Name: _____

Date: _____ Period: _____

Rhombuses :

1. Please find the values of *a*, *x*. and *y* in rhombus ABCD.

A ____x____ B
a°   2a°
                    3x - 12
8 - y

D   C
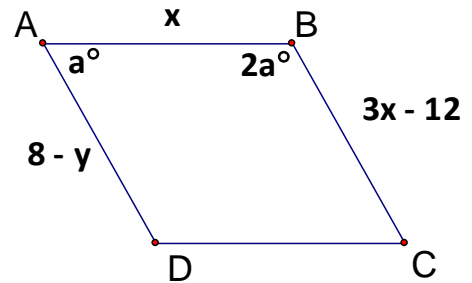
2. ROBS is a rhombus. Please solve for *a*, *b*, and *c*.

O   b   B
                  a°
15

c°
R 30°   S
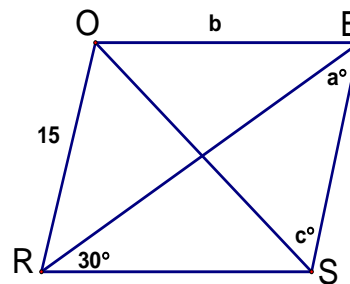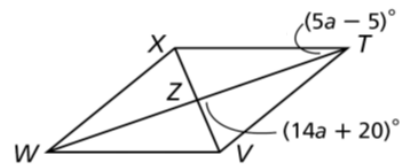
3. In rhombus PINK, PI = 3x +7 and IN = x +19, what is the length of $\overline{NK}$?

4. Quadrilateral TVWX is a rhombus.
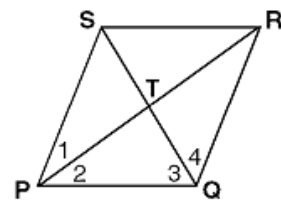   a. Please find m∠TZV.

   b. Please find the value of a.

   X   (5a − 5)°
                      T
         Z
   W   (14a + 20)°
              V

   c. Please find m∠ZTX.

5. In the diagram below, PQRS is a rhombus with diagonals $\overline{PR}$ and $\overline{SQ}$. If m∠SPQ= 8x − 14 and m∠1= 3x + 3, then find m∠SPQ.

   S   R
          T
      1   4
       2   3
   P   Q

6. The diagonals of a rhombus have lengths of 16 and 30. Please find the perimeter of the rhombus.

Rectangles and Squares :

7. In rectangle ABCD, AB = 7x – 3, BC = 2, and CD = 4x + 9. Please sketch rectangle ABCD and find the perimeter.

8. ABCD is a rectangle and $m\angle B = (8x+26)°$. What is the value of x?

9. In rectangle MATH, diagonal MT = 2x +12 and diagonal AH = 3x +2. What is the length of $\overline{MT}$?

10. In rectangle ABCD, diagonals $\overline{AC}$ and $\overline{BD}$ intersect at point E. If AE = 20 and BE = x + 15, please solve for x.
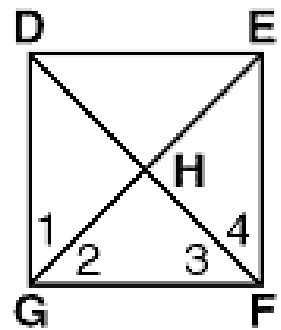
11. In the diagram to the right, DEFG is a square with diagonals $\overline{GE}$ and $\overline{DF}$.
    a. If DE = 5x – 14 and EF = 3x – 6, please solve for x.

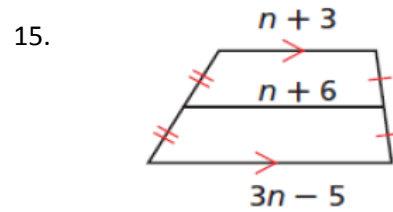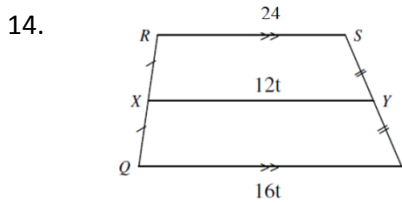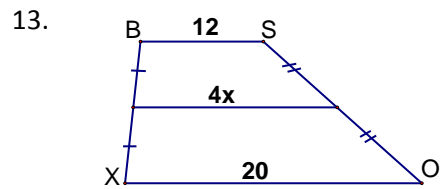   b. If DF = 2y – 17 and GE = 28 – 3y, please find the value of y.

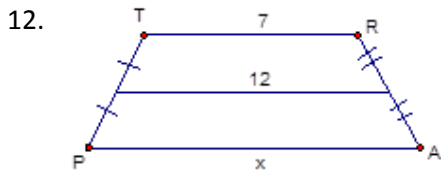   c. What is the m∠4?

    d. If m∠DHE = (6x + 18)°, please solve for x.
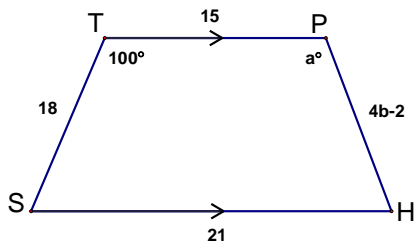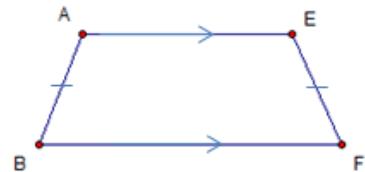
Trapezoids :

The following quadrilaterals are trapezoids. Please solve for the variable.
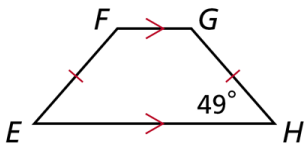
12.

13.

14.

15.

16. STPH is an isosceles trapezoid. Please solve for a and b.

17. In quadrilateral ABFE, the diagonals intersect at point M. If AM = 10.6 and FM = 14.8. Please find the length of diagonal BE.
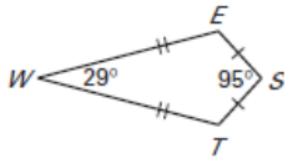

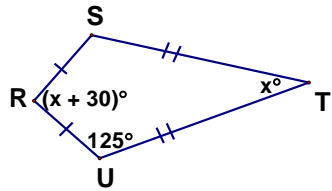18. Please find the measures of **all** missing angles in the following quadrilateral.
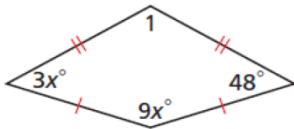
Kites :

19. WEST is a kite. Please find $m\angle$E and $m\angle$T.
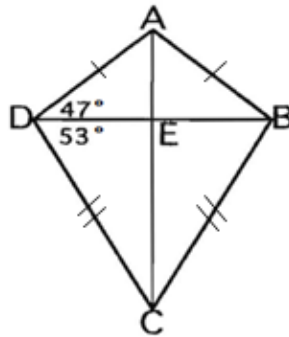

20. Given that RSTU is a kite, please find $m\angle R$.
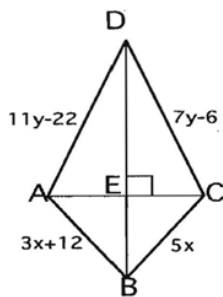

21. Please solve for x and find the m∠1.

22. Given kite ABCD, please find

    a.   m∠ABC = _____

    b.   m∠CED = _____

    c.   m∠DAB = _____
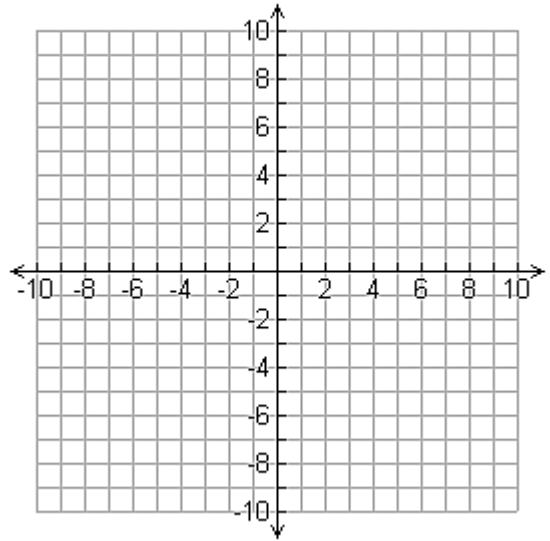
    d.   m∠DCB = _____

23. Given kite DCBA, please solve for x and y.

Coordinate Proofs!

24. Determine if *ABCD* is an isosceles trapezoid using the slope and distance formulas as needed. The coordinates of *ABCD* are A(5, 0), B(0, 5), C(4, 7) and D(7, 4).

Answers:
1. a = 60, x = 6, y = 2
2. a = 30°, b = 15, c = 60°
3. x = 6; NK = 25
4. a) 90° b) a = 5 c) 20°
5. x = 10; $m\angle SPQ = 66°$
6. x = 17; perimeter = 68
7. x = 4; perimeter = 54
8. x = 8
9. x = 10; MT = 32
10. x = 5
11. a) x = 4, b) y = 9, c) 45°, d) x = 12
12. x = 17
13. x = 4
14. t = 3
15. n = 7
16. a = 100°, b = 5
17. BE = 25.4
18. $m\angle E = 49°$, $m\angle F = 131°$, $m\angle G = 131°$
19. $m\angle E = m\angle T = 118°$
20. x = 40, $m\angle R = 70°$
21. x = 16, $m\angle 1 = 120°$
22. a) 100°, b) 90°, c) 86°, d) 74°
23. x = 6, y = 4
24. Check slopes: $\overline{CD}$ and $\overline{BA}$ both have a slope of -1. $\overline{BC}$ has a slope of ½ and $\overline{DA}$ has a slope of 2. Since exactly one pair of opposite sides are parallel, the quadrilateral is a trapezoid. BC = DA = $\sqrt{20}$. Therefore ABCD is an isosceles trapezoid.