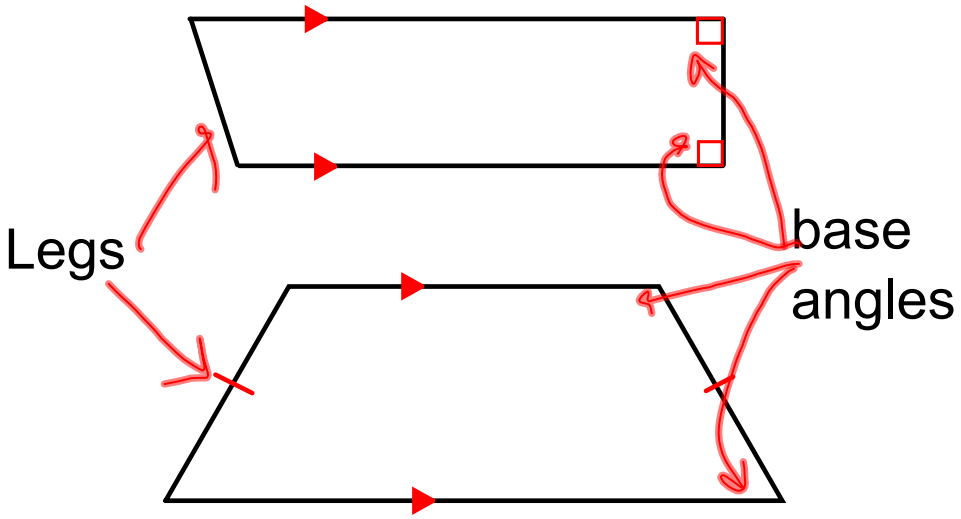
Chapter 8.5: Use Properties of Trapezoids and Kites

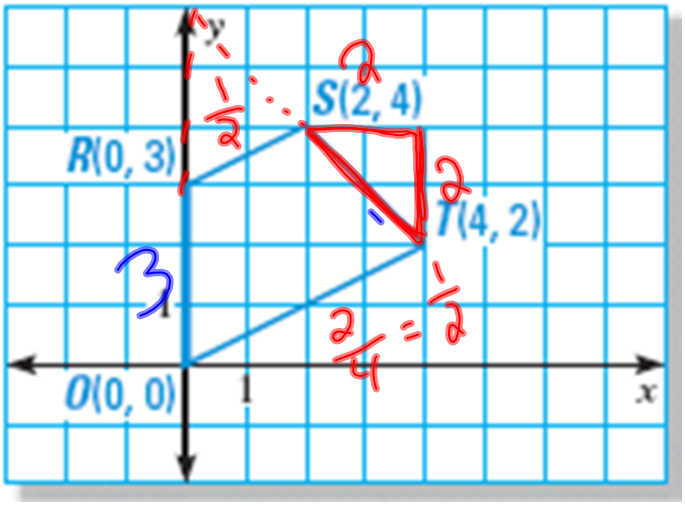
- Trapezoid: a quad with exactly one pair of parallel sides, parallel sides are the bases.

- Kite: a quad that has pairs of consecutive congruent sides, but opposite sides are not congruent.



- Isosceles Trapezoid: legs of the trapezoid are congruent.

Show that ORST is a Trapezoid.



yes, slopes are ≅

$2^2 + 2^2 = c^2$

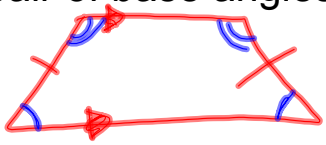
$4 + 4 = c^2$

$\sqrt{8} = \sqrt{c^2}$

not isos.

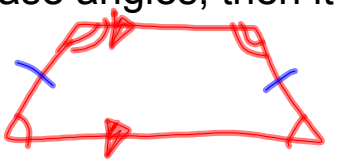
Theorem 8.14: If a trapezoid is isosceles, then each pair of base angles is congruent.

Picture:



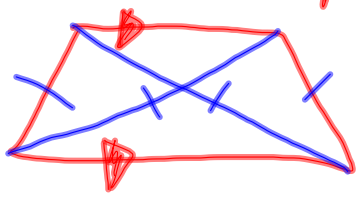
Theorem 8.15: If a trapezoid has a pair of congruent base angles, then it is an isosceles trapezoid.

Picture:

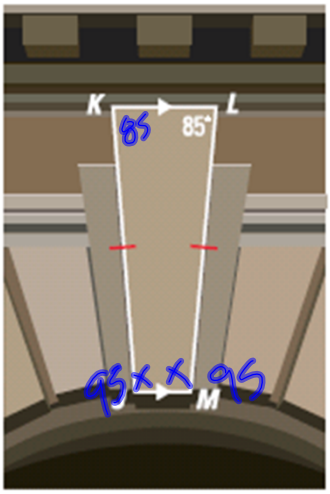


Theorem 8.16: A trapezoid is isosceles iff its diagonals are congruent.

Picture:



The keystone is an isosceles trapezoid. Find m<K, m<M, and m<J



$m\angle K = 85^\circ$ by. 8.14

$m\angle M = 95^\circ$ $m\angle J = 95^\circ$

$x + x + 85 + 85 = 360$

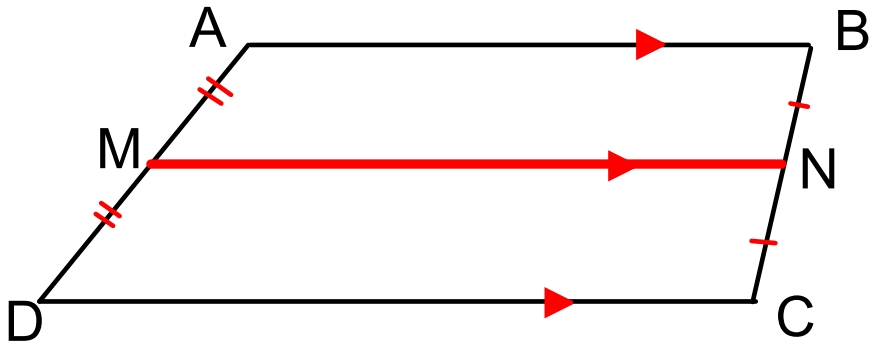
$2x + 170 = 360$

$-170 \quad -170$

$\frac{2x}{2} = \frac{190}{2}$

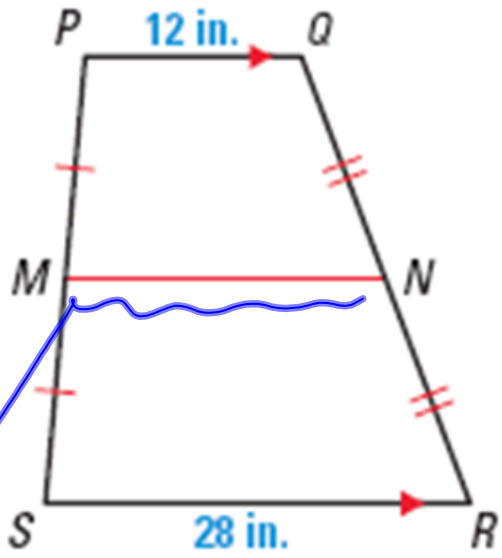
$x = 95$

Midsegment of a trapezoid:



$$MN = \frac{1}{2}(AB + CD)$$

Find MN.

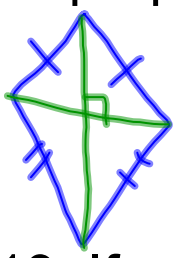


$\frac{12+28}{2}$

$\frac{40}{2} = 20$ in

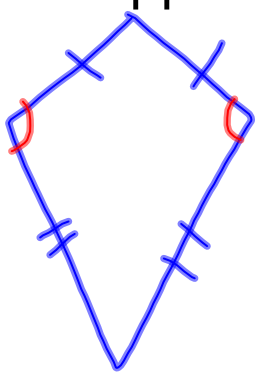
Theorem 8.18: If a quad is a kite, then its diagonals are perpendicular.

Picture:



Theorem 8.19: If a quad is a kite, then exactly one pair of opposite angles are congruent.

Picture:



Find m<D

$2x + 124 + 80 = 360$

$2x + 204 = 360$

$-204 \quad -204$

156

$\frac{2x}{2} = \frac{156}{2}$

$x = 78°$

Homework: Chapter 8.5 pg. 546
#'s 4,8,10-12,15,16,20,22