

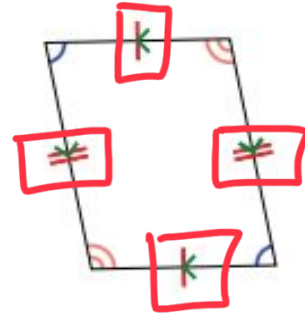
Geometry Chapter 6 Pre-Test

1.) (2.5 pts each, 5 pts total) Name each of the following shapes. Place a check beside each category of shape for which it qualifies.

a) Name of Shape: **Parallelogram**

This shape also fall under the category of:

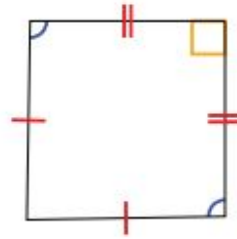
- kite
- parallelogram
- quadrilateral
- rectangle
- rhombus
- square
- trapezoid



b) Name of Shape:

This shape also fall under the category of:

- kite
- parallelogram
- quadrilateral
- rectangle
- rhombus
- square
- trapezoid



2.) (5 pts total) Determine the most exact name for the quadrilateral with the given vertices.

$(-3, -2), (-3, 1), (0, 2), (0, -1)$

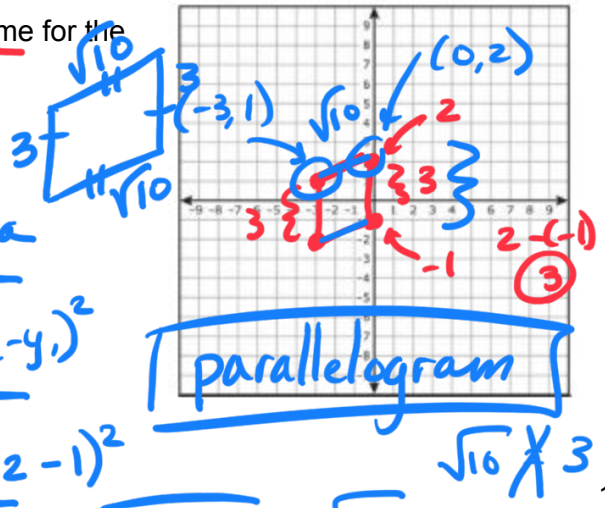
$(x, y)$

Distance formula

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$\sqrt{(0 - (-3))^2 + (2 - 1)^2}$$

$$\sqrt{3^2 + 1^2} = \sqrt{9 + 1} = \sqrt{10}$$



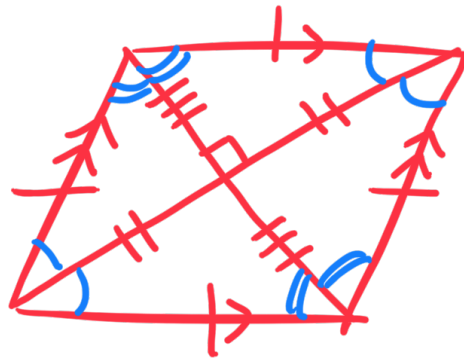
**parallelogram**

$\sqrt{10} \times 3$

3.) (2.5 pts each, 5 pts total) Draw out the indicated shape. Include congruent sides, congruent angles, and congruent diagonal lengths where necessary. Indicate all appropriate  $90^\circ$  angles and parallel lines as well.

a) rhombus

4 sides equal



Diagonals

- perpendicular bisectors

- angle bisectors

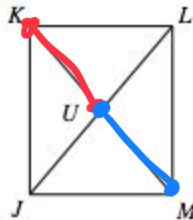
b) parallelogram

4.) (5 pts each, 15 pts total) Find the value of  $x$  in each parallelogram.

a)

$$KU = 3x + 3$$

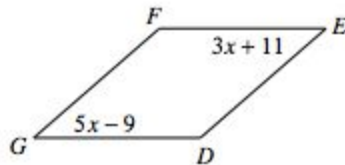
$$UM = 4x - 4$$



$$KM = 2UM$$

Opposite angles congruent

b)



Parallelograms -  
Diagonals bisect

$$\overline{KU} = \overline{UM}$$

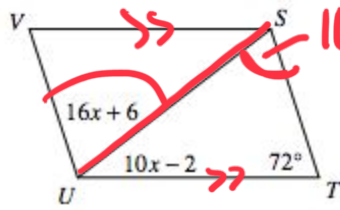
$$\begin{array}{r} \downarrow \quad \downarrow \\ 3x + 3 = 4x - 4 \\ -3x \quad -3x \end{array}$$

$$3 = x - 4$$

$$\begin{array}{r} +4 \quad +4 \end{array}$$

$$\boxed{7 = x}$$

c)



180°  
Alternate interior angles

$$16x + 6 + 10x - 2 + 72 = 180^\circ$$

$$26x + 76 = 180$$

$$-76 \quad -76$$

$$\frac{26x}{26} = \frac{104}{26} \quad \boxed{x = 4}$$

5.) (5 pts each, 15 pts total) Use your knowledge of the properties of rectangles to answer each of the following.

a) Find  $\angle 1$ ,  $\angle 2$ , and  $\angle 3$ .

$$\angle 1 =$$

$$\angle 2 =$$

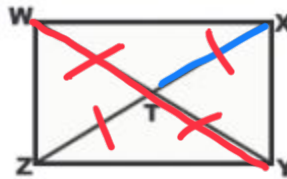
$$\angle 3 =$$



Diagonals are all bisected and equal

b)  $WY = 4x + 10$   
 $TX = 3x - 2$

Find  $x$ .



$$\overline{WY} = 2\overline{TX}$$

$$4x + 10 = 2(3x - 2)$$

$$4x + 10 = 6x - 4$$

$$-4x \quad -4x$$

$$10 = 2x - 4$$

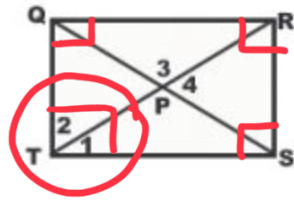
$$+4 \quad +4$$

$$\frac{14}{2} = \frac{2x}{2}$$

$$\boxed{7 = x}$$

Rectangle All angles are congruent

c)  $\angle 1 = 3x + 4$   
 $\angle 2 = 2x + 6$   
 $\angle 3 = 7x - 2$



Find x.

$$\begin{aligned} \angle 1 + \angle 2 &= 90^\circ \\ \downarrow \quad \downarrow \\ 3x + 4 + 2x + 6 &= 90 \\ 5x + 10 &= 90 \\ -10 \quad -10 \\ \hline 5x &= 80 \\ \frac{5x}{5} &= \frac{80}{5} \end{aligned}$$

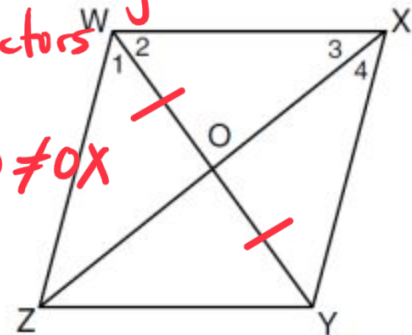
$x = 16$

6.) (5 pts each, 10 pts total) Use your knowledge of the properties of rhombi to answer each of the following.

a) Find x.

$WO = 4x + 8$   
 $OX = 3x + 12$   
 $OY = 5x - 3$

Rhombus  $\rightarrow$  Parallelogram  
 Diagonals bisectors

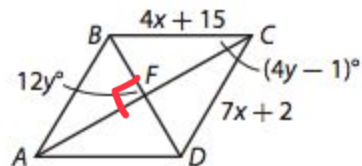


$WO = OY$     $WO \neq OX$

$$\begin{aligned} 4x + 8 &= 5x - 3 \\ -4x \quad -4x \\ \hline 8 &= x - 3 \\ +3 \quad +3 \\ \hline 11 &= x \end{aligned}$$

b) Find x and y.

Rhombus  
 perpendicular bisectors





7.) (5 pts, 10 pts total) Use your knowledge of the properties of trapezoids to answer each of the following.

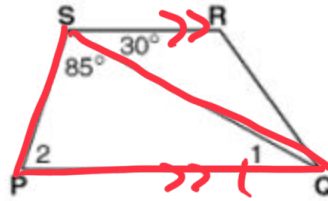
a) Find  $\angle 1$  &  $\angle 2$

$\angle 1 = 30^\circ$

$85 + 30 + \angle 2 = 180^\circ$

$115 + \angle 2 = 180$   
 $- 115 \quad - 115$

$\angle 2 = 65$



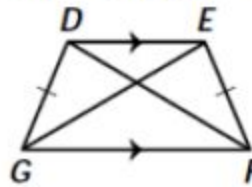
$30^\circ$  Alt. Int. Angles

b) Find x.

Trapezoid diagonals are congruent

$DF = EG$   
 $\downarrow \quad \downarrow$   
 $4x = 2x + 16$

$DF = 4x, EG = 2x + 16$



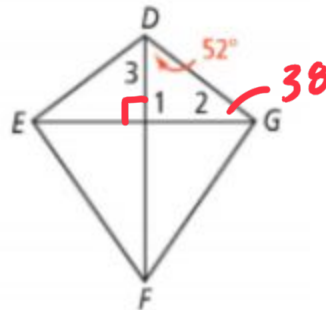
8.) (5 pts, 10 pts total) Use your knowledge of the properties of kites to answer each of the following.

a) Find the indicated angles.

$\angle 1 = 90^\circ$

$\angle 2 = 38$

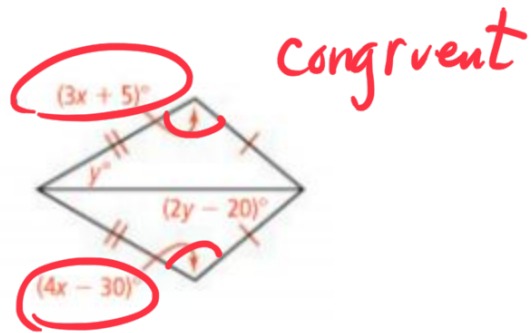
$\angle 3 = 52$



Diagonal is also an angle bisector!

# Kite

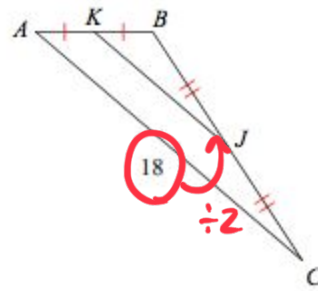
b) Find x and y.



9.) (5 pts each, 10 pts total) Find the length of variable indicated.

a) Find KJ <sup>KJ</sup> Midsegment

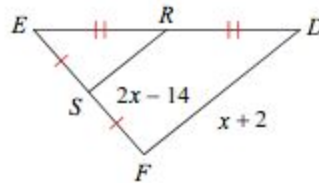
$$\overline{KJ} = 9$$



b) Find x.

$$2SR = FD$$

$$2(2x - 14) = x + 2$$



10.) (5 pts) Is the point (2,-2) along the line forming a perpendicular bisector of the line segment AB if point A is (-2,3) and point B is (6,-7)? Show your work.

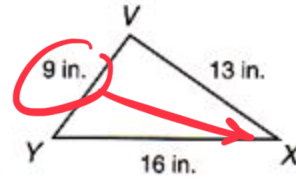
Distance Formula



11.) (2.5 pts each, 5 pts total) Use your knowledge of triangles to answer each of the following.

a) Order the angles within the triangle from least to greatest:

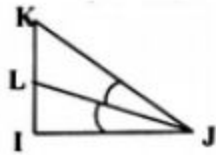
*X, Y, V*



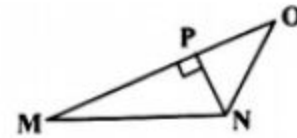
b) Can a triangle with the lengths 6 cm, 7 cm, and 14 cm exist? Clearly state why or why not.

*Sum smallest sides > largest side  
 $6 + 7 > 14$   
 false Now!*

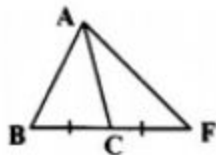
12.) (5 pts) Label each of the following.



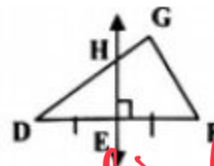
*Angle bisector*



*Altitude*



*median*



*perpendicular bisector*