Name:_____ Date:_____ Period:_____

Chapter 7: Right Triangles
Topic 3: Trapezoid Midsegments

Trapezoid Midsegment Theorem:

The midsegment of a trapezoid is the segment that joints the _____ of the two _____ sides (legs) of a trapezoid.

Properties:

According to the midsegment theorem, the midsegment of a trapezoid:

1.) _____

2.) _____

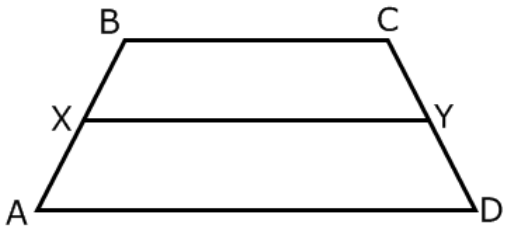
3.) _____

Examples:

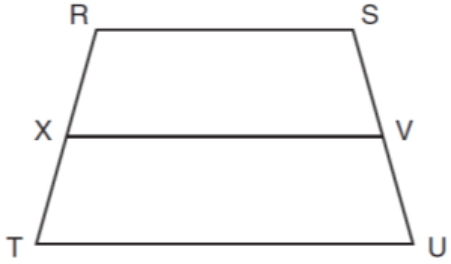
1.) In the diagram below of trapezoid ABCD, BC||XY, X is the midpoint of AB, and Y is the midpoint of CD. BC=28 inches, AD=35 inches and AB=10.

What is the length of XY?

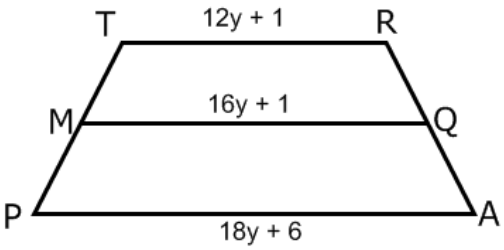
What is the length of AX?



2.) In the diagram below of trapezoid RSUT, RS||TU, X is the midpoint of RT, and V is the midpoint of SU. If RS=30 and XV=44, what is the length of TU?



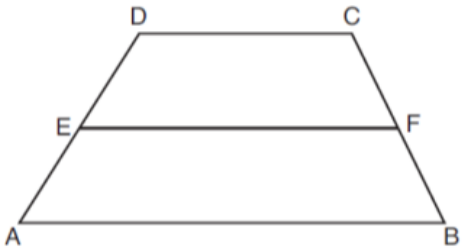
3.) Trapezoid TRAP, with median MQ, is shown in the diagram below. Solve algebraically for the value of y.



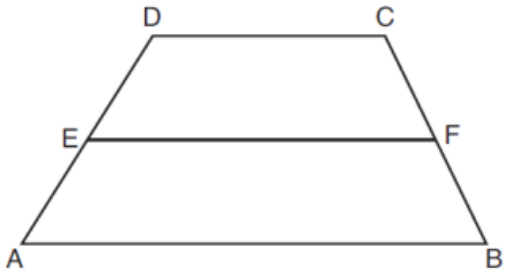
4.) In the diagram below, EF is the median of trapezoid ABCD. If AB = 5x - 9, DC = x + 3, and EF = 2x + 2, what is the value of x?

(1) 5 (2) 2

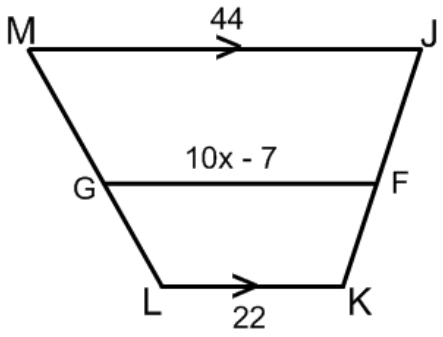
(3) 7 (4) 8



5.) In the diagram below, ABCD is a trapezoid. E is the midpoint of AD and F is the midpoint of BC. DC = 17, AB = 27, and EF = x + 10; find the value of x and the length of EF.



6.) Use the diagram below to find the value of x. G is the midpoint of ML and F is the midpoint of JK.



Name:_____ Date:_____ Period:_____

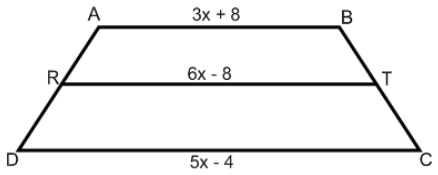
Trapezoid Midsegment: Homework

Complete all of the questions below.

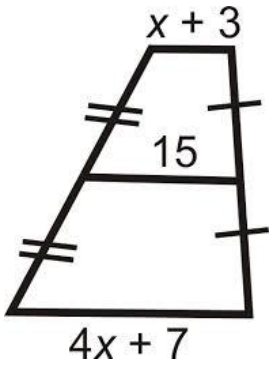
1.) In trapezoid *ABCD*, *AB* ∥ *CD*. If *AB* = 18 and *CD* = 50, what is the measure of the midsegment *MN*?

2.) In trapezoid *RSTU*, RS || TU and *RS* = $8x + 5$ and *TU* = $2x + 29$. Find the length of the median *QP* in terms of *x*.

3.) If *RT* is a median of trapezoid *ABCD*, find the length of *RT*.

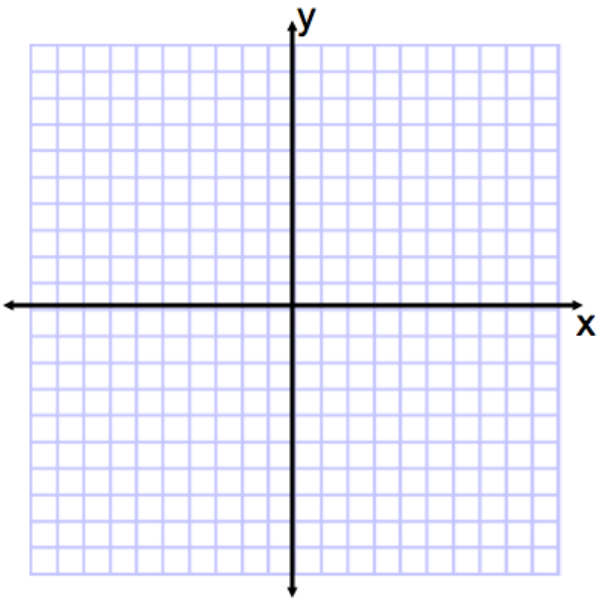


4.) Use the diagram below and your knowledge of trapezoids to find the value of x.

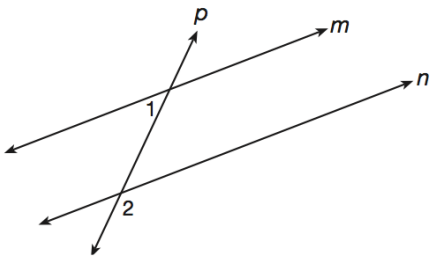


Review Questions:

5.) ΔGHS has vertices G(2,3), H(6,5), and S(4, 6). Graph and state the coordinates of $\Delta G"H"S"$, the image of ΔGHS after the transformation $D_2 \circ T_{-2,-1}$.



6.) As shown in the diagram below, lines *m* and *n* are cut by transversal *p*.



If m<1 = 4x + 4 and m<2 = 8x + 10, lines *m* and *n* are parallel when *x* equals

7.) $\overline{AB}$ and $\overline{CD}$ are intersected by $\overline{EF}$ at G and H as shown in the diagram. $< EGA = 3x - 6$ and $< CHF = 2x + 4$. If x = 6, determine if $\overline{AB} \| \overline{CD}$ and ***justify*** (explain) your answer.