

Geometry Chapter 6 Pre-Test

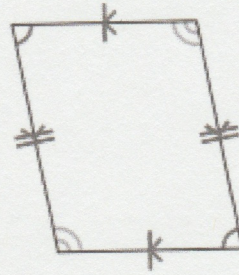
Key

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:

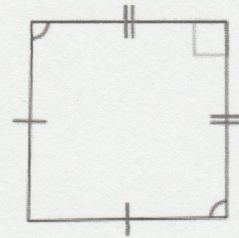
- kite
- parallelogram
- quadrilateral
- rectangle
- rhombus
- square
- trapezoid



b) Name of Shape: *Kite*

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.

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

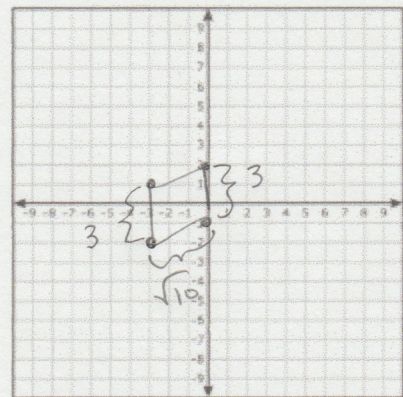
$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

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

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

$$\sqrt{9 + 1}$$

$$\sqrt{10}$$

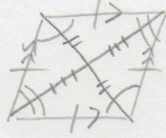


not rhombus (not equal sides)
not rectangle (not 90° angles)

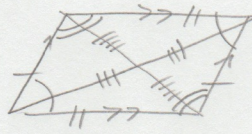
parallelogram parallel sides, equal opposite sides

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)

$$KU = 3x + 3$$

$$UM = 4x - 4$$

A square-like parallelogram KJLM with diagonals KM and JL intersecting at point U. Segments KU and UM are marked as congruent with double tick marks.

$$KU = UM$$

$$3x + 3 = 4x - 4$$

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

$$x = 7$$

b)

A parallelogram FGDE with interior angles at vertices F and E labeled as $3x + 11$ and $5x - 9$ respectively. The angles are marked as supplementary with a curved line across the top and bottom vertices.

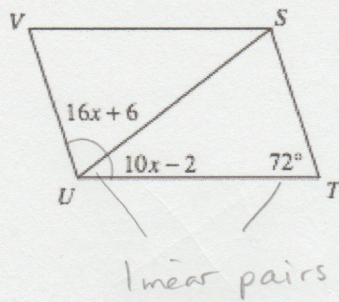
$$3x + 11 = 5x - 9$$

$$\begin{array}{r} -3x \quad -3x \\ 11 = 2x - 9 \\ +9 \quad +9 \end{array}$$

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

$$x = 10$$

c)



$$x = 4$$

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

$$26x + 4 + 72 = 180^\circ$$

$$26x + 76 = 180^\circ$$

$$\begin{array}{r} -76 \\ -76 \end{array}$$

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

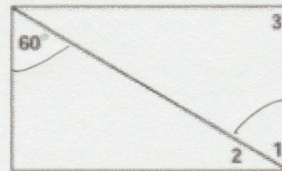
5.) (5 pts each, 15 pts total) Use your knowledge of the properties of rectangles to answer each of the following.

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

$$\angle 1 = 60^\circ$$

$$\angle 2 = 30^\circ$$

$$\angle 3 = 90^\circ$$



$60^\circ = \angle 1$
due to
alt. interior \angle 's

$\angle 3 = 90^\circ$
since
rectangles
have 90° angles

$$\angle 1 + \angle 2 = 90^\circ$$

$$60^\circ + \angle 2 = 90^\circ$$

$$-60$$

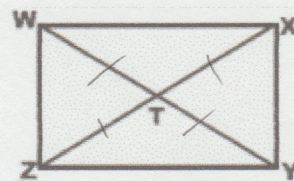
$$-60^\circ$$

$$\angle 2 = 30^\circ$$

b) $WY = 4x + 10$

$$TX = 3x - 2$$

Find x .



$$2TX = WY$$

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

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

$$\begin{array}{r} -4x \\ -4x \end{array}$$

$$2x - 4 = 10$$

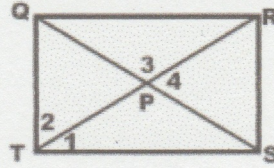
$$+4 \quad +4$$

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

$$x = 7$$

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

Find x.



$$\angle 1 + \angle 2 = 90^\circ$$

$$3x + 4 + 2x + 6 = 90^\circ$$

$$5x + 10 = 90$$

$$-10 \quad -10$$

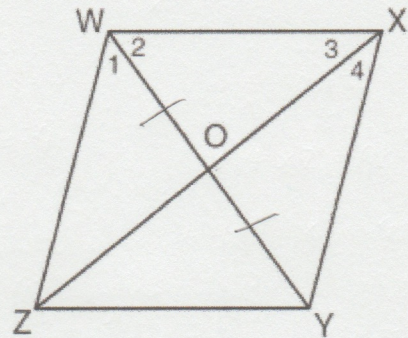
$$\frac{5x}{5} = \frac{80}{5}$$

$$x = 16$$

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

a) Find x.

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



$$WO = OY$$

$$4x + 8 = 5x - 3$$

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

$$8 = x - 3$$

$$+3 \quad +3$$

$$x = 11$$

b) Find x and y.

Rhombi have equal sides

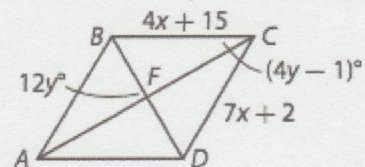
$$\overline{BC} = \overline{CD}$$

$$4x + 15 = 7x + 2$$

$$-4x - 2 \quad -4x - 2$$

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

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



Since diagonal are perpendicular bisectors of each other,

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

$$y = \frac{90}{12} = \frac{15}{2}$$

$$y = \frac{15}{2}$$

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

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

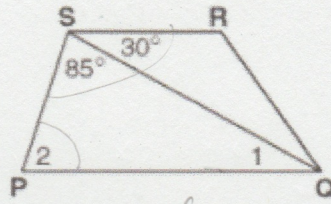
$$\angle 1 = 30^\circ$$

$$\angle 2 + 85^\circ + 30^\circ = 180^\circ \text{ (due to same-side interior)}$$

$$\angle 2 + 115^\circ = 180^\circ$$

$$-115^\circ \quad -115^\circ$$

$$\angle 2 = 65^\circ$$

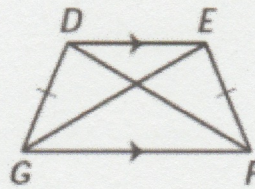


Since SR and PQ are parallel,

$\angle 1 = 30^\circ$ due to alt interior \angle 's

b) Find x .

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



Diagonals are equal

$$\overline{DF} = \overline{EG}$$

$$4x = 2x + 16$$

$$-2x \quad -2x$$

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

$$\underline{\quad \quad 2}$$

$$x = 8$$

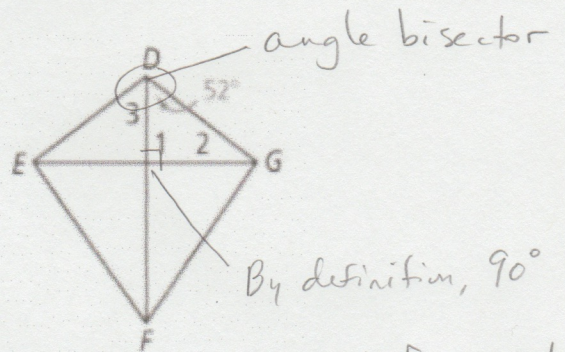
8.) (5 pts, 10 pts total) Use your knowledge of the properties of kites to answer each of the following.

a) Find the indicated angles.

$$\angle 1 = 90^\circ$$

$$\angle 2 = 38^\circ$$

$$\angle 3 = 52^\circ$$



By definition, 90°

Since it forms a triangle,

$$\angle 2 + \angle 1 + 52^\circ = 180^\circ$$

$$\angle 2 + 90 + 52 = 180$$

$$\angle 2 + 142 = 180$$

$$-142 \quad -142$$

$$\angle 2 = 38^\circ$$

b) Find x and y.

Since they form a triangle,

$$y^\circ + 4x - 30 + 2y - 20 = 180^\circ$$

$$4x + 3y - 50 = 180$$

$$+50 \quad +50$$

$$4x + 3y = 230$$

$$4(35) + 3y = 230$$

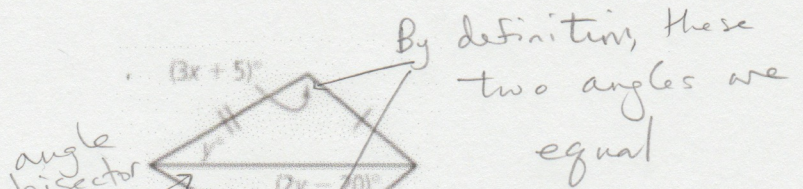
$$140 + 3y = 230$$

$$-140 \quad -140$$

$$\frac{3y}{3} = \frac{90}{3}$$

$$y = 30$$

$$x = 35$$



$$-3x + 5 = 4x - 30$$

$$-3x \quad -3x$$

$$5 = x - 30$$

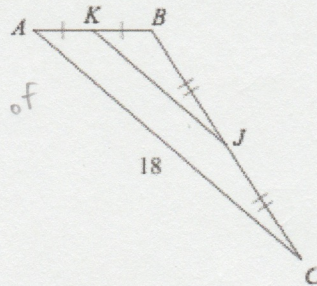
$$+30 \quad +30$$

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

a) Find KJ

9

Definition of Midsegment of Triangle



b) Find x.

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

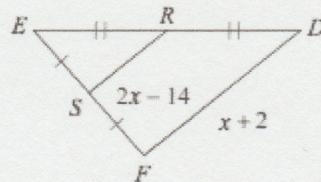
$$4x - 28 = x + 2$$

$$-x \quad -x$$

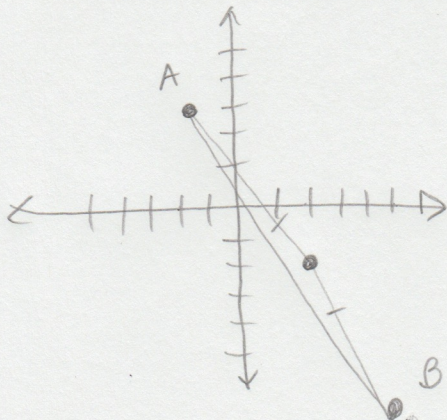
$$3x - 28 = 2$$

$$+28 \quad +28$$

$$\frac{3x}{3} = \frac{30}{3} \quad x = 10$$



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.



By definition, the distance between A and B will be equidistant from (2,-2). Thus, use distance formula:

Point to A

$$d = \sqrt{(2 - (-2))^2 + (-2 - 3)^2}$$

$$\sqrt{4^2 + (-5)^2}$$

$$\sqrt{16 + 25}$$

yes

$$d = \sqrt{(2 - 6)^2 + (-2 - (-7))^2}$$

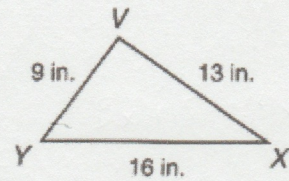
$$\sqrt{(-4)^2 + (5)^2}$$

$$\sqrt{16 + 25}$$

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:

least \rightarrow greatest
 X, Y, V



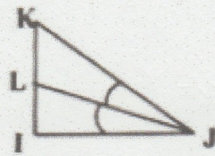
Angles correspond to side measures
 greater the side, greater the opposite angle.

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

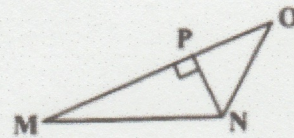
$$6 + 7 < 14$$

No, the sum of any two sides must be greater than the third.
 Since $(6 + 7)$ is not greater than 14,
not a triangle

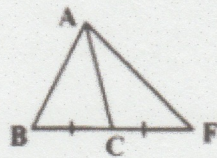
12.) (5 pts) Label each of the following.



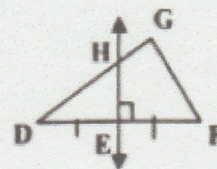
Angle bisector



Altitude



Median



Perpendicular bisector