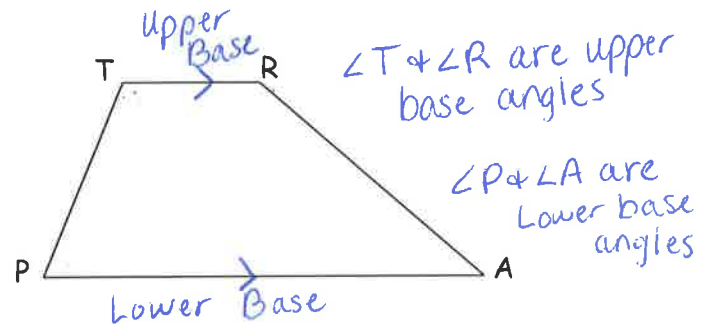


Learning Targets	Help!	I'm getting there...	I'm almost there...	Yes! I totally got this! ☺
1. I can state precise definitions of a rectangle, parallelogram, trapezoid and regular polygons.				
2. I can prove the case for which a trapezoid is isosceles.				
3. I can prove the case for which a quadrilateral is a kite.				

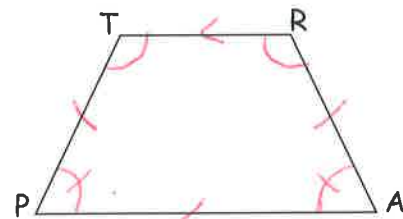
Properties of a Trapezoid

- Exactly one pair of parallel sides. (Bases)
- Consecutive upper base and lower base angles are supplementary.



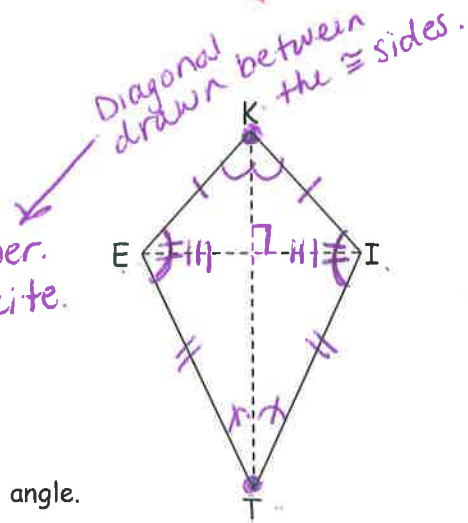
Properties of an Isosceles Trapezoid

- Properties of a Trapezoid
- Non-parallel sides are $\cong$. (legs)
- Upper base $\angle$ s are $\cong$.
- Lower base $\angle$ s are $\cong$.
- Diagonals are $\cong$. ($\overline{TA} \cong \overline{PR}$)



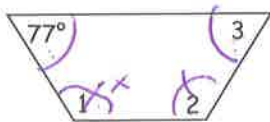
Properties of a Kite

- 2 pairs of consecutive sides that are $\cong$.
- Diagonals are perpendicular
- One diagonal is the $\perp$ bisector of the other.
- One diagonal bisects the angles of the kite.
- One pair of opposite $\angle$ s are $\cong$.
($\angle KET \cong \angle KIT$)



Directions: Each trapezoid is isosceles. Find the measure of each angle.

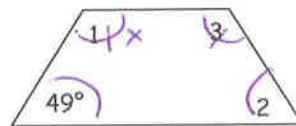
1.



$$\begin{aligned} m\angle 1 &= 103^\circ \\ m\angle 2 &= 103^\circ \\ m\angle 3 &= 77^\circ \end{aligned}$$

$$\begin{aligned} x + 77 &= 180 \\ x &= 103 \end{aligned}$$

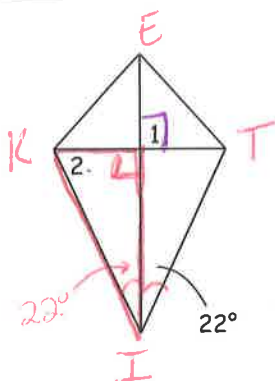
2.



$$\begin{aligned} m\angle 1 &= 131^\circ \\ m\angle 2 &= 49^\circ \\ m\angle 3 &= 131^\circ \end{aligned}$$

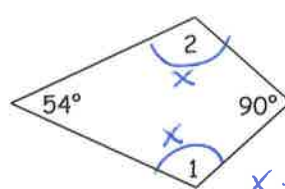
$$\begin{aligned} x + 49 &= 180 \\ x &= 131 \end{aligned}$$

Directions: Find the measure of the numbered angles in each kite.

3. 

$m\angle 1 = 90^\circ$
 $m\angle 2 = 68^\circ$

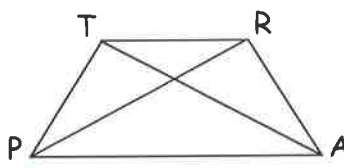
$m\angle 2 + 22 + 90 = 180$
 $m\angle 2 + 112 = 180$
 $m\angle 2 = 68$

4. 

$m\angle 1 = 108^\circ$
 $m\angle 2 = 108^\circ$

$x + 54 + x + 90 = 360$
 $2x + 144 = 360$
 $2x = 216$
 $x = 108$

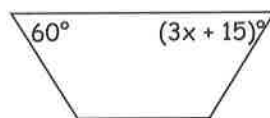
Directions: Find the value of the variable in each isosceles trapezoid or kite.

5. 

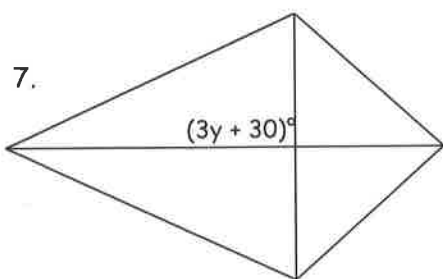
$TA = x + 5$
 $RP = 3x + 3$

$3x + 3 = x + 5$
 $2x + 3 = 5$
 $2x = 2$
 $x = 1$

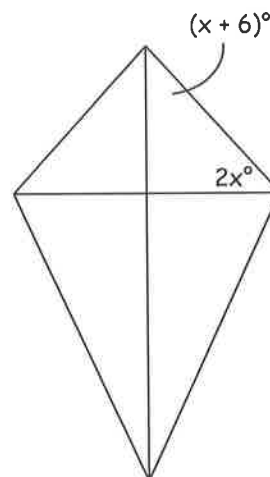
$x = 1$

6. 

$x = \underline{\hspace{2cm}}$

7. 

$y = \underline{\hspace{2cm}}$

8. 

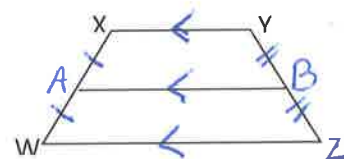
$x = \underline{\hspace{2cm}}$

****Midsegment of a Trapezoid:** a segment drawn between the midpoints of the non-parallel sides.

1). midsegment is parallel to the bases.

2). midsegment is half the sum of the bases.

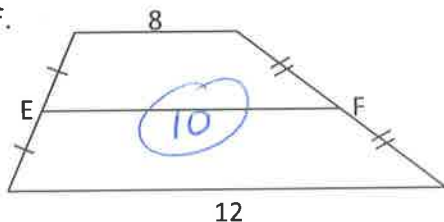
$$AB = \frac{1}{2}(xy + wz)$$



OR $2AB = xy + wz$

Example D: Find the given segment length.

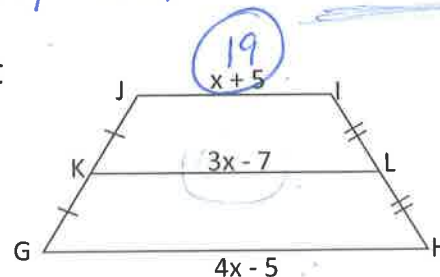
1) Find EF.



$$EF = \frac{1}{2}(8 + 12)$$

$$= \frac{1}{2}(20) = 10$$

2) Find JI



$$2(3x - 7) = 19 + 4x - 5$$

$$6x - 14 = 4x - 5$$

$$-14 = -2x$$

$$x = 14$$