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**

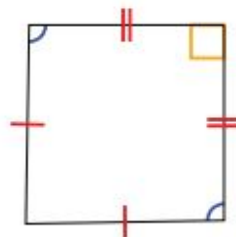This shape also fall under the category of:

- [ ] kite
- [x] parallelogram
- [x] 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.

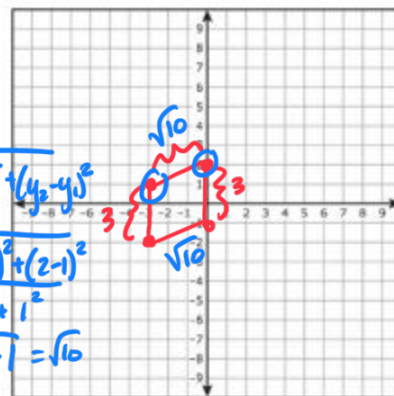(-3, -2), (-3, 1), (0, 2), (0, -1)

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

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

parallelogram

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

$\sqrt{3^2 + 1^2}$

$\sqrt{9 + 1} = \sqrt{10}$

$\sqrt{10}$

$\sqrt{10}$

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.
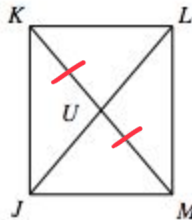
(a) rhombus

b) parallelogram

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

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

$$\overline{KU} = \overline{UM}$$
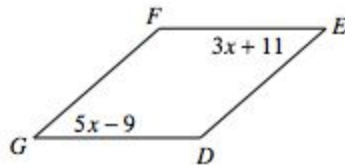$$\downarrow \qquad \downarrow$$
$$3x+3 = 4x-4$$
$$+4 \qquad +4$$
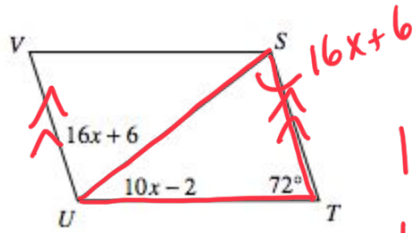
$$3x+7 = 4x$$
$$-3x \qquad -3x$$
$$\boxed{7 = X}$$

b)

$3x + 11$

$5x - 9$

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

c)

V, S, 16x+6, 16x+6, 10x-2, 72°, U, T

$$180° = 10x - 2 + 16x + 6 + 72$$

$$180° = 26x + 76$$
$$-76 \qquad -76$$

$$\frac{104}{26} = \frac{26x}{26}$$

$$\boxed{X = 4}$$

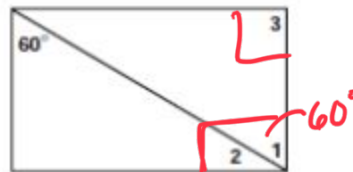5.) (5 pts each, 15 pts total) Use your knowledge of the properties of rectangles to answer each of the following.

a) Find ∠1, ∠2, and ∠3.

∠1 = $60°$

∠2 = $30°$

∠3 = $90°$

60°, 3, 60°, 2, 1

$$\angle 1 + \angle 2 = 90$$
$$60 + \angle 2 = 90 \qquad \angle 2 = 30°$$
$$-60 \qquad -60$$

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

Find x.

W, X, T, Z, Y

$$\tfrac{1}{2}WY = TX \quad \text{or} \quad WY = 2TX$$
$$\downarrow \qquad\qquad \downarrow$$
$$4x + 10 = 2(3x - 2)$$

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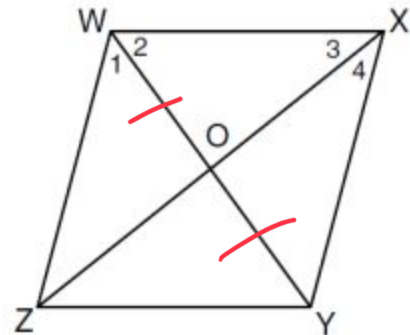$\angle 2 = 2x + 6$
$\angle 3 = 7x - 2$

Find x.

$\angle 1 + \angle 3 + \angle 1 = 180$ Isosceles

Alternate Interior Angles

Q ① ⑪ R
3 4
P
2 ▢ 3
T ① S

$\angle 1 + \angle 2 = 90$

$3x + 4 + 2x + 6 = 90$

$5x + 10 = 90$

$\quad -10 \quad -10$

$\dfrac{5x}{5} = \dfrac{80}{5}$ $\boxed{x = 16}$

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

a) Find x.

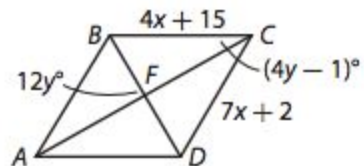WO = $\boxed{4x + 8}$
OX = 3x + 12
OY = 5x - 3

$WO = OY$

$4x + 8 = 5x - 3$
$\quad +3 \qquad +3$

$4x + 11 = 5x$
$-4x \qquad -4x$

$\boxed{11 = x}$
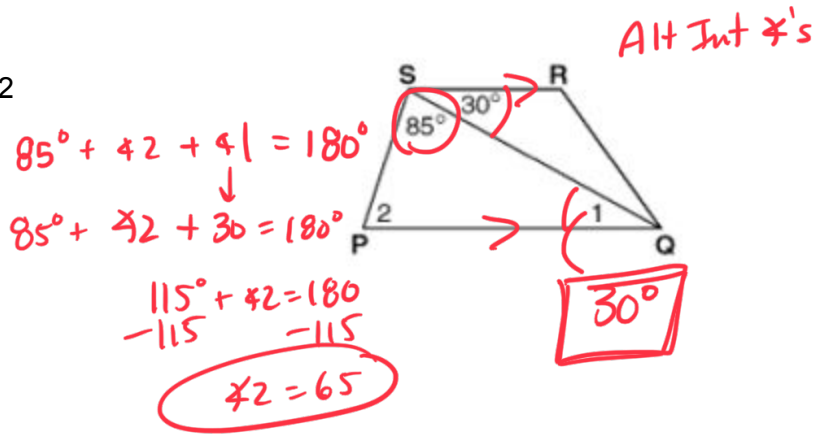
W 2 X
1 3
O 4
Z Y

b) Find x and y.

B   4x + 15   C
12y°   F   (4y − 1)°
7x + 2
A   D
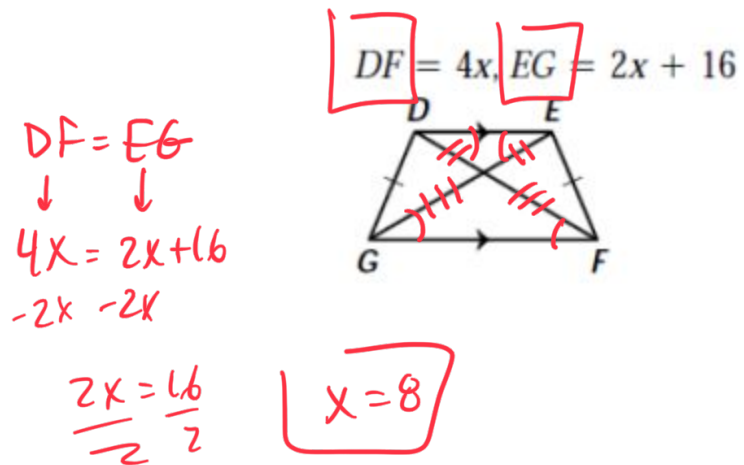
7.) (5 pts, 10 pts total) Use your knowledge of the properties of trapezoids to answer each of the following.
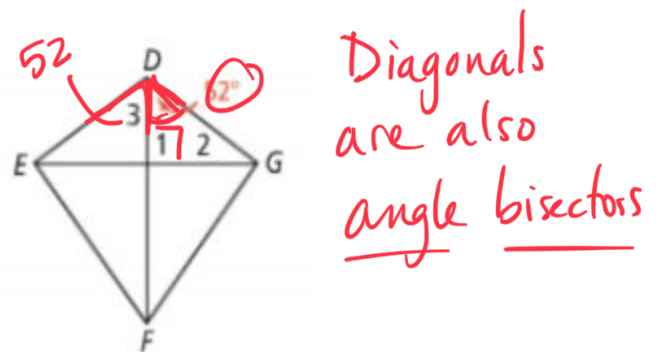
Alt Int ∡'s

a) Find ∠1 & ∠2

$$85° + ∡2 + ∡1 = 180°$$

$$85° + ∡2 + 30 = 180°$$

$$115° + ∡2 = 180$$
$$-115 \qquad -115$$

$$∡2 = 65$$

$$30°$$

b) Find x.

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

$$DF = EG$$

$$4x = 2x + 16$$
$$-2x \quad -2x$$

$$2x = \frac{16}{2} \qquad x = 8$$
$$\frac{}{2}$$

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

52

Diagonals are also angle bisectors

a) Find the indicated angles.

∠1 = 90°

∠2 = 38°

∠3 = 52°

perpendicular bisector

∡2 = 38°

$$90 + 52 + ∡2 = 180$$

$$142 + ∡2 = 180$$
$$-142 \qquad -142$$

5

b) Find x and y.

$(3x + 5)°$

$y°$

$(2y - 20)°$

$(4x - 30)°$

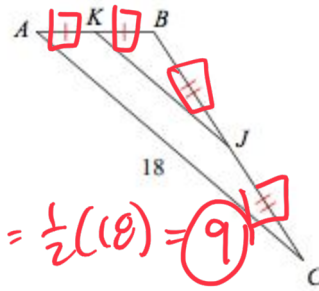9.) (5 pts each, 10 pts total) Find the length of variable indicated.

a) Find KJ

A K B

18

J

C

$$KJ = \tfrac{1}{2}AC$$

$$2KJ = AC$$
$$\frac{2KJ}{2} = \frac{AC}{2}$$
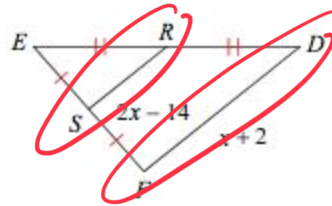
$$KJ = \tfrac{1}{2}(18) = \boxed{9}$$

b) Find x.

E   R   D

S $2x - 14$

$x + 2$
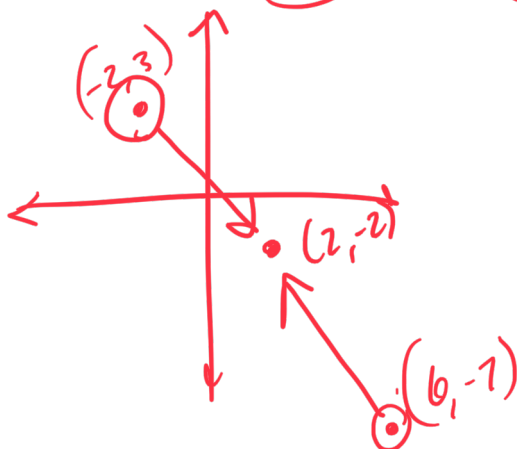
$$2SR = FD$$
$$2(2x - 14) = X + 2$$

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.
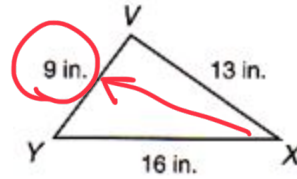
$(-2,3)$

$(2,-2)$

$(6,-7)$

$(-2,3) \longrightarrow (2,-2)$ must be equal

$(6,-7) \longrightarrow (2,-2)$

use distance formula

6

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:
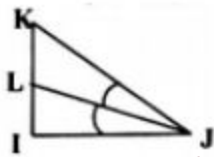
$$X, Y, V$$

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

$$6 + 7 > 14$$

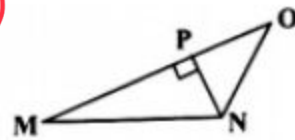$$13 \cancel{>} 14 \qquad \underline{No}$$

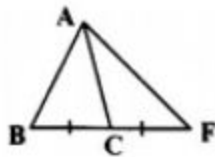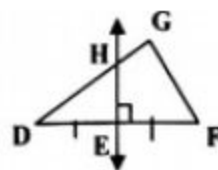12.) (5 pts) Label each of the following.

a)

angle bisector

b)

altitude (height)

c)

median

d)

perpendicular bisector