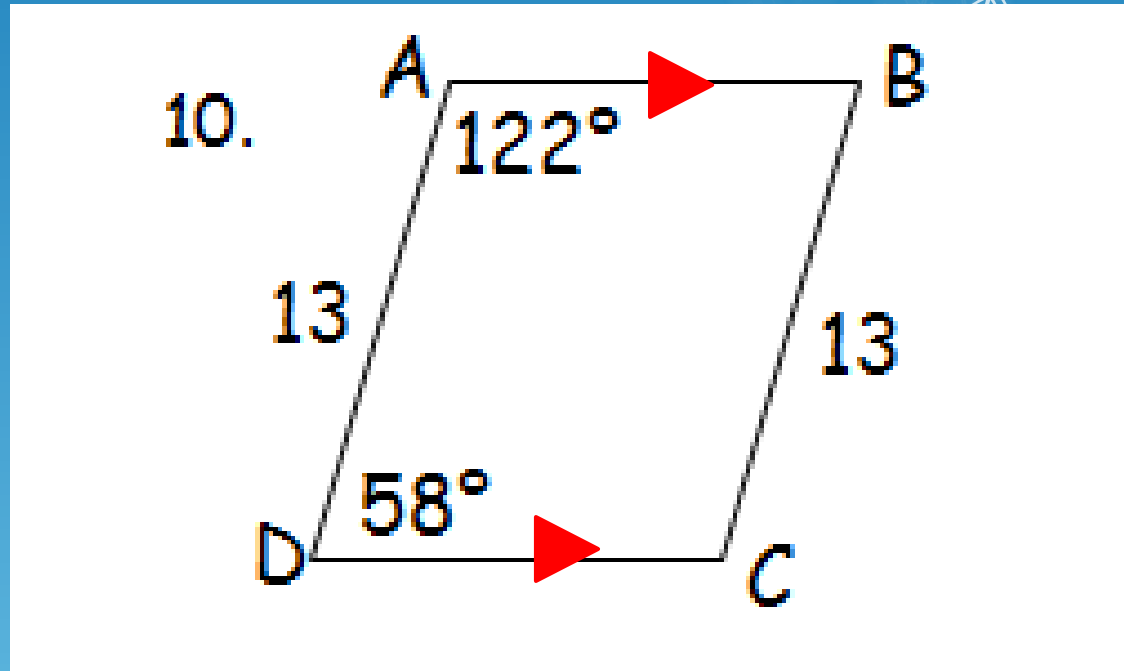5. The diagonals of a square are __Always__ perpendicular.

# Problems 6-9:

- Complete each of the 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 <u>Rhombus</u> is a quadrilateral with four congruent sides.

# Problems 10-15:

- Study the markings on each figure and decide whether ABCD must be a parallelogram. Explain your reasoning.
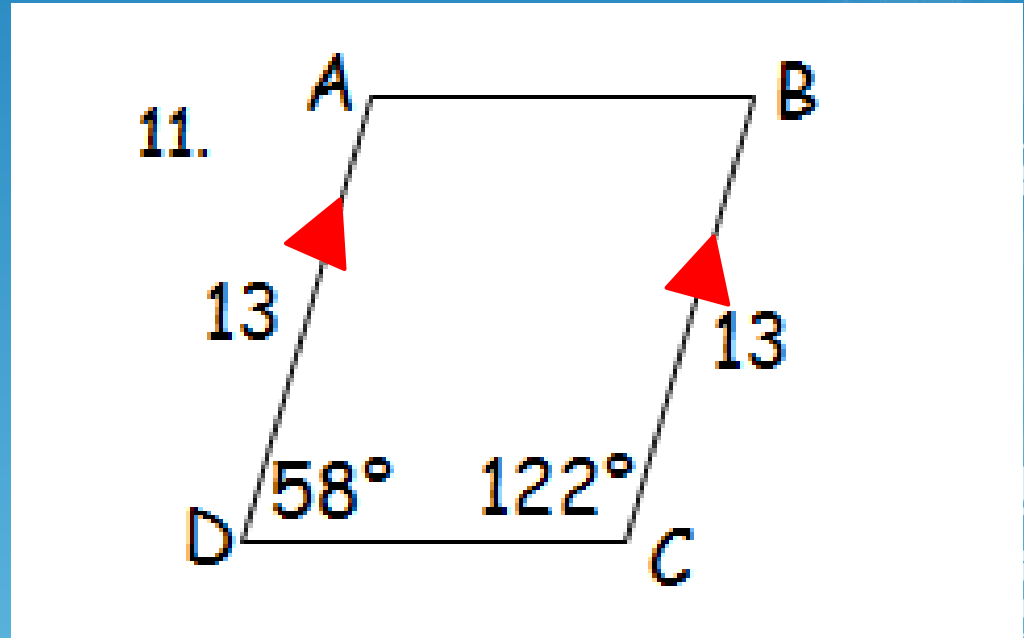
**No; The pair of opp. Sides that are congruent and parallel are not the same.**

# Problems 10-15:

- Study the markings on each figure and decide whether ABCD must be a parallelogram. Explain your reasoning.
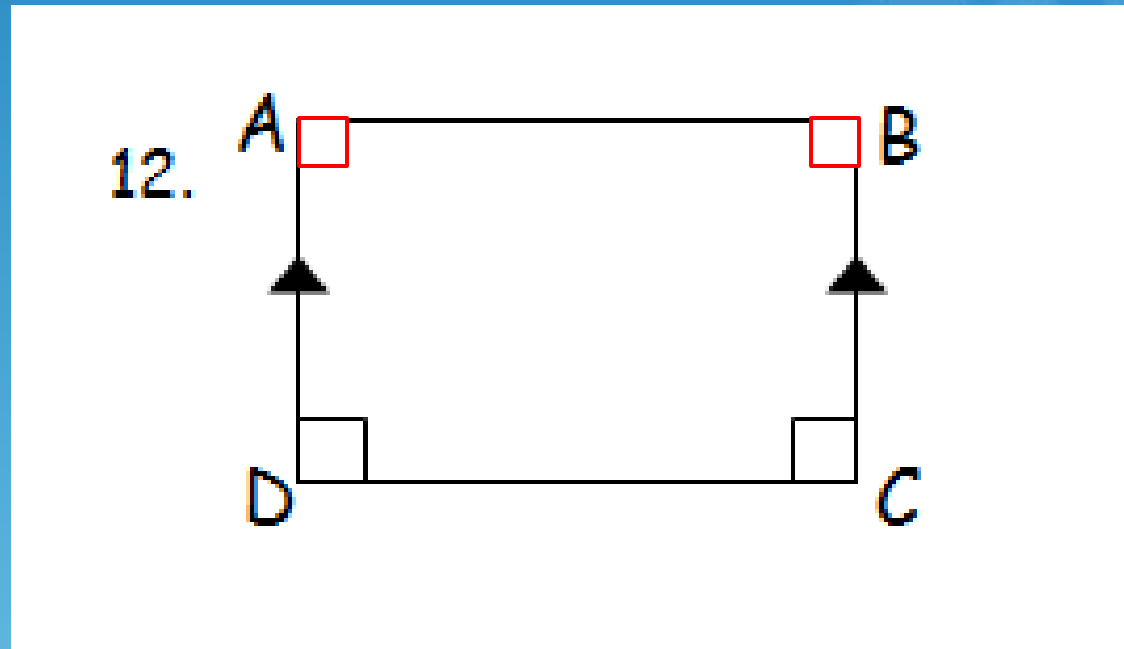
**Yes; There is one pair of opposite sides that are both parallel and congruent.**

# Problems 10-15:

- Study the markings on each figure and decide whether ABCD must be a parallelogram. Explain your reasoning.
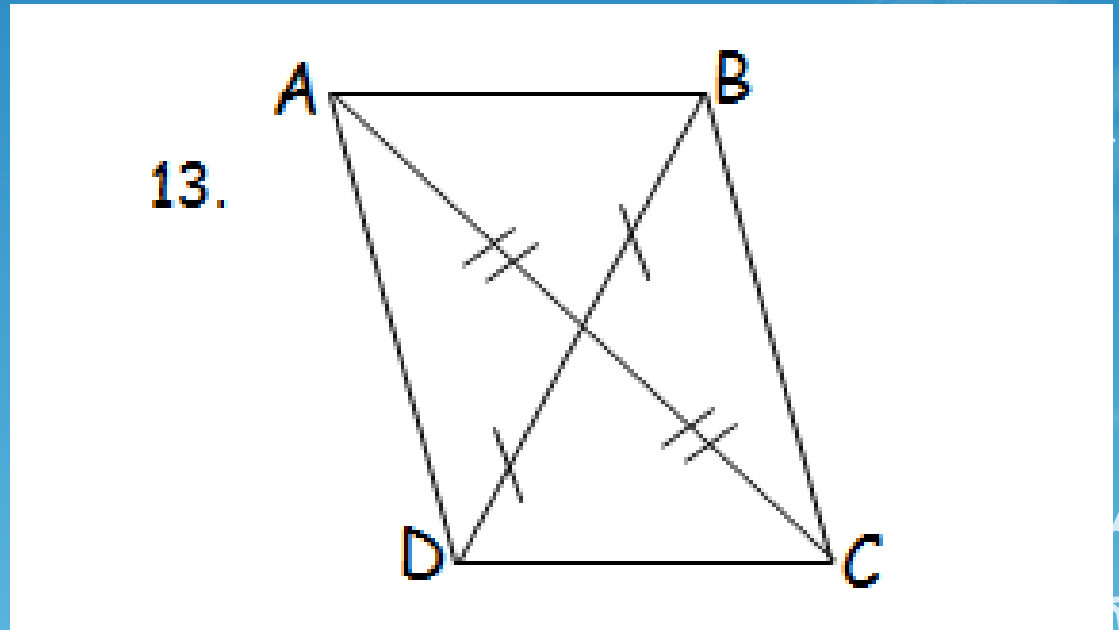
**Yes; Both pairs of opposite angles are congruent.**

# Problems 10-15:

- Study the markings on each figure and decide whether ABCD must be a parallelogram. Explain your reasoning.
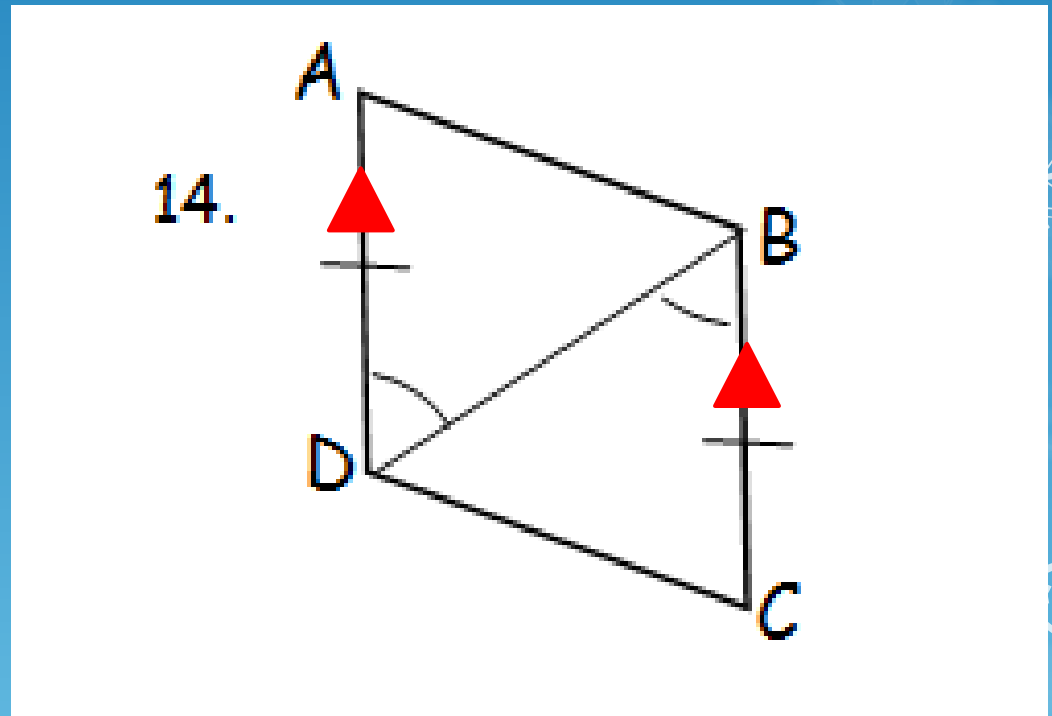
**Yes; The diagonals bisect each other.**



13.

# Problems 10-15:

- Study the markings on each figure and decide whether ABCD must be a parallelogram. Explain your reasoning.
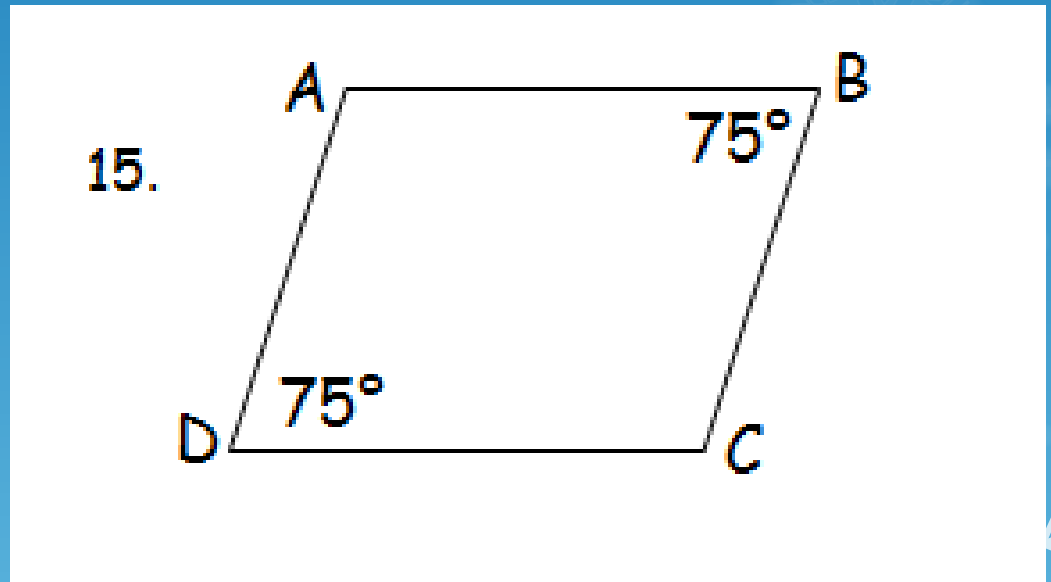
**Yes; There is one pair of opposite sides that are both parallel and congruent.**

# Problems 10-15:

- Study the markings on each figure and decide whether ABCD must be a parallelogram. Explain your reasoning.

**No; We only know that one pair of opposite angles are congruent.**

# Problems 16-20:

- Write and equation and solve for each of the following parallelograms. Explain your reasoning.

**For x:**

$$x + 5 = 85$$
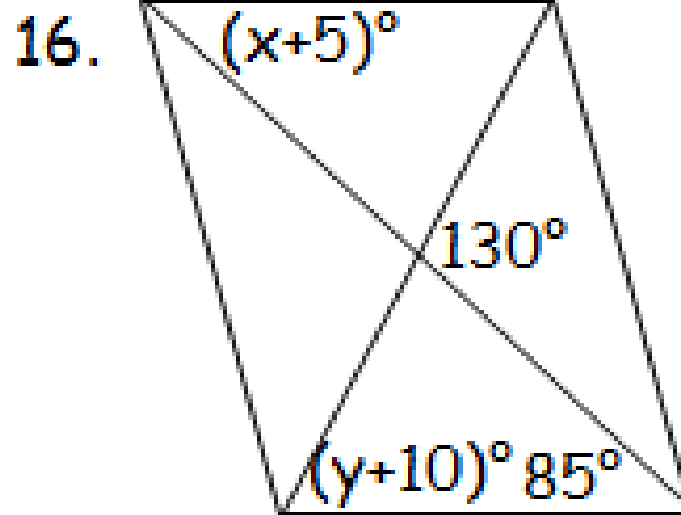$$x = 80$$

16.

$(x+5)°$

$130°$

$(y+10)° \ 85°$

**For y:**

$$y + 10 + 85 = 130$$
$$y + 95 = 130$$
$$y = 35$$

**No explanation required for these.**
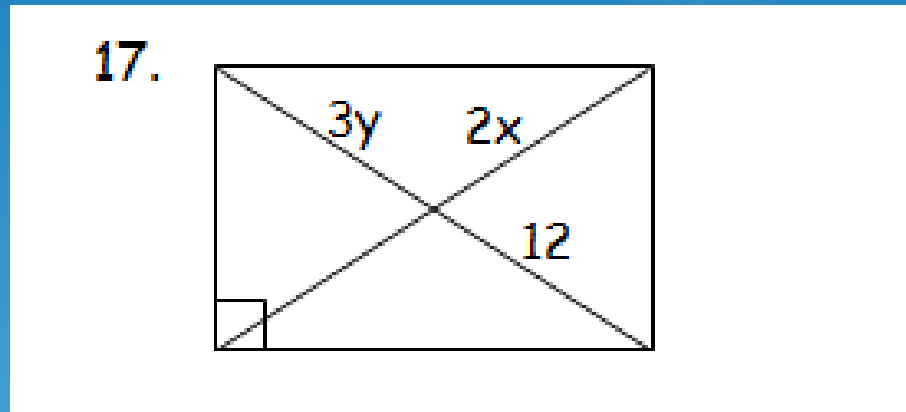
# Problems 16-20:

- Write and equation and solve for each of the following parallelograms. Explain your reasoning.

**For x:**
$$2x = 12$$
$$x = 6$$

17.



**Why: Because diagonals are congruent and bisect each other.**

**For y:**
$$3y = 12$$
$$y = 4$$

**Why: Because diagonals bisect each other.**

# Problems 16-20:

- Write and equation and solve for each of the following parallelograms. Explain your reasoning.

**For x:**

$$3x + 4 = 25$$
$$3x = 21$$
$$x = 7$$

18.



**Why: Because diagonals bisect each other.**
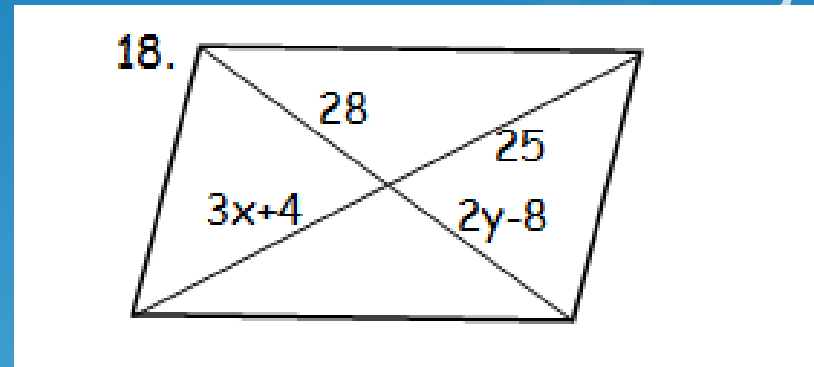
**For y:**

$$2y - 8 = 28$$
$$2y = 36$$
$$y = 18$$

**Why: Because diagonals bisect each other.**

# Problems 16-20:

- Write and equation and solve for each of the following parallelograms. Explain your reasoning.

**For x:**

$$11x - 24 = 3x + 8$$
$$8x = 32$$
$$x = 4$$
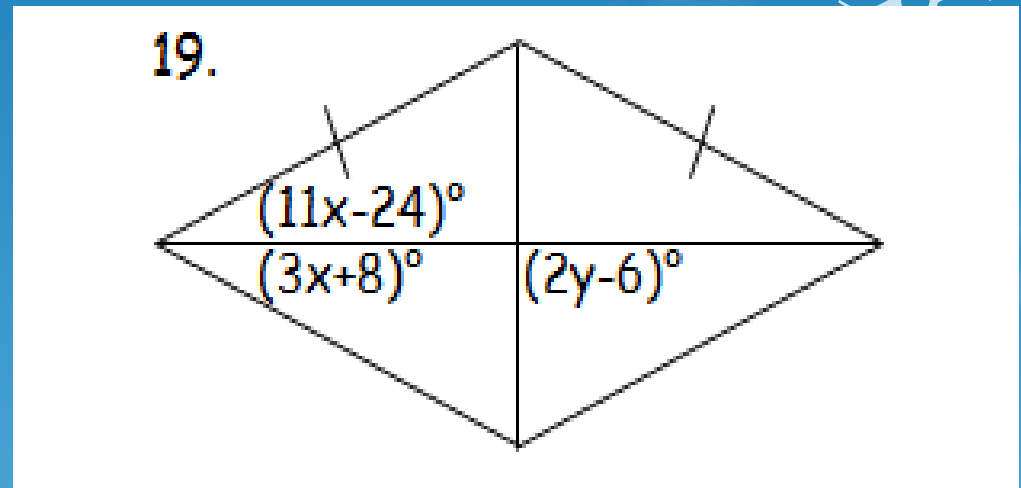
**Why: Because diagonals bisect angles (in a Rhombus)**

19.



**For y:**

$$2y - 6 = 90$$
$$2y = 96$$
$$y = 48$$

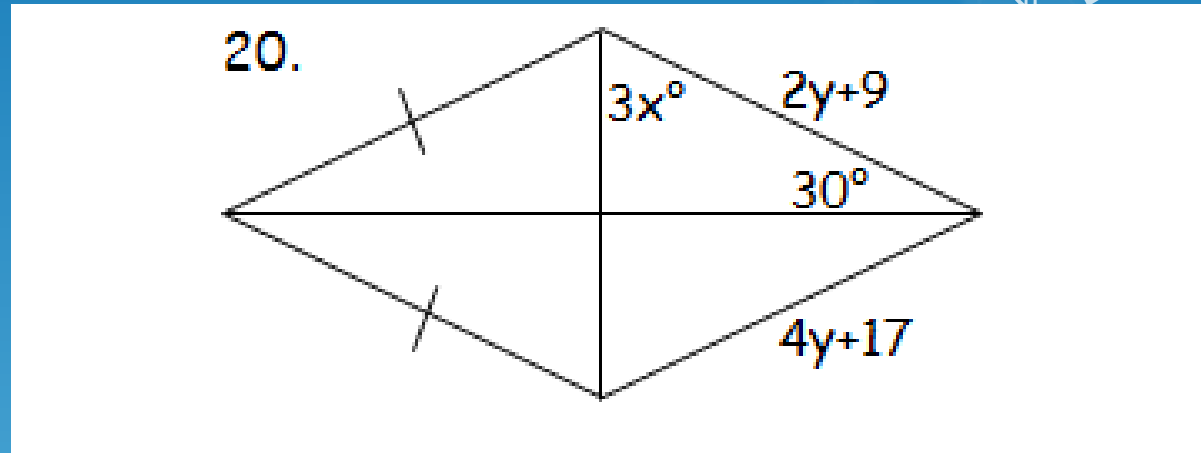**Why: Because diagonals are perpendicular (in a Rhombus)**

# Problems 16-20:

- Write and equation and solve for each of the following parallelograms. Explain your reasoning.

**For x:**

$$3x + 30 = 90$$
$$3x = 60$$
$$x = 20$$

20.

3x°   2y+9

30°

4y+17

**Why: Because diagonals perpendicular (in a Rhombus)**

**For y:**

$$2y + 9 = 4y + 17$$
$$-2y = 8$$
$$y = -4$$

**Why: Because opposite Sides are Congruent**

# Problems 21-22:

- Write and equation and solve for each of the following Trapezoids. Explain your reasoning.
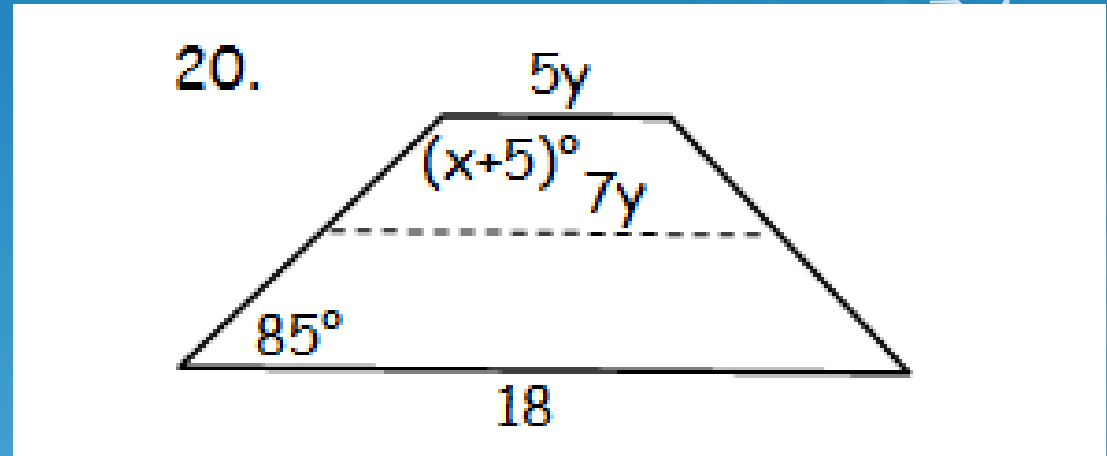
**For x:**

$$x + 5 + 85 = 180$$
$$x + 90 = 180$$
$$x = 90$$

**Why: Because consecutive angles are supplementary along the legs of a trapezoid**



20.

**Why: Because the median length is equal to the average of the bases.**

**For y:**

$$7y = \frac{1}{2}(5y + 18)$$
$$14y = 5y + 18$$
$$9y = 18$$
$$y = 2$$

# Problems 21-22:

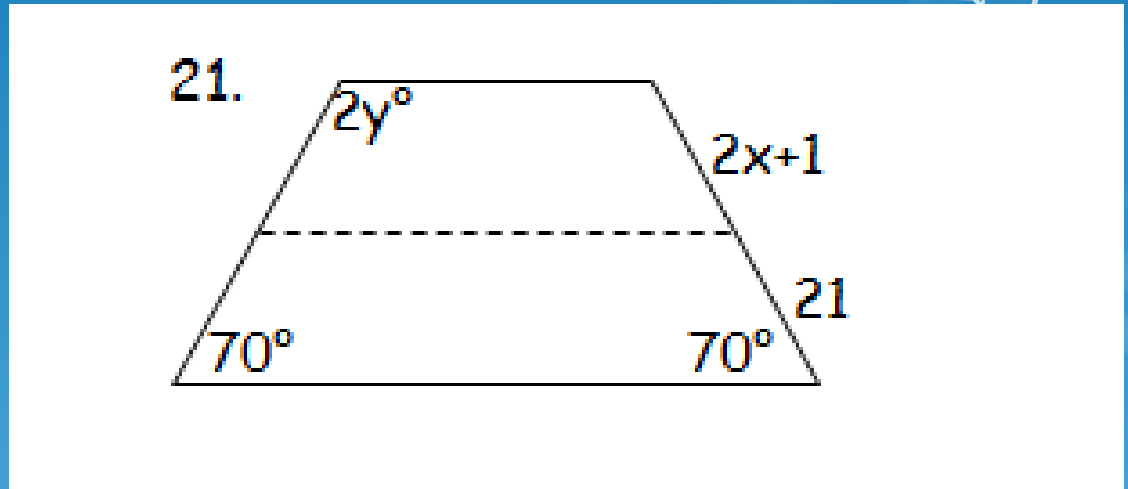- Write and equation and solve for each of the following Trapezoids. Explain your reasoning.

## For x:

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

**Why: Because the median bisects the legs of a trapezoid**



**21.**

$2y°$

$2x+1$

$21$

$70°$

$70°$

**Why: Because consecutive angles are supplementary along the legs of a trapezoid**

## For y:

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