

8 - 6

Trapezoids

trapezoid: quad. with one pair of parallel sides

bases: the parallel sides

base angles: formed by one base and one leg



legs: nonparallel sides

isosceles trapezoid: legs are \cong



Theorem 8.18:

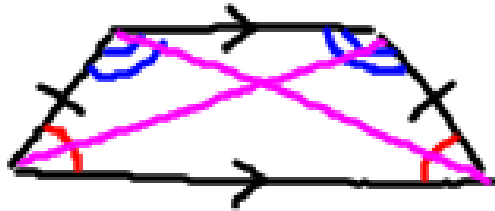
Both pairs of base angles of an isosceles trapezoid are congruent.

Theorem 8.19:

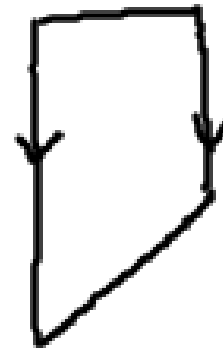
The diagonals of an isosceles trapezoid are congruent.



Isosceles



Not Isosceles



median: segment joining the midpoints
of the legs

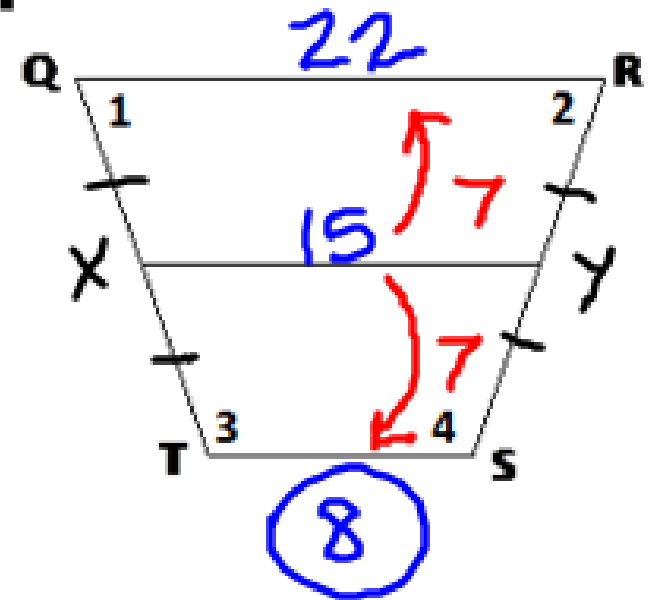
Theorem 8.20:

The median of a trapezoid is parallel
to its bases and its measure is
 $\frac{1}{2}$ the sum of the bases.



Ex: QRST is an isosceles trapezoid with median \overline{XY} .

A.) Find TS if $QR = 22$ and $XY = 15$.



$$15 = \frac{1}{2}(22 + x)$$

$$15 = 11 + \frac{1}{2}x$$

-11 -11

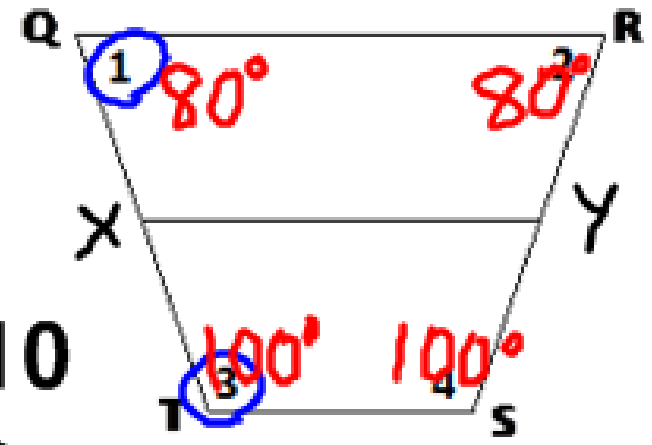
$$4 = \frac{1}{2}x$$

$$x = 8$$



Ex: QRST is an isosceles trapezoid with median XY.

B.) Find $m\angle 1$, $m\angle 2$, $m\angle 3$, and $m\angle 4$ if $m\angle 1 = 4a - 10$ and $m\angle 3 = 3a + 32.5$.



$$\underbrace{4a - 10 + 3a + 32.5}_{\text{}} = 180$$

$$4(22.5) - 10 = 80^\circ$$

$$\begin{array}{r} 7a + 22.5 = 180 \\ - 22.5 \quad - 22.5 \\ \hline 7a = 157.5 \\ \hline a = 22.5 \end{array}$$

$$a = 22.5$$



Homework:

p.442 #9a, 11a, 13 - 18

