

6.5 Trapezoids

Objective : Use properties of trapezoids

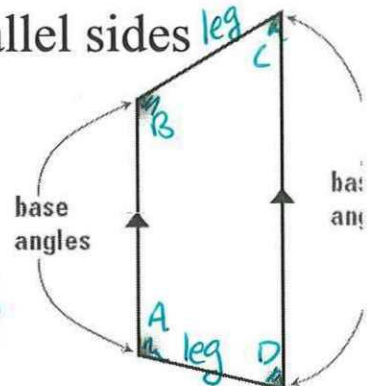
Trapezoid: quadrilateral with only 1 pair of parallel sides

bases : the 2 sides that are parallel

legs : the 2 non-parallel sides

base angles: angles connected to the base

The base angles are not necessarily at the bottom.



Isosceles trapezoid: trapezoid with congruent legs

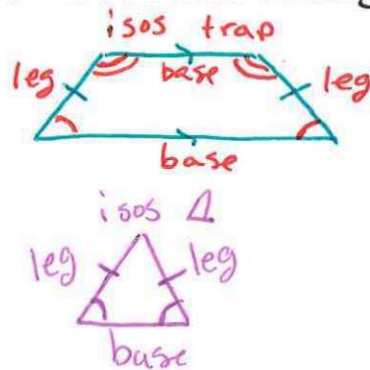
Th: base angles are = in an isosceles trapezoid

$A + D = 180$
 $B + C = 180$

Examples:

1. Tell whether the statements are true for isosceles triangles, isosceles trapezoids, both or neither

- Legs are congruent *both*
- Base angles are congruent *both*
- Bases are parallel *isos trap*
- Legs are parallel *neither*



Examples:

EFGH is an trapezoid. Find the missing angles.

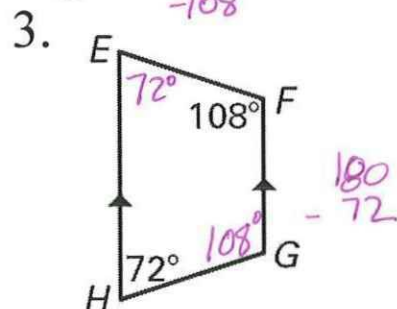
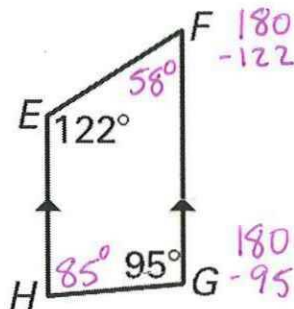
1. 2.

$E + H = 180$
 $E + 90 = 180$

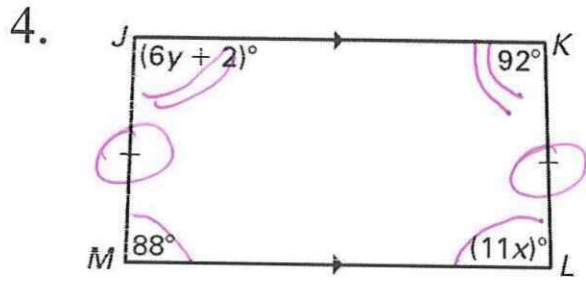
$E = 90^\circ$

$F + 45 = 180$

$F = 135^\circ$



Find the values of the variables for the isosceles trapezoids



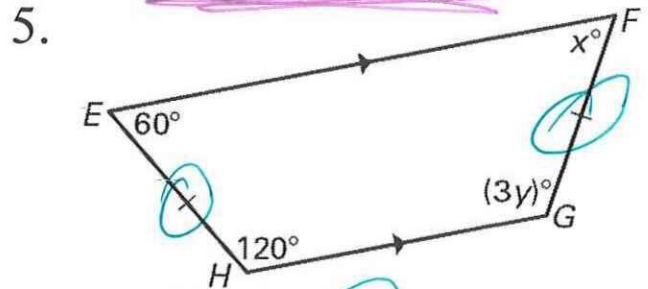
$$11x = 88$$

$$\boxed{x = 8}$$

$$6y + 2 = 92$$

$$\begin{array}{r} 6y + 2 = 92 \\ -2 \quad -2 \\ \hline 6y = 90 \\ \frac{6y}{6} = \frac{90}{6} \\ \hline y = 15 \end{array}$$

$$\boxed{y = 15}$$

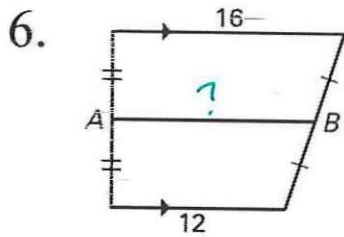
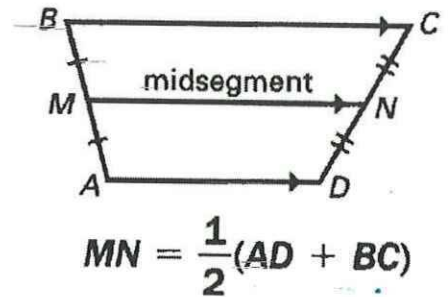


$$x = 60$$

$$3y = 120$$

$$\boxed{y = 40}$$

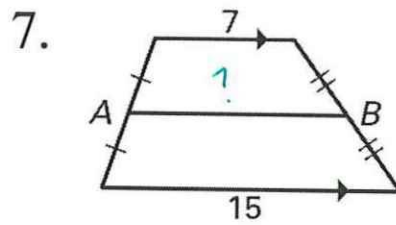
Midsegment of a trapezoid: connects the midpoint of each leg. Equals half the sum of the bases



$$16 + 12$$

$$\frac{28}{2}$$

$$\boxed{14}$$



$$7 + 15$$

$$\frac{22}{2}$$

$$\boxed{11}$$

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