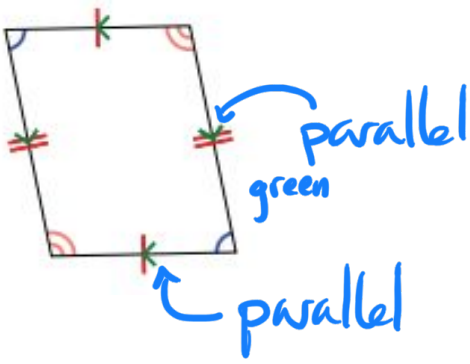
Geometry Chapter 6 Pre-Test

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:

This shape also fall under the category of:

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



kite - adjacent sides congruent

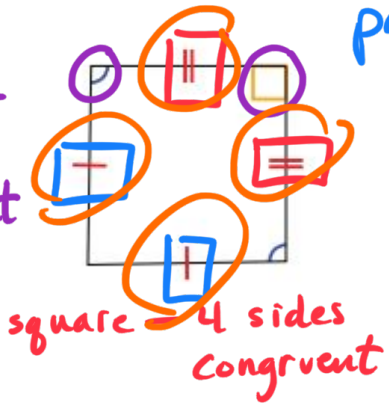
parallelogram - opposite sides equal and parallel lines

b) Name of Shape: kite

This shape also fall under the category of:

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

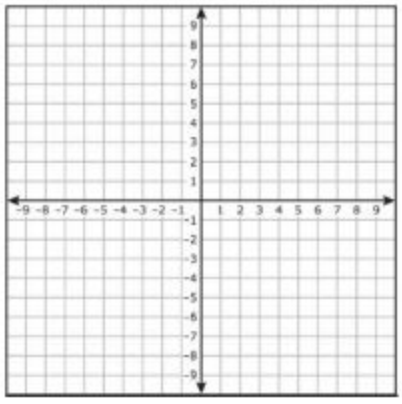
rectangle - 4 angles congruent



square - 4 sides congruent

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

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



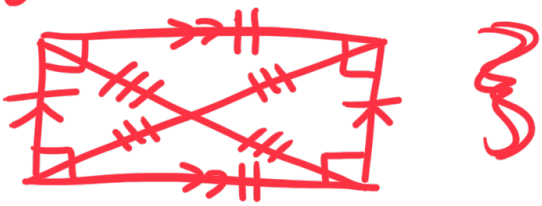
distance formula

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

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° angles and parallel lines as well.

a) ~~rhombus~~ rectangle

All diagonals are congruent

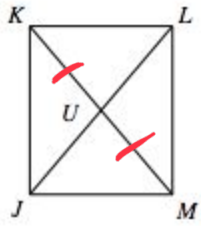


b) parallelogram

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

a) $KU = 3x + 3$
$UM = 4x - 4$

Diagonals bisect each other

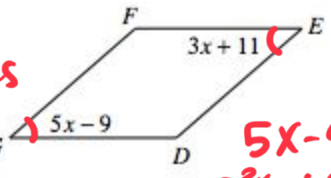


$\overline{KU} = \overline{UM}$

~~$2\overline{KU} = \overline{UM}$~~

b)

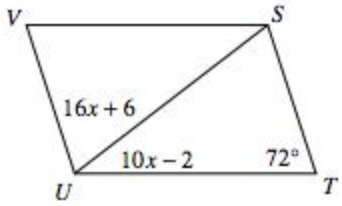
opposite angles are always congruent



$5x - 9 = 3x + 11$
$-3x \quad +9 \quad -3x \quad +9$

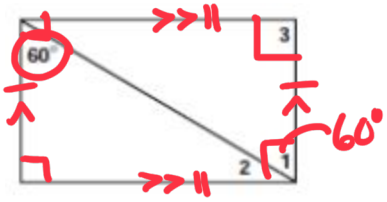
$\frac{2x}{2} = \frac{20}{2}$ $\boxed{x = 10}$

c)



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

a) Find ∠1, ∠2, and ∠3.



∠1 = 60°

∠2 = 30°

∠3 = 90°

$\angle 1 + \angle 2 = 90°$

$60° + \angle 2 = 90°$

$-60 \quad -60$

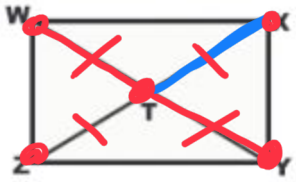
$\angle 2 = 30°$

parallel → alternate interior angles

Rectangle – All diagonals are

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

Find x.

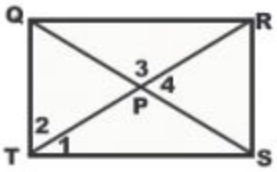


~~$\overline{WY} \cong \overline{TX}$~~

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

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

Find x.

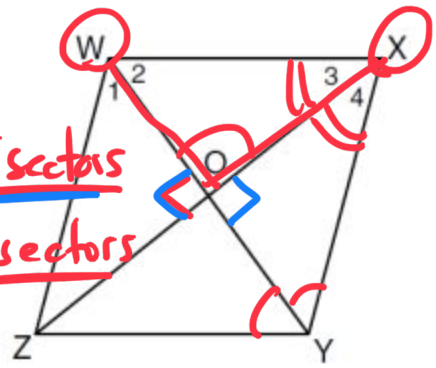


6.) (5 pts each, 10 pts total) Use your knowledge of the properties of rhombi to answer each of the following.

a) Find x.

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

Rhombus:
Diagonals: perpendicular bisectors also angle bisectors

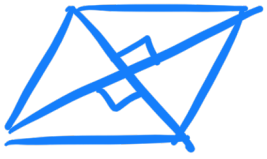


$\measuredangle WOX = 90°$

b) Find x and y.

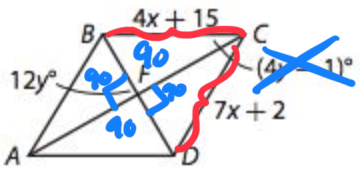
Rectangle

Rhombus



Rhombus

All 4 sides congruent



$\overline{BC} \cong \overline{CD}$

$4x + 15 = 7x + 2$
$-2 \quad -2$
$4x + 13 = 7x$
$-4x \quad -4x$
$13 = 3x$
$\frac{13}{3} = \frac{3x}{3}$

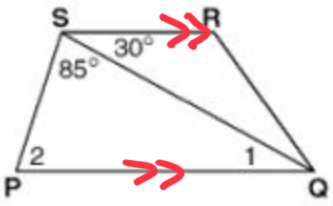
$x = \frac{13}{3}$

$\frac{12y}{12} = \frac{90}{12}$

$y = 7.5$

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

a) Find ∠1 & ∠2



Know: Trapezoids

1 pair of parallel lines

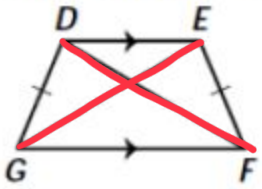
parallel lines → Alternate interior angles

trapezoid

$\angle 1 = 30$

b) Find x.

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



$\overline{DF} \cong \overline{EG}$

$4x = 2x + 16$

$-2x \quad -2x$

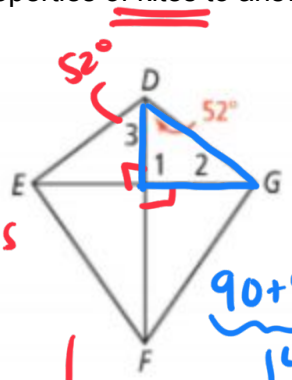
$\frac{2x}{2} = \frac{16}{2}$

$x = 8$

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

Kite

a) Find the indicated angles.



$\angle 1 = 90°$

$\angle 2 = 38°$

$\angle 3 = 52°$

No alternate interior angles because no parallel lines!

$90 + 52 + \angle 2 = 180$

$142 + \angle 2 = 180$

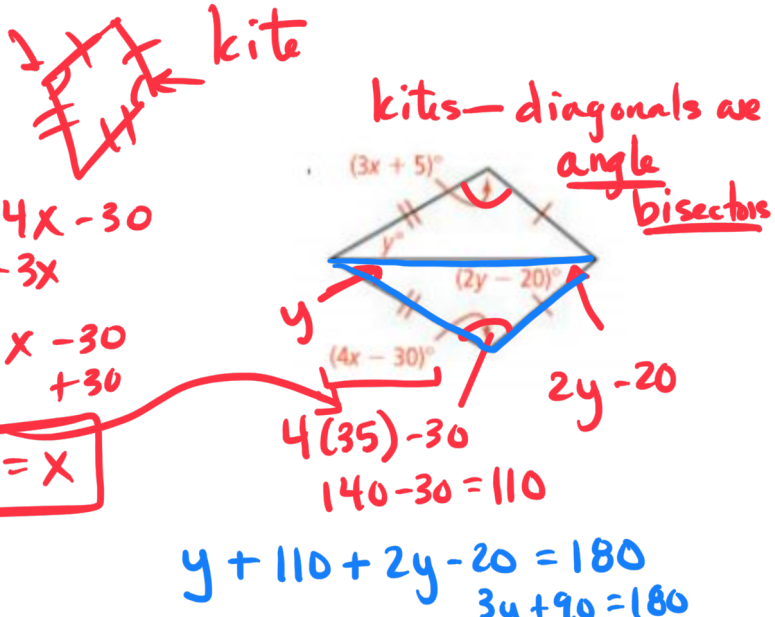
$-142 \quad -142$

$\angle 2 = 38$

Diagonals are perpendicular

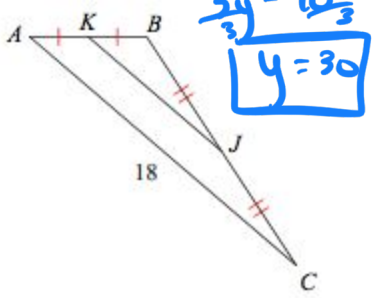
Diagonals are angle bisectors

b) Find x and y.

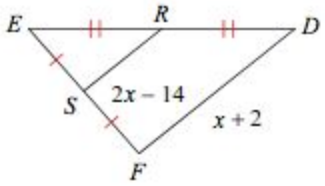


9.) (5 pts each, 10 pts total) Find the length of variable indicated.

a) Find KJ



b) Find x.



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.