Geometry (A)
Unit 7 Test Review

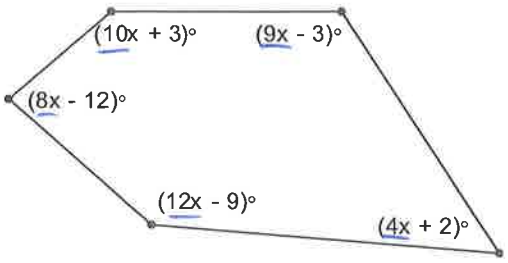
Name : Key
Date : _____ Period : _____

Section 8.1

1. In the figure at the right,
   a.) What is the value of x? $43x - 19 = 540$

   $43x = 559 \Rightarrow \boxed{x = 13}$

   b.) Find the sum of the measures of the exterior angles, one at each vertex. $= \boxed{360^\circ}$



2. You are given the number of sides of a regular polygon. Find the measure of each interior and each exterior angle.
   a. Quadrilateral

   Int: $\frac{(4-2)\cdot 180}{4} = \frac{360}{4} = \boxed{90^\circ}$

   Ext: $\frac{360}{4} = \boxed{90^\circ}$

   b. Octagon

   Int: $\frac{(8-2)\cdot 180}{8} = \frac{1080}{8} = \boxed{135^\circ}$

   Ext: $\frac{360}{8} = \boxed{45^\circ}$

3. The measure of the interior angle of a regular polygon is 160°, how many sides does the polygon have? $160 = \frac{(n-2)\cdot 180}{n}$ $\boxed{n = 18}$

   $160n = 180n - 360$

   $-20n = -360$

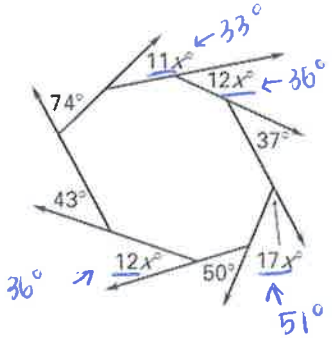
4. The sum of the measures of the interior angles of a convex polygon is 2700°. How many sides does the polygon have?

   $2700 = (n-2)\cdot 180$

   $15 = n - 2$

   $\boxed{n = 17}$

5. Solve for x using the diagram below and find the measure of each exterior angle that is missing.



   $52x + 204 = 360$

   $52x = 156$

   $\boxed{x = 3}$

6. The sum of the measures of the interior angles of a particular regular polygon is 6120°. First find the number of sides the polygon has, and then find the measure of each exterior angle for this polygon.

   $6120 = (n-2)\cdot 180$

   $34 = n - 2$

   $\boxed{n = 36}$

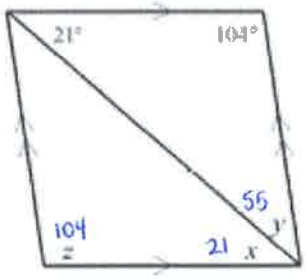
   Ext: $\frac{360}{36} = \boxed{10^\circ}$

Section 8.2 – 8.3

7. Consecutive angles in a parallelogram are always
   a. Congruent angles
   b. Complementary angles
   c. Supplementary angles
   d. Vertical angles

8. Choose the statement that is NOT ALWAYS true. For any parallelogram,
   a. The diagonals bisect each other
   b. Opposite angles are congruent
   c. The diagonals are perpendicular
   d. Opposite sides are congruent

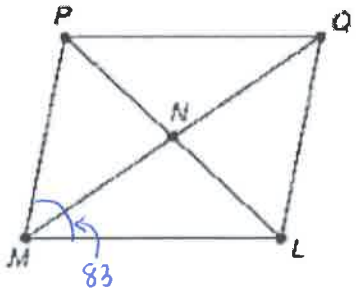
9. Find the value of the variables in the parallelogram



y = 55
z = 104
x = 21

   a. x = 52, y = 10.5 , z = 159
   b. x = 21, y = 55, z = 104
   c. x = 55, y = 21, z = 104
   d. x = 10.5 , y = 52, z = 159

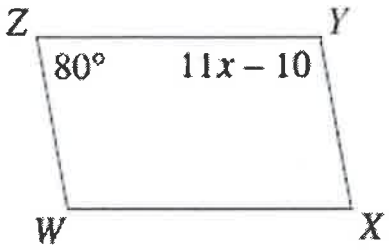
10. For parallelogram PQLM, if m∠PML = 83° then m∠PQL = 83°



   a. m∠PQM
   b. 83°
   c. 97°
   d. m∠QLM

Each figure below is a parallelogram. Please solve for the indicated variable(s).

11.



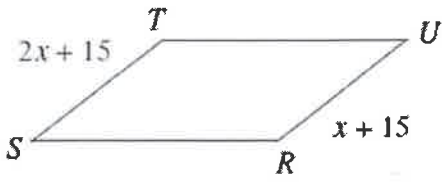
$80 + 11x - 10 = 180$

$11x + 70 = 180$

$11x = 110$

$\boxed{x = 10}$

12.

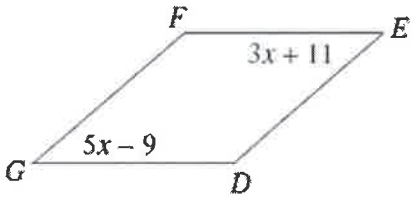


$2x + 15 = x + 15$

$x + 15 = 15$

$\boxed{x = 0}$

13.



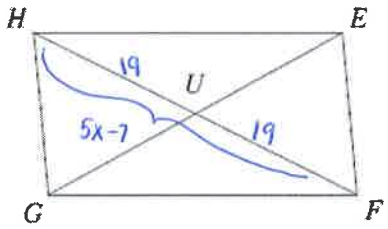
$3x + 11 = 5x - 9$

$11 = 2x - 9$

$20 = 2x$

$\boxed{x = 10}$

14. UH = 19 and FH = 5x − 7.



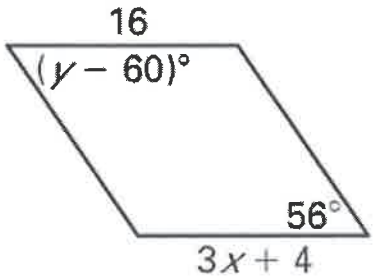
$19 + 19 = 5x - 7$

$38 = 5x - 7$

$45 = 5x$

$\boxed{x = 9}$

15.



$16 = 3x + 4$

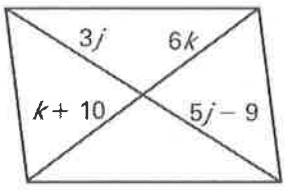
$12 = 3x$

$\boxed{x = 4}$

$56 = y - 60$

$\boxed{y = 116}$

16.



$3j = 5j - 9$

$-2j = -9$

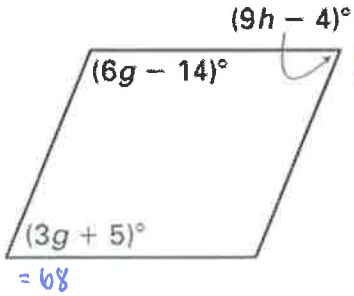
$\boxed{j = 4.5}$

$6k = k + 10$

$5k = 10$

$\boxed{k = 2}$

17.



$= 68$

$6g - 14 + 3g + 5 = 180$

$9g - 9 = 180$

$9g = 189$

$\boxed{g = 21}$

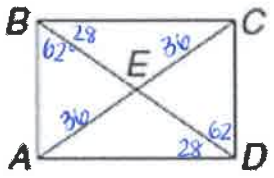
$9h - 4 = 68$

$9h = 72$

$\boxed{h = 8}$

Section 8.4

18. Given that ABCD is a rectangle,



a) If AE = 36 and BD = 2x – 4, find the value of x.

$2x-4=72$

$2x=76$

$x=38$

** b) If m∠ABD = 62°, please find m∠BAC

62°

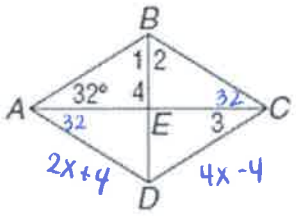
19. Given that quadrilateral ABCD is a rectangle and m∠B = (8x+26)°, what is the value of x?

$8x+26=90$ (all int angles are 90°)

$8x=64$

$x=8$

20. Given that ABCD is a rhombus,



a) Please find the measures of the numbered angles.

$m\angle 1 = 58°$ $m\angle 4 = 90°$

$m\angle 2 = 58°$

$m\angle 3 = 32°$

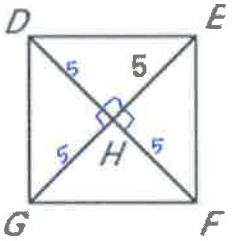
b) If AD = 2x + 4 and CD = 4x – 4, find x.

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

$4=2x-4$

$8=2x$

21. The diagonals of square DEFG intersect at H. Given that EH = 5, find the indicated measure.



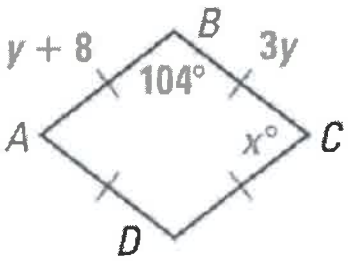
a) $m\angle GHF = 90°$ (diagonals are ⊥)

b) $m\angle DGH = 45°$ (diagonals bisect angles)

c) DF = 5+5 = 10 (diagonals bisect each other)

d) HF = 5

22. Given quadrilateral ABCD, please solve for x and y.



$104+x=180$ (consec angles are supp.)

$x=76$

$y+8=3y$ (all sides are ≅)

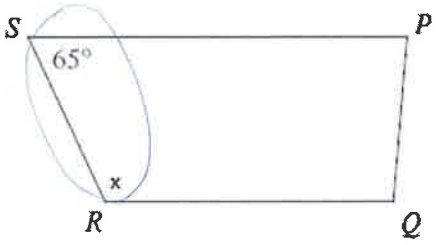
$8=2y$

$y=4$

Section 8.5

Given the quadrilaterals below, please find the value of x.

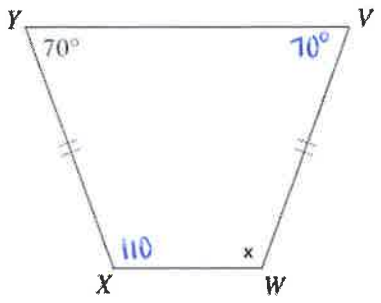
23.



$65 + x = 180$ (consecutive angles)

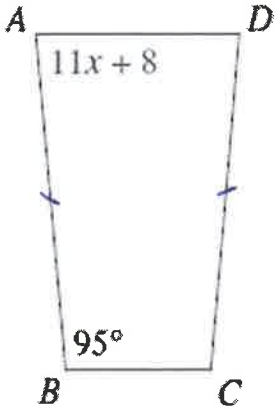
$x = 115$

24.



$x = 110$ (base angles are $\cong$)

25.



$11x + 8 + 95 = 180$ (consecutive angles)

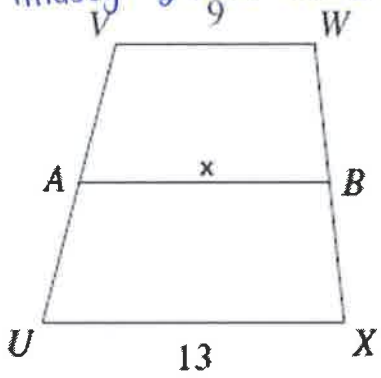
$11x + 103 = 180$

$11x = 77$

$x = 7$

26.

midseg $= \frac{1}{2}$ (base + base)

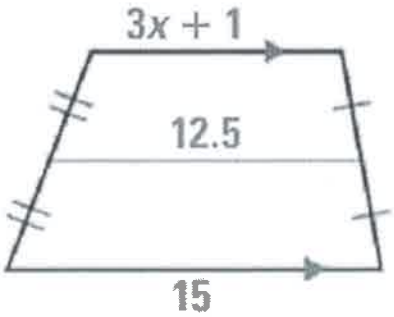


$x = \frac{1}{2}(9 + 13)$

$x = \frac{1}{2}(22)$

$x = 11$

27.



$12.5 = \frac{1}{2}(3x + 1 + 15)$

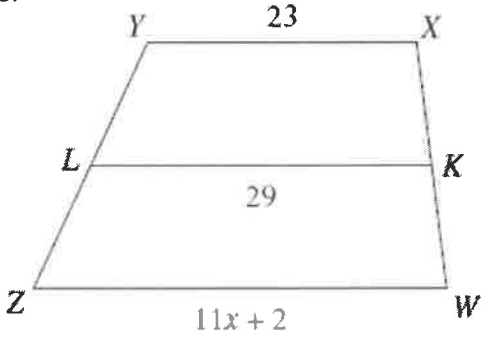
$12.5 = \frac{1}{2}(3x + 16)$

$12.5 = 1.5x + 8$

$4.5 = 1.5x$

$x = 3$

28.



$29 = \frac{1}{2}(23 + 11x + 2)$

$29 = \frac{1}{2}(11x + 25)$

$29 = 5.5x + 12.5$

$16.5 = 5.5x$

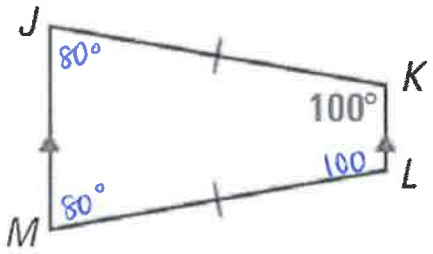
$x = 3$

29. Given the trapezoid below, find:

a.) m∠J 80°

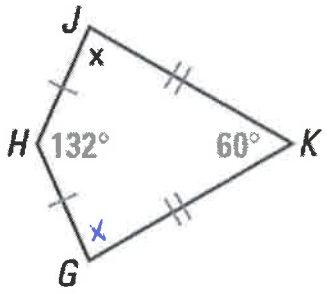
b.) m∠L 100° ← congruent base angle w/ ∠K

c.) m∠M 80°



For the kites below, please solve find the value of x.

30.

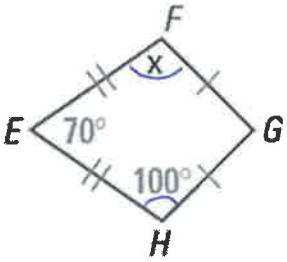


$2x + 132 + 60 = 360$

$2x + 192 = 360$

$2x = 168$ ⇒ $\boxed{x = 84°}$

31.



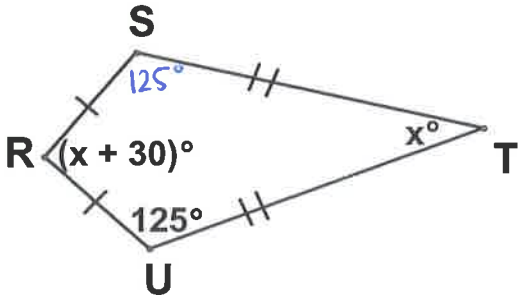
$\boxed{x = 100°}$ (congruent to ∠F)

32. Given the kite shown below, find:

a.) m∠R 70°

b.) m∠S 125°

c.) m∠T 40°



$2x + 30 + 125 + 125 = 360$

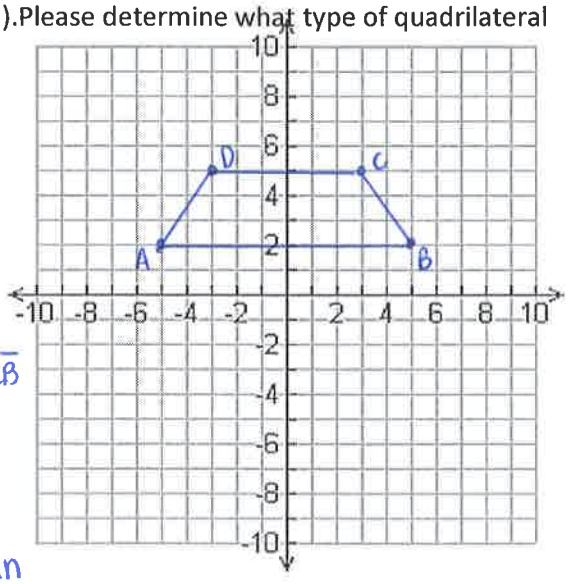
$2x + 280 = 360$

$2x = 80$

$x = 40$

Coordinate Proofs

33. Given coordinates A(-5,2),B(5,2), C(3,5) and D(-3,5).Please determine what type of quadrilateral ABCD is. Please justify your answer.



Bases: Slope $\overline{DC} = \frac{5-5}{-3-3} = \frac{0}{-6} = 0$

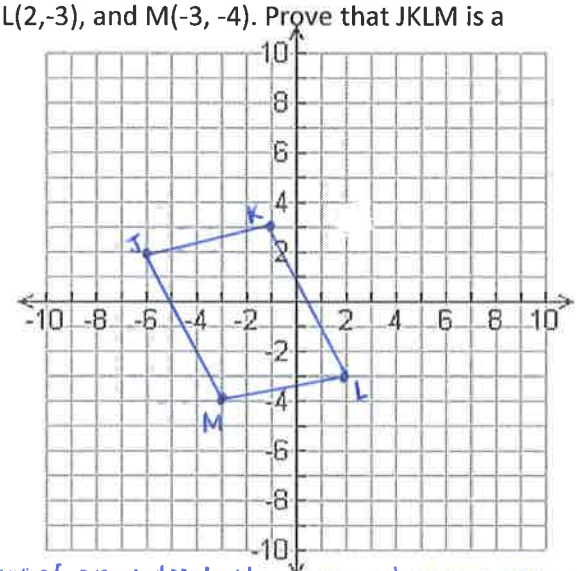
Slope $\overline{AB} = \frac{2-2}{5--5} = \frac{0}{10} = 0$ $\rightarrow \overline{DC} \parallel \overline{AB}$

Legs: Distance $\overline{AD} = \sqrt{(-3+5)^2+(5-2)^2} = \sqrt{(2)^2+(3)^2} = \sqrt{4+9} = \sqrt{13}$

Distance $\overline{CB} = \sqrt{(3-5)^2+(5-2)^2} = \sqrt{(-2)^2+(3)^2} = \sqrt{4+9} = \sqrt{13}$ $\rightarrow \overline{AD} \cong \overline{CB}$

Since bases $\overline{DC} \parallel \overline{AB}$ and legs $\overline{AD} \cong \overline{CB}$, this quadrilateral is an isosceles trapezoid

34. The vertices of a quadrilateral are J(-6,2), K(-1,3), L(2,-3), and M(-3, -4). Prove that JKLM is a parallelogram.



Opp sides: Dist $\overline{JK} = \sqrt{(-1+6)^2+(3-2)^2} = \sqrt{(5)^2+(1)^2} = \sqrt{25+1} = \sqrt{26}$

Dist $\overline{ML} = \sqrt{(-3-2)^2+(-4+3)^2} = \sqrt{(-5)^2+(-1)^2} = \sqrt{25+1} = \sqrt{26}$

Opp sides: Dist $\overline{JM} = \sqrt{(-3+6)^2+(-4-2)^2} = \sqrt{(3)^2+(-6)^2} = \sqrt{9+36} = \sqrt{45}$

Dist $\overline{KL} = \sqrt{(2+1)^2+(-3-3)^2} = \sqrt{(3)^2+(-6)^2} = \sqrt{9+36} = \sqrt{45}$

Slope $\overline{JK} = \frac{3-2}{-1+6} = \frac{1}{5}$ Slope $\overline{ML} = \frac{-4+3}{-3-2} = \frac{-1}{-5} = \frac{1}{5}$

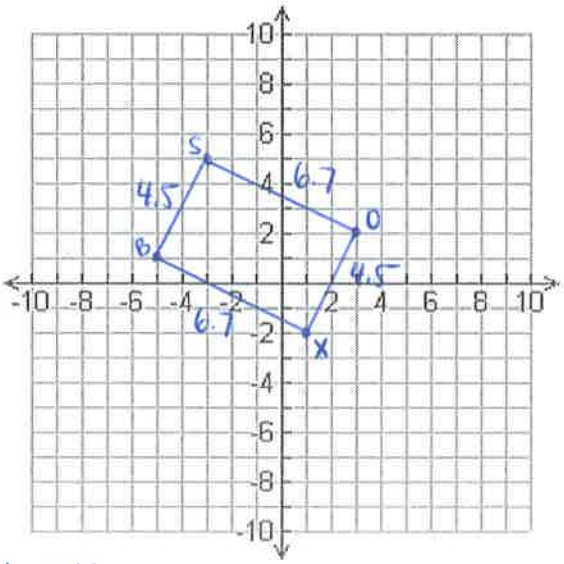
Slope $\overline{JM} = \frac{-4-2}{-3+6} = \frac{-6}{3} = -2$ Slope $\overline{KL} = \frac{-3-3}{2+1} = \frac{-6}{3} = -2$

Both pairs of opp sides both parallel & congruent, the quad is a parallelogram

35. Quadrilateral BSOX has vertices B(-5 , 1), S(-3 , 5), O(3 , 2), and X(1 , -2).

a. Please prove that BSOX is a rectangle.

b. Find the area and perimeter of BSOX.



(A) Dist $\overline{BS} = \sqrt{(-3+5)^2+(5-1)^2} = \sqrt{(2)^2+(4)^2} = \sqrt{4+16} = \sqrt{20}$

Dist $\overline{OX} = \sqrt{(1-3)^2+(-2-2)^2} = \sqrt{(-2)^2+(-4)^2} = \sqrt{4+16} = \sqrt{20}$ $\rightarrow \overline{BS} \cong \overline{OX}$

Dist $\overline{SO} = \sqrt{(3+3)^2+(2-5)^2} = \sqrt{(6)^2+(-3)^2} = \sqrt{36+9} = \sqrt{45}$

Dist $\overline{BX} = \sqrt{(1+5)^2+(-2-1)^2} = \sqrt{(6)^2+(-3)^2} = \sqrt{36+9} = \sqrt{45}$ $\rightarrow \overline{SO} \cong \overline{BX}$

Slope $\overline{BS} = \frac{5-1}{-3+5} = \frac{4}{2} = 2$

Slope $\overline{SO} = \frac{2-5}{3+3} = \frac{-3}{6} = -\frac{1}{2}$ $\rightarrow \overline{BS} \perp \overline{SO}$

(B) Area = $(4.5)(6.7) = 30.15$ units^2 Perimeter = $4.5+6.7+4.5+6.7 = 22.4$ units