Non Isosceles Trapezoid:
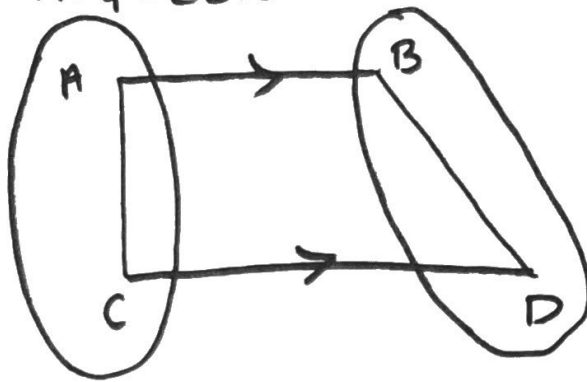

1. One pair of opposite sides that are parallel.
   $\overline{AB} \parallel \overline{CD}$
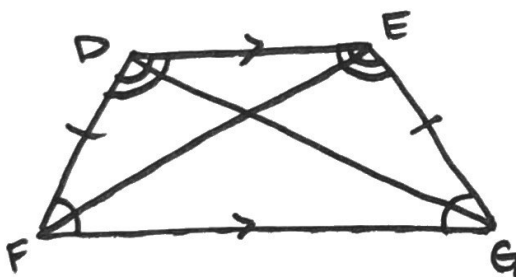
2. Consecutive ∠'s are supplementary.
   $\angle A + \angle C = 180°$
   $\angle B + \angle D = 180°$

Isosceles Trapezoid:

Has the same properties of a non isosceles trapezoid + . . .

3. Legs are ≅. (non parallel sides).
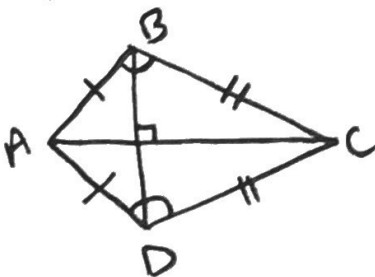 $\overline{DF} \cong \overline{EG}$

4. Base ∠'s are ≅.
   $\angle F \cong \angle G$ & $\angle D \cong \angle E$

5. Opposite ∠'s are supplementary.

6. Diagonals are ≅.
   $\overline{FE} \cong \overline{DG}$

Kite:

1. 2 pairs of consecutive (next to) ≅ sides.
   $\overline{AB} \cong \overline{AD}$ & $\overline{BC} \cong \overline{DC}$

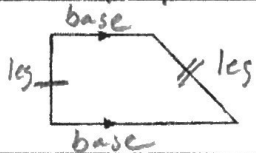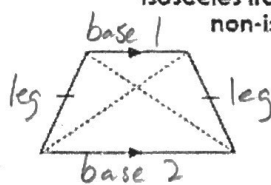2. 1 pair of opposite ∠'s are ≅. $\angle B \cong \angle D$

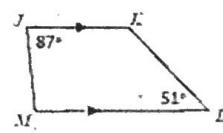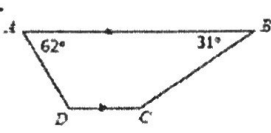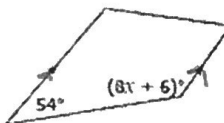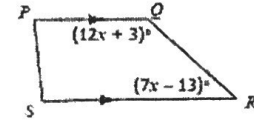3. Diagonals are ⊥. $\overline{AC} \perp \overline{BD}$

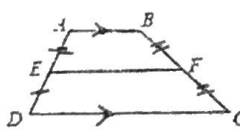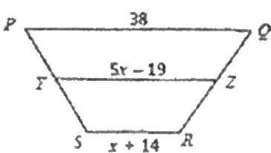Trap = 1 set of parallel lines   Kites- 0 set of ||

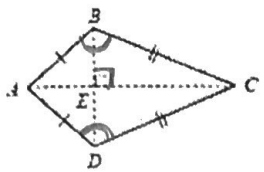| Main Ideas/Questions	Notes $\frac{11}{2}\frac{2}{18}$
NON-ISOSCELES Trapezoids	base / leg — X leg / base — **Properties of Non-Isosceles Trapezoids:** • Only ONE pair of opposite sides parallel. • Consecutive angles are supplementary. Base are ||
ISOSCELES Trapezoids	base 1 / leg leg / base 2 — **Isosceles trapezoids have the same properties as non-isosceles trapezoids, plus these:** • Non-parallel sides (legs) are congruent. • Diagonals are congruent. • Base angles are congruent. • Opposite angles are supplementary.

Practice! Find each missing value on the trapezoids below.

1. J $87°$ K / M $51°$ L $\quad m\angle K = \underline{129°}$ $\quad m\angle M = \underline{93°}$	2. A $62°$ $31°$ B / D C $\quad m\angle C = \underline{149°}$ $\quad m\angle D = \underline{118°}$
3. Solve for x. $54°$ $(8x + 6)°$ $54 + 8x + 6 = 180$ $8x = 120$ $\boxed{x = 15}$	4. Find $m\angle R$. P $(12x + 3)°$ Q S $(7x - 13)°$ R $12x + 3 + 7x - 13 = 180$ $19x = 190$ $x = 10$ $7(10) - 13 = \boxed{57°}$
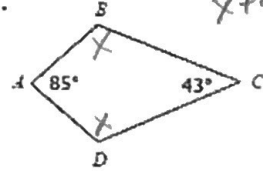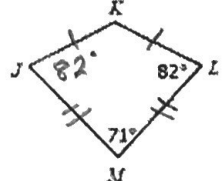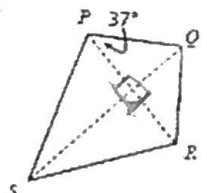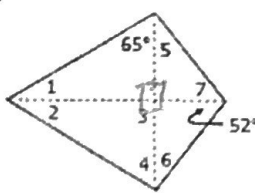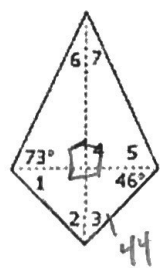
Main Ideas/Questions	Notes
MIDSEGMENT of a **TRAPEZOID**	A B / E F / D C **The midsegment of a trapezoid connects the midpoints of the legs:** If $\overline{EF}$ is the midsegment of trapezoid $ABCD$, then: • $\overline{AB} \| \overline{EF} \| \overline{DC}$ • $\overline{EF} = \dfrac{AB + DC}{2} = \dfrac{base1 + base2}{2}$

Practice! Use the trapezoid above for questions 1-4.

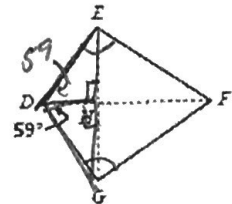|	
1. If $AB = 14$ and $DC = 26$, find EF. $EF = \dfrac{14 + 26}{2} = \boxed{20}$	2. If $AB = 7$ and $DC = 31$, find EF. $EF = \dfrac{7 + 31}{2} = \boxed{19}$
3. If $EF = 22$ and $DC = 38$, find AB. $22 = \dfrac{x + 38}{2}$ $44 = x + 38$ $\boxed{x = 6 = AB}$	4. If $AB = 41$ and $EF = 47$, find DC. $47 = \dfrac{41 + x}{2}$ $94 = 41 + x$ $\boxed{x = 53}$
5. For trapezoid $PQRS$, Y and Z are midpoints of the legs. Find YZ. P 38 Q / Y $5x - 19$ Z / S $x + 14$ R $\qquad 5x - 19 = \dfrac{38 + x + 14}{2}$ $10x - 38 = 52 + x$ $9x = 90$ $x = 10$ $\qquad 5(10) - 19 = YZ$ $\boxed{31 = YZ}$	

Main Ideas/Questions	Notes

PROPERTIES OF A *Kite*

A kite is a quadrilateral with the following properties:

- Exactly two pairs of consecutive congruent sides. ($\overline{AB} \cong \overline{AD}$ and $\overline{BC} \cong \overline{DC}$)
- One pair of opposite angles are congruent. ($\angle ABC \cong \angle ADC$)
- Diagonals are perpendicular. ($\overline{AC} \perp \overline{BD}$)

Practice! If each quadrilateral below is a kite, find the missing values.

1.

$x + 43 + x + 85 = 360$
$2x = 232$
$x = 116°$
$m\angle B = \underline{116°}$
$m\angle D = \underline{116°}$

2.

$360 - 82 - 82 - 71 = 125°$
$m\angle J = \underline{82°}$
$m\angle K = \underline{125°}$

3.

$90 + 37 + x = 180$
$x = 53°$
$m\angle PTQ = \underline{90°}$
$m\angle PQT = \underline{53°}$
$m\angle QRT = \underline{37°}$

4.

$m\angle GDE = \underline{118°}$
$m\angle DEH = \underline{31°}$
$m\angle DGH = \underline{31°}$

5.

$m\angle 1 = \underline{25}$
$m\angle 2 = \underline{25}$
$m\angle 3 = \underline{90}$
$m\angle 4 = \underline{65}$
$m\angle 5 = \underline{38}$
$m\angle 6 = \underline{38}$
$m\angle 7 = \underline{52°}$

6.

$m\angle 1 = \underline{46°}$
$m\angle 2 = \underline{44°}$
$m\angle 3 = \underline{44°}$
$m\angle 4 = \underline{90°}$
$m\angle 5 = \underline{73°}$
$m\angle 6 = \underline{17°}$
$m\angle 7 = \underline{17°}$