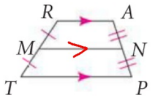
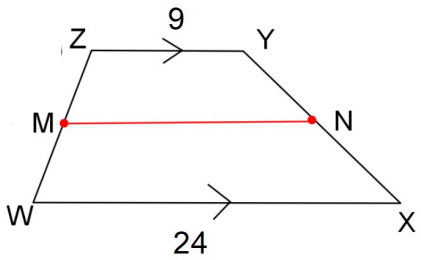
**Theorem 6-18** **Trapezoid Midsegment Theorem**

(1) The midsegment of a trapezoid is parallel to the bases.
(2) The length of the midsegment of a trapezoid is half the sum of the lengths of the bases.

$\overline{MN} \parallel \overline{TP}, \overline{MN} \parallel \overline{RA}$, and $MN = \frac{1}{2}(TP + RA)$.



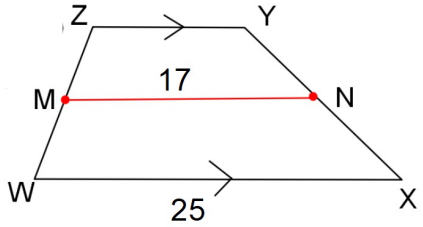




Find the length of MN.

$MN = \frac{1}{2}(9+24)$

$MN = \frac{1}{2}(33)$

$MN = 33/2$ or $16.5$




Find the length of ZY.

$\frac{1}{2}(25+ZY) = 17$

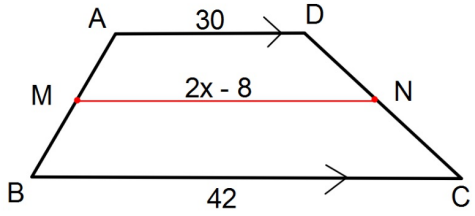
$2 \cdot \frac{1}{2}(25+ZY) = 17 \cdot 2$

$25 + ZY = 34$

$-25 \quad -25$

$ZY = 9$

Find the value of x. M and N are midpoints.




$2x - 8 = \frac{1}{2}(30+42)$

$2x - 8 = \frac{1}{2}(72)$

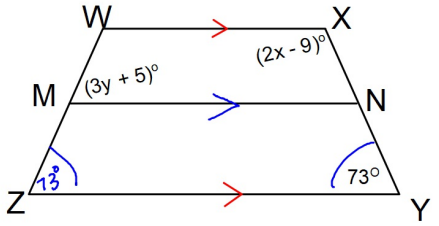
$2x - 8 = 36$

$+8 \quad +8$

$\frac{2x}{2} = \frac{44}{2}$

$x = 22$

Find the values of x and y in this Isosceles Trapezoid.
M and N are midpoints




$\angle X$ & $\angle Y$ are same side interior $\angle$'s

$2x - 9 + 73 = 180$

$2x + 64 = 180$

$-64 \quad -64$

$\frac{2x}{2} = \frac{116}{2}$ $\quad x = 58$

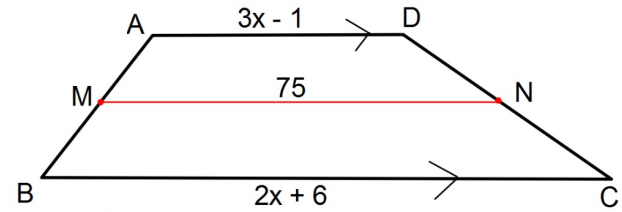
- $\overline{MN} \parallel \overline{ZY}$
- since this is an isosceles Trap $\angle Z \cong \angle Y$
- $\angle WMN$ & $\angle Z$ are $\cong$ b/c corresp $\angle$'s

$3y + 5 = 73$

$-5 \quad -5$

$\frac{3y}{3} = \frac{68}{3}$ $\quad y = \frac{68}{3}$

Find the value of x. M and N are midpoints.




$2 \cdot \frac{1}{2}(3x - 1 + 2x + 6) = 75 \cdot 2$

$5x + 5 = 150$

$5x + 5 = 150$

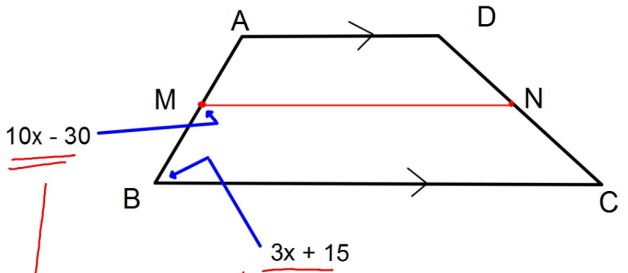
$-5 \quad -5$

$5x = 145$

$\frac{5x}{5} = \frac{145}{5}$

$x = 29$

Find the value of x. M and N are midpoints.




Same side interior $\angle$'s since $\overline{MN} \parallel \overline{BC}$

$10x - 30 + 3x + 15 = 180$

$13x - 15 = 180$

$+15 \quad +15$

$13x = 195$

$\frac{13x}{13} = \frac{195}{13}$

$x = 15$

Hwk #9 Sec 6-7

Practice Sheet Due Tomorrow

That's it.....Done with Chapter 6!

# Chapter 7: Similarity

Similar figures: Two figures that have the same shape but not neccessarily the same size.

Symbol for Similar: $\sim$