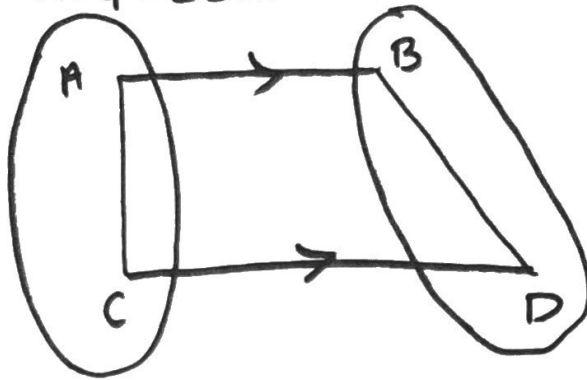


## Non Isosceles

Trapezoid:



1. One pair of opposite sides that are parallel.

$$\overline{AB} \parallel \overline{CD}$$

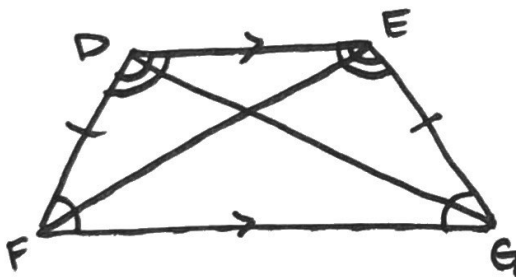
2. Consecutive  $\angle$ 's are supplementary.

$$\angle A + \angle C = 180^\circ$$

$$\angle B + \angle D = 180^\circ$$

## Isosceles

Trapezoid:



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

3. Legs are  $\cong$ . (non parallel sides).

$$\overline{DF} \cong \overline{EG}$$

4. Base  $\angle$ 's are  $\cong$ .

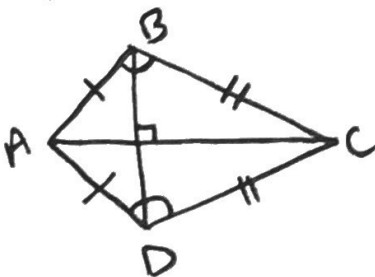
$$\angle F \cong \angle G \text{ \& } \angle D \cong \angle E$$

5. Opposite  $\angle$ 's are supplementary.

6. Diagonals are  $\cong$ .

$$\overline{FE} \cong \overline{DG}$$

Kite:



1. 2 pairs of consecutive  $\cong$  sides. (next to)

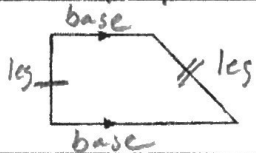
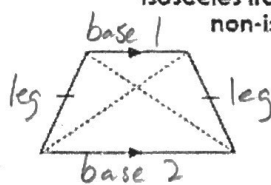
$$\overline{AB} \cong \overline{AD} \text{ \& } \overline{BC} \cong \overline{DC}$$

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

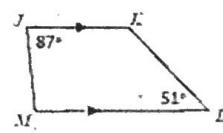
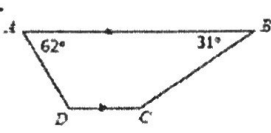
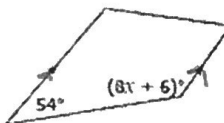
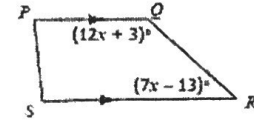
3. Diagonals are  $\perp$ .  $\overline{AC} \perp \overline{BD}$

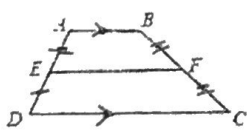
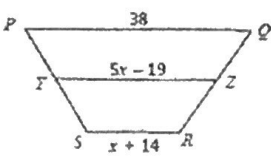
Trapez = 1 set of parallel lines

Kites - 0 set of //

| Main Ideas/Questions   | Notes 11/2/18  |
|--|--|
| <p><b>NON-ISOSCELES Trapezoids</b></p>  | <p><b>Properties of Non-Isosceles Trapezoids:</b></p> <ul style="list-style-type: none"> <li>• Only ONE pair of opposite sides parallel.</li> <li>• Consecutive angles are supplementary.</li> </ul> <p>Base are //</p>  |
| <p><b>ISOSCELES Trapezoids</b></p>      | <p>Isosceles trapezoids have the same properties as non-isosceles trapezoids, plus these:</p> <ul style="list-style-type: none"> <li>• Non-parallel sides (legs) are congruent.</li> <li>• Diagonals are congruent.</li> <li>• Base angles are congruent.</li> <li>• Opposite angles are supplementary.</li> </ul> |

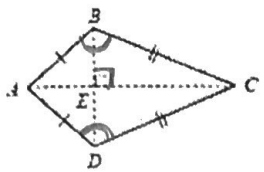
Practice! Find each missing value on the trapezoids below.

|  |   |
|--|---|
| <p>1.</p>  <p> <math>m\angle K = 129^\circ</math><br/> <math>m\angle M = 93^\circ</math> </p>                       | <p>2.</p>  <p> <math>m\angle C = 149^\circ</math><br/> <math>m\angle D = 118^\circ</math> </p>  |
| <p>3. Solve for x.</p>  <p> <math>54 + 8x + 6 = 180</math><br/> <math>8x = 120</math><br/> <math>x = 15</math> </p> | <p>4. Find <math>m\angle R</math>.</p>  <p> <math>12x + 3 + 7x - 13 = 180</math><br/> <math>19x = 190</math><br/> <math>x = 10</math><br/> <math>7(10) - 13 = 57^\circ</math> </p> |

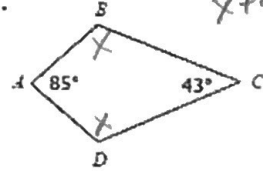
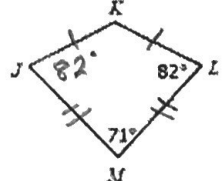
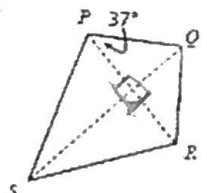
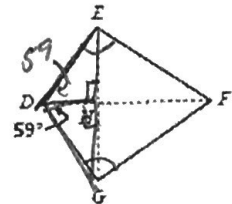
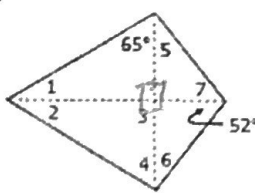
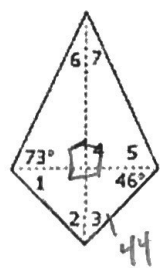
| Main Ideas/Questions  | Notes   |
|---|---|
| <p><b>MIDSEGMENT of a TRAPEZOID</b></p>    | <p>The midsegment of a trapezoid connects the midpoints of the legs:</p> <p>If <math>\overline{EF}</math> is the midsegment of trapezoid <math>ABCD</math>, then:</p> <ul style="list-style-type: none"> <li>• <math>\overline{AB} \parallel \overline{EF} \parallel \overline{DC}</math></li> <li>• <math>EF = \frac{AB + DC}{2} = \frac{\text{base 1} + \text{base 2}}{2}</math></li> </ul> |
| Practice! Use the trapezoid above for questions 1-4.  |   |
| <p>1. If <math>AB = 14</math> and <math>DC = 26</math>, find <math>EF</math>.</p> <p><math>EF = \frac{14 + 26}{2} = 20</math></p>   | <p>2. If <math>AB = 7</math> and <math>DC = 31</math>, find <math>EF</math>.</p> <p><math>EF = \frac{7 + 31}{2} = 19</math></p>   |
| <p>3. If <math>EF = 22</math> and <math>DC = 38</math>, find <math>AB</math>.</p> <p><math>22 = \frac{x + 38}{2}</math><br/> <math>44 = x + 38</math><br/> <math>x = 6 = AB</math></p>                            | <p>4. If <math>AB = 41</math> and <math>EF = 47</math>, find <math>DC</math>.</p> <p><math>47 = \frac{41 + x}{2}</math><br/> <math>94 = 41 + x</math><br/> <math>x = 53</math></p>  |
| <p>5. For trapezoid <math>PQRS</math>, <math>Y</math> and <math>Z</math> are midpoints of the legs. Find <math>YZ</math>.</p>  | <p> <math>5x - 19 = \frac{38 + x + 14}{2}</math><br/> <math>10x - 38 = 52 + x</math><br/> <math>9x = 90</math><br/> <math>x = 10</math><br/> <math>5(10) - 19 = 31 = YZ</math> </p>   |

Quads sum to  $360^\circ$

A Kite has 0 sets of parallel lines.

| Main Ideas/Questions          | Notes   |
|-------------------------------|---|
| <h2>PROPERTIES OF A Kite</h2> | <p>A kite is a quadrilateral with the following properties:</p>  <ul style="list-style-type: none"> <li>Exactly two pairs of consecutive congruent sides. (<math>\overline{AB} \cong \overline{AD}</math> and <math>\overline{BC} \cong \overline{DC}</math>)</li> <li>One pair of opposite angles are congruent. (<math>\angle ABC \cong \angle ADC</math>)</li> <li>Diagonals are perpendicular. (<math>\overline{AC} \perp \overline{BD}</math>)</li> </ul> |

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

|   |  |
|---|--|
| <p>1. </p> <p><math>x + 43 + x + 85 = 360</math><br/> <math>2x = 232</math><br/> <math>x = 116</math><br/> <math>m\angle B = 116^\circ</math><br/> <math>m\angle D = 116^\circ</math></p>  | <p>2. </p> <p><math>360 - 82 - 82 - 71 = 125^\circ</math><br/> <math>m\angle I = 82^\circ</math><br/> <math>m\angle K = 125^\circ</math></p>   |
| <p>3. </p> <p><math>90 + 37 + x = 180</math><br/> <math>x = 53</math><br/> <math>m\angle PTQ = 90^\circ</math><br/> <math>m\angle PQT = 53^\circ</math><br/> <math>m\angle QRT = 37^\circ</math></p>   | <p>4. </p> <p><math>m\angle GDE = 118^\circ</math><br/> <math>m\angle DEH = 31^\circ</math><br/> <math>m\angle DGH = 31^\circ</math></p>   |
| <p>5. </p> <p><math>m\angle 1 = 25</math><br/> <math>m\angle 2 = 25</math><br/> <math>m\angle 3 = 90</math><br/> <math>m\angle 4 = 65</math><br/> <math>m\angle 5 = 38</math><br/> <math>m\angle 6 = 38</math><br/> <math>m\angle 7 = 52^\circ</math></p> | <p>6. </p> <p><math>m\angle 1 = 46^\circ</math><br/> <math>m\angle 2 = 44^\circ</math><br/> <math>m\angle 3 = 44^\circ</math><br/> <math>m\angle 4 = 90^\circ</math><br/> <math>m\angle 5 = 73^\circ</math><br/> <math>m\angle 6 = 17^\circ</math><br/> <math>m\angle 7 = 17^\circ</math></p> |