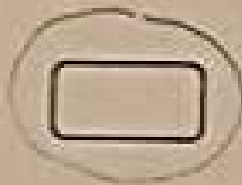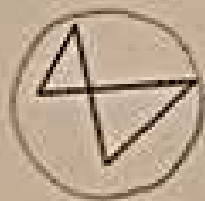# Geo B Quadrilateral Review

Name: **Key**

1) Circle the figures that are *not* polygons. If it is not a polygon, explain why not.

2) Label the following as convex or concave.

concave

convex

108°
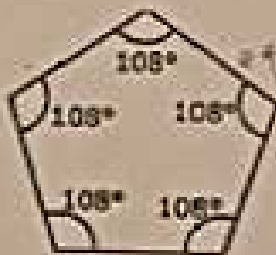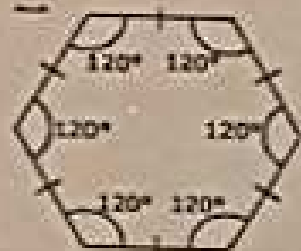108° 108°
108° 108°   convex

concave

3) Label the following as equilateral, equiangular, or regular (which implies that the figure is both equiangular and equilateral)

equilateral

108°
108° 108°
108° 108°   equiangular

120° 120°
120° 120°
120° 120°   regular

4) Solve for x in the figures below.

$(n-2)180$

$(6-2)180 = 720$

Sum
720°

$X + 595 = 720$

$\boxed{X = 125°}$

$3 \cdot 180 = 540$
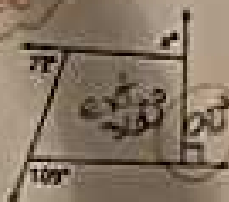
Sum
540°

$X + 456 = 540$

$\boxed{X = 84°}$

exterior sum to 360

$2X + 208 = 360$

$2X = 152$

$\boxed{X = 76°}$

$X + 272 = 360$

$\boxed{X = 88°}$

5) Using knowledge of interior and exterior angles of polygons, answer the following. $(n-2)180$

a) Find the SUM of the measures of the interior angles of a heptagon (7 sides)

$$7 \cdot 180 = \boxed{900°}$$

b) Find the measure of each interior and exterior angle of a regular decagon (10 sides) $(n-2) 180$

one interior
$$8 \cdot 180 = SUM = \underline{1440°}$$

$$\frac{1440}{10} = \boxed{144°}$$ one

exterior
$$\frac{360}{n} = \boxed{36°}$$

c) Find the measure of each interior and exterior angle of a regular quadrilateral. 4 sides

$$2 \cdot 180 = SUM = 360°$$

interior
$$\frac{360}{n} \boxed{90°}$$

exterior
$$\frac{360}{n} \boxed{90°}$$

6) Using properties of parallelograms, solve for each variable below and name the property used.

$y - 2$

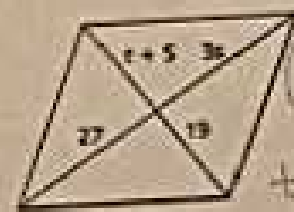$x + 3$

17

38

opp sides ≅
$$17 = x + 3$$
$$y - 2 = 38$$
$$\boxed{y = 40}$$ $$\boxed{14 = x}$$

125

consecutive ∠'s supplementary
$$124 + V - 3 = 180$$
$$V = 59°$$
$$2w + 5a = 180$$

$a + 5$

36°

115°

15

opp sides ≅
$$a + 5 = 15$$
$$\boxed{a = 10}$$

opp ∠'s ≅
$$111 = 36$$
$$\boxed{b = 37°}$$

$t + 5$ $3a$

27   19

diagonals bisect
$$t - 5 = 19$$
$$\boxed{t = 14}$$

$$27 = 3a$$
$$\boxed{9 = a}$$

7) Is there enough information to classify the following quadrilaterals as parallelograms? If so, give the theorem used. If not, explain why not.
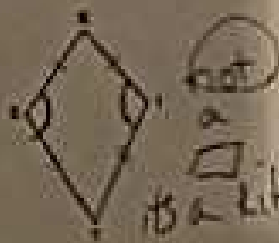
115°

115°

yes
opp ∠'s ≅
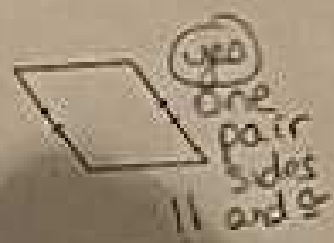
yes
diagonals bisect

B   C

A   E   D

I got nothing

not a kite!
it's a kite!

yes
one pair sides ∥ and ≅

5.8   yes
7.2   7.2   opp sides ≅
5.8

8) ABCD is a Rhombus. Given that m∠EAD=67, CB=5, and DE=12, find each indicated measure below.

m∠AED = 90°

m∠ADE = 23°

m∠BAE = 67°

AE = 5

BE = 12
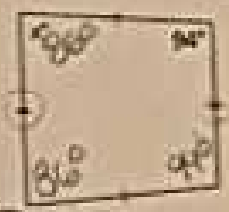
Rhombus has 90° diagonals!

Rhombus bisect ∠'s diagonals

9) Suppose we have rectangle JKLM. Draw a picture and use the information below to solve for x.

JL = 3x + 4

KM = 4x − 1

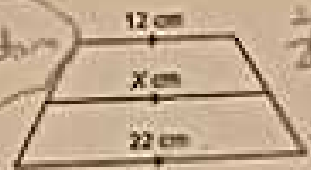*diagonals ≅*

$3x+4 = 4x-1$
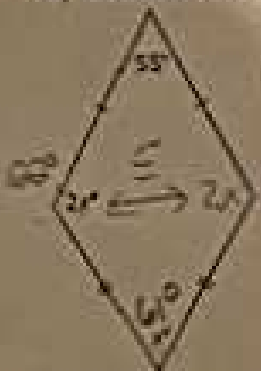
$5 = x$

10) Given the trapezoid below, solve for x.

non base's are non ∥ & supplementary

$x+94 = 180$

$x = 86°$

$\frac{1}{2}(b_1+b_2) = mid$
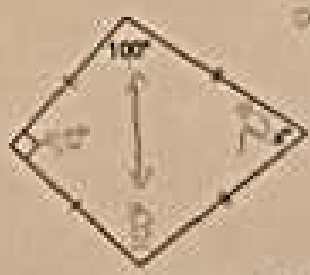
$\frac{1}{2}(12+22) = 17cm$

12 cm

X cm

22 cm
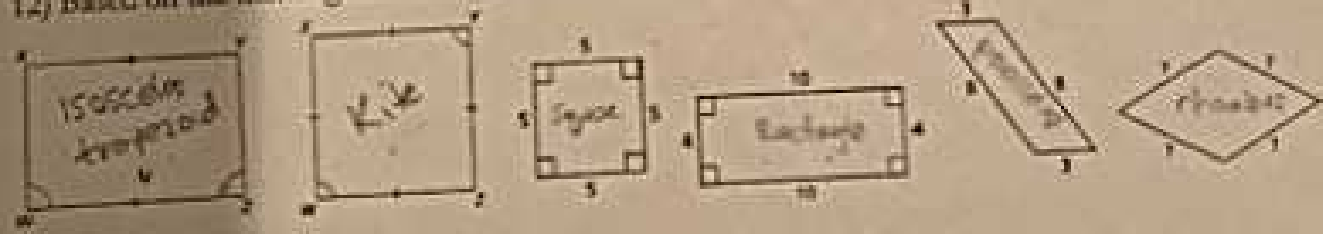
11) Given the kite below, solve for x.

opp ∠'s ≅

$55+5x = 360$

$5x = 505$

$x = 61°$

55°

$90 + 100 + 100 + x = 360°$

$290 + x = 360$

$x = 70°$

100°

12) Based on the markings for each quadrilateral, give the most specific name for each figure.

Isosceles trapezoid

Kite

Square

Rectangle

Parallelogram

rhombus

13) Mark the following as Sometimes, Always, Never.

square is a parallelogram. **A**

A parallelogram with a right angle is a square. **S**

All rectangles are parallelograms. **A**

rhombuses are squares. **S**

squares are rectangles. **A**

A parallelogram with four congruent sides is a square. **S**

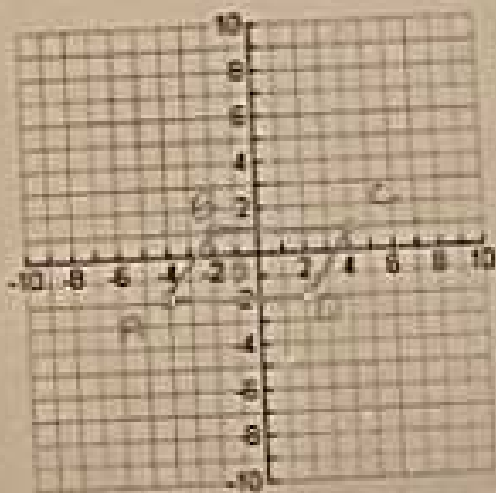14) Fill in the following by putting an X in the boxes for which each is true.

	4 Sides	Opp. Sides ||	Opp. Sides =	All Sides =	Opp. Angles =	All Angles =
1. Parallelogram	X	X	X		X	
2. Rectangle	X	X	X		X	X
3. Rhombus	X	X	X	X	X	
4. Square	X	X	X	X	X	X

The diagonals ...	bisect each other	are congruent	bisect opposite angles	are perpendicular
5. Parallelogram	X			
6. Rectangle	X	X		X
7. Rhombus	X		X	X
8. Square	X	X	X	

13) Given the coordinates of the quadrilateral below, draw the quadrilateral on the graph and prove (using 1 of the 3 methods taught in class) that the quadrilateral is a parallelogram.

a) $A(-4, -2), B(-2, 1), C(4, 1), D(2, -2)$

$$\frac{BC \ \text{Slope } 0}{AD \ \text{Slope } 0} \Big\} \ \frac{\text{length} = 6}{\text{length } 6}$$

yes

b) $E(-4, 1), F(-1, 5), G(11, 0), H(8, -4)$

$$EF = \frac{4}{3} \Big\} \ \text{Same slope}$$

$$HG = \frac{4}{3}$$

yes