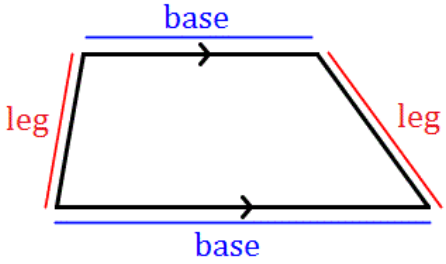
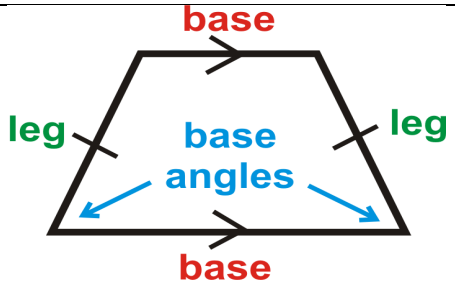
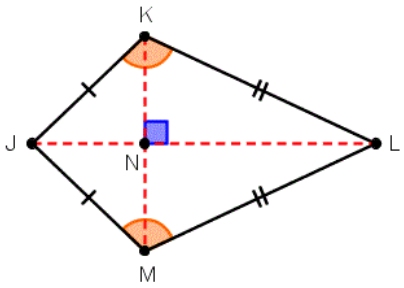
Name: _____ Date: _____

UNIT 4 **LESSON 4**

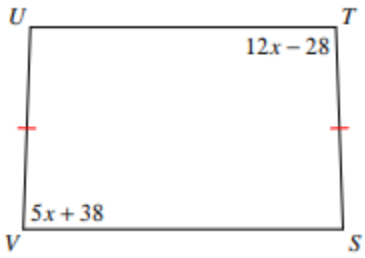
AIM: WHAT ARE THE PROPERTIES OF TRAPEZOIDS, ISOSCELES TRAPEZOIDS AND KITES?

Do Now: The perimeter of a square is 56. Express the length of a diagonal of the square to the nearest tenth.

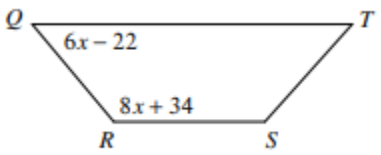
TRAPEZOID	ISOSCELES TRAPEZOID	KITE
		
• Has **ONE** pair of opposite sides parallel. These sides are called the **BASES**. • The sides that are not parallel are called the **LEGS**. • The **MIDSEGMENT** is equal to $\frac{base_1 + base_2}{2}$	**ALL THE PROPERTIES OF A TRAPEZOID PLUS:** • The legs are **CONGRUENT**. • The base angles are **CONGRUENT**. • The **DIAGONALS** are **CONGRUENT**. • **ADJACENT** angles along the **LEGS** are **SUPPLEMENTARY**.	• Two pairs **CONSECUTIVE** sides are **CONGRUENT**. • **DIAGONALS** are **PERPENDICULAR**. • The longer diagonal *(JL)* **BISECTS** the shorter diagonal *(KM)*. • The longer diagonal **BISECTS** the opposite pair of angles *(J and L)* • The opposite angles of the shorter diagonal are **CONGRUENT** *(K and M)*.

Given the isosceles trapezoids below, find the value of x and all of the angle measures.

1)

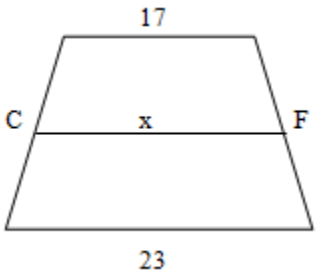


2)

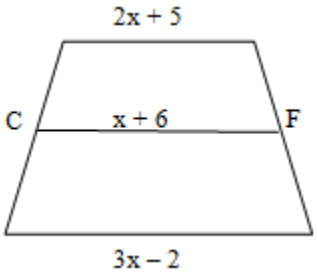


Given the trapezoids with the corresponding midsegments below, find the value of *x*.

3)

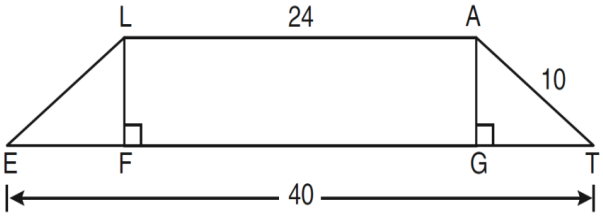


4)



5) In the diagram below, *LATE* is an isosceles trapezoid with $\overline{LE} \cong \overline{AT}$, $\overline{LA} = 38$, $\overline{ET} = 62$, and $\overline{AT} = 13$

Altitudes $\overline{LF}$ and $\overline{AG}$ are drawn. What is the length of $\overline{LF}$? Explain your solution.



MIXED PRACTICE!

(Complete for HW before QUIZ TOMORROW!

List the 5 Properties of **PARALLELOGRAMS** below:

1. _____

2. _____

3. _____

4. _____

5. _____

A **RECTANGLE** is a parallelogram with _____ and _____.

A **RHOMBUS** is a parallelogram with _____ that _____.

A **SQUARE** is a parallelogram with _____ and _____ that

_____

A **TRAPEZOID** is a quadrilateral with _____.

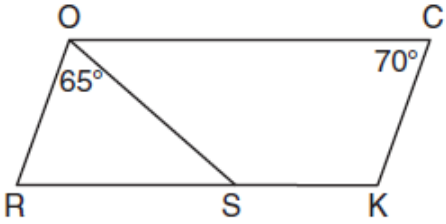
An **ISOSCELES TRAPEZOID** is a trapezoid with _____, _____

and _____.

To find the **MIDSEGMENT** in a trapezoid: _____

1. If the diagonals of a quadrilateral do *not* bisect each other, then the quadrilateral could be a
   1) rectangle
   2) rhombus
   3) square
   4) Trapezoid

2. In the diagram below of parallelogram *ROCK*, $m\angle C$ is 70° and $m\angle ROS$ is 65°. What is $m\angle KSO$?
   1) 45º
   2) 110º
   3) 115º
   4) 135º



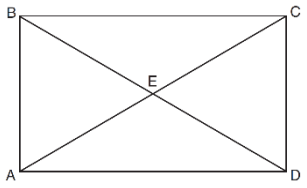
3. A builder is building a rectangular deck with dimensions of 16 feet by 30 feet. To ensure that the sides form 90° angles, what should each diagonal measure?

   1) 16 ft 2) 30 ft 3) 34 ft 4) 46 ft

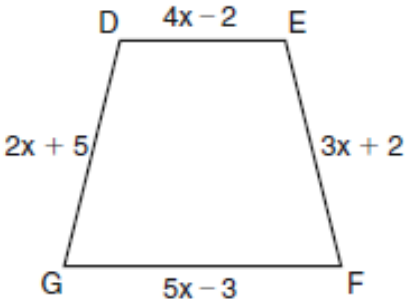
4. As shown in the diagram of rectangle *ABCD* below, diagonals $\overline{AC}$ and $\overline{BD}$ intersect at *E*.

   If $AE = x + 2$ and $BD = 4x - 16$, then the length of $\overline{AC}$ is

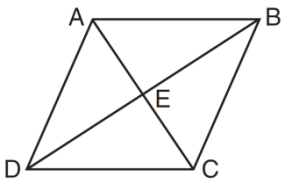
   1) 6 2) 10 3) 12 4) 24



5. In the diagram below of isosceles trapezoid *DEFG*, $\overline{DE} \parallel \overline{GF}$, $DE = 4x - 2$, $EF = 3x + 2$, $FG = 5x - 3$, and $GD = 2x + 5$. Find the value of *x*. Explain your solution.



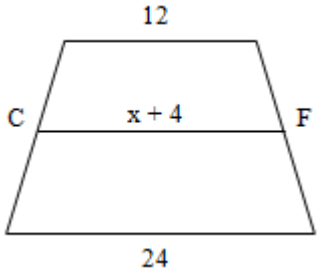
6. In the diagram below of rhombus *ABCD*, the diagonals $\overline{AC}$ and $\overline{BD}$ intersect at *E*. If $AC = 6$ and $BD = 12$, what is the length of one side of rhombus *ABCD*?



7. In a certain quadrilateral, two opposite sides are parallel, and the other two opposite sides are not congruent. This quadrilateral could be a

   1) rhombus
   2) parallelogram
   3) square
   4) Trapezoid

8. Given trapezoid with midsegment CF, find the value of x.



9. A regular polygon with an exterior angle of 40° is a 1) pentagon 2) hexagon 3) nonagon 4) decagon	10. The sum of the interior angles of a regular polygon is 720°. Determine and state the number of degrees in one interior angle of the polygon.