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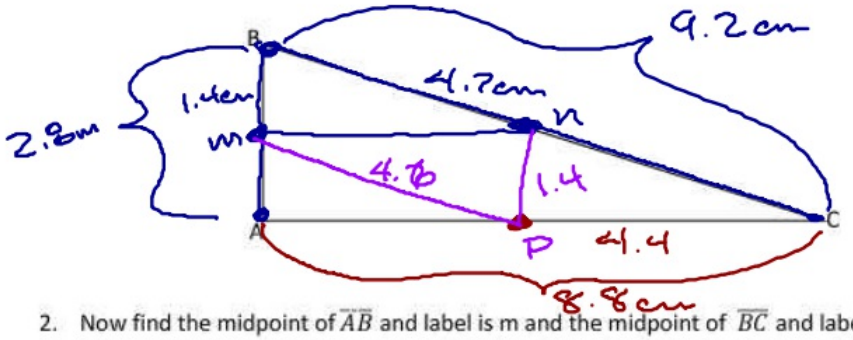
Secondary 2 Honors – Triangles Unit

Day 1 – In Class Notes - The Midsegment Triangle

What is a segment?

What does the prefix mid mean?

1. Using a ruler measure the length of $\overline{AB}$. Using a ruler measure the length of $\overline{BC}$. Please round to the nearest tenth of a centimeter.



2. Now find the midpoint of $\overline{AB}$ and label is m and the midpoint of $\overline{BC}$ and label it ***n***. Make sure to mark them on the actual side of the triangle.

3. Connect points m and n. Hooray!!!! You just found your first midsegment! The midsegment is the line segment that connects the midpoints of 2 sides of a triangle. You just found midsegment $\overline{mn}$ which is opposite of side $\overline{AC}$.

4. To the nearest tenth of a centimeter find the measure of $\overline{AC}$ and $\overline{mn}$.

   $\overline{AC}$ = 8.8 cm $\overline{mn}$ = 4.4 cm

   Scale factor = ratio

5. Find the scale factor from $\overline{AC}$ → $\overline{mn}$. Is this an enlargement or a reduction? $\frac{8.8}{4.4} = \frac{2}{1}$

6. How many midsegments does △ABC have? 3 Find the other midsegments of the triangle. Label the midpoint for $\overline{AC}$ as ***p***.

7. To the nearest tenth of a centimeter find the measure of $\overline{BC}$ and $\overline{mp}$.

   $\overline{BC}$ = 9.2 cm $\overline{mp}$ = 4.6 cm

8. Find the scale factor from $\overline{BC}$ → $\overline{mp}$. Is this an enlargement or a reduction? $\frac{9.2}{4.6} = \frac{2}{1}$

9. To the nearest tenth of a centimeter find the measure of $\overline{AB}$ and $\overline{np}$.

   $\overline{AB}$ = _____ cm $\overline{np}$ = _____ cm

10. Find the scale factor from $\overline{AB}$ → $\overline{np}$. Is this an enlargement or a reduction?

11. Are these 2 triangles similar? _____ Why? _____

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On the last page you found △ ***mnp*** by finding the midsegments of △ABC. △ mnp is known as a ***MIDSEGMENT TRIANGLE***.

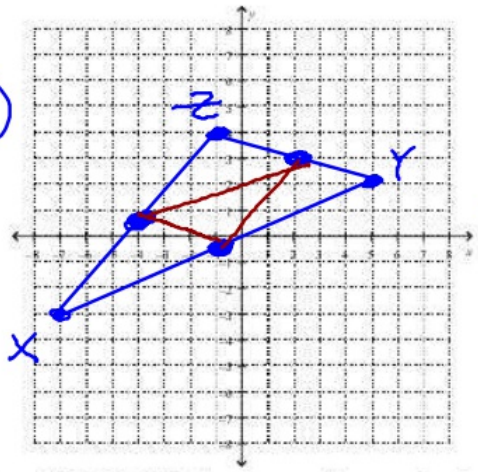
What should the scale factor be ALWAYS when you are comparing a triangle to its midsegment triangle? _____

Explain why.

Look again at triangles ***ABC*** and ***mnp***. How do the slopes of the sides and the midsegments compare?

1. a. Plot the following coordinates on the graph below. X (-7,-3) Y (5,2) Z (-1,4)

$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$



$\overline{XY}_m : \left(\frac{-7+5}{2}, \frac{-3+2}{2}\right)$

$: \left(\frac{-2}{2}, \frac{-1}{2}\right)$

$= (-1, -\frac{1}{2})$

$\overline{YZ}_m : \left(\frac{5+-1}{2}, \frac{2+4}{2}\right)$

$: \left(\frac{4}{2}, \frac{6}{2}\right)$

$(2, 3)$

$\overline{XZ}_m : \left(\frac{-7+-1}{2}, \frac{-3+4}{2}\right)$

$\left(\frac{-8}{2}, \frac{1}{2}\right)$

$(-4, \frac{1}{2})$

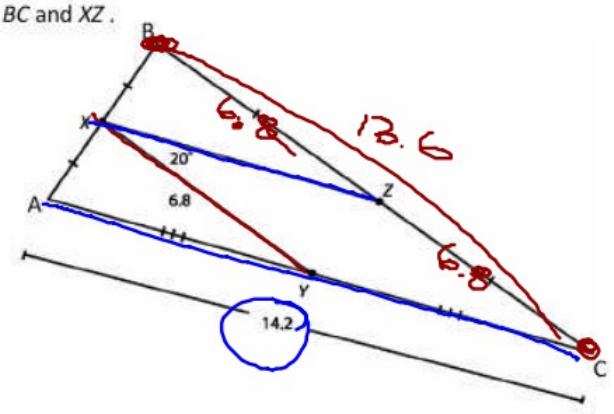
b. Find the midpoints of $\overline{XY}, \overline{YZ}, \overline{XZ}$. List the coordinates of each midpoint.

c. Go back to your graph and mark each midpoints on it and connect them to create a midsegment triangle.

2. Given that xz and xy are midsegments, find the lengths of *BC* and *XZ* .

$\overline{BC} = 13.6$

$\overline{XZ} = 7.1$



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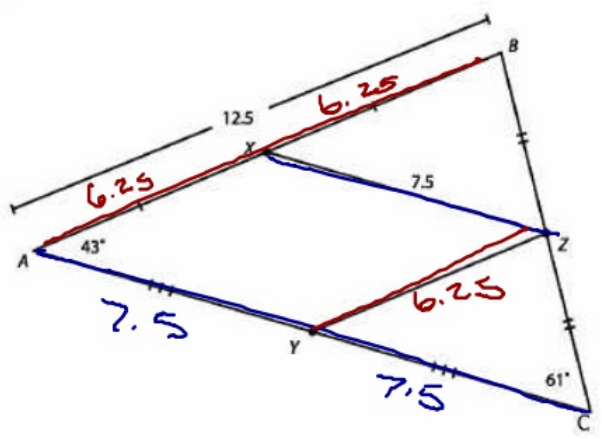
3. Given that xz and yz are midsegments, find the lengths of *AC* and *YZ*.

$\overline{AC} = 15$

$\overline{YZ} = 7.5$



4. If $AB = 7x - 13$ and $YZ = 2x + 4$, what is the length of *YZ*?

$\overline{YZ} = 18$

1) Solve for x
2) Plug it in.

$2(2x+4) = 7x-13$

$2x+4 + 2x+4 = 7x-13$

$4x + 8 = 7x - 13$

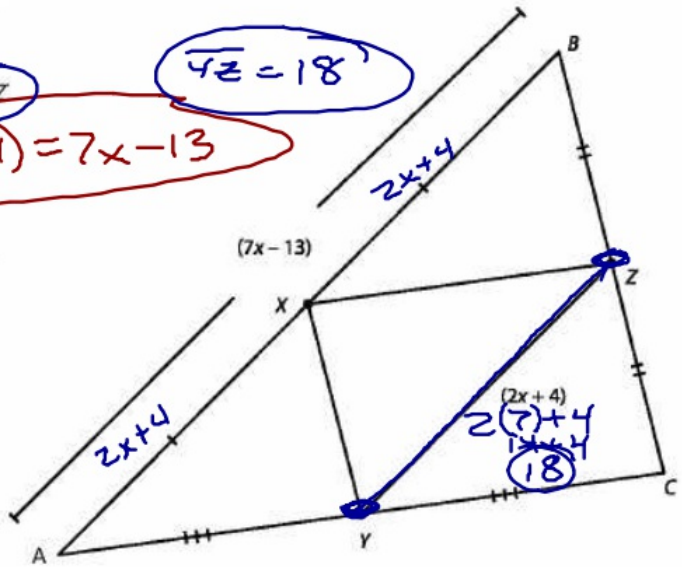
$-4x \quad -4x$

$8 = 3x - 13$

$+13 \quad +13$

$\frac{21}{3} = \frac{3x}{3}$

$7 = x$



5. If $BC = 5x + 0.75$ and $XY = 3x - 0.25$, what is the length of *BC*?

$2(3x - 0.25) = 5x + 0.75$

$6x - 0.5 = 5x + 0.75$

$x - 0.5 = 0.75$

$+0.5 \quad +0.5$

$x = 1.25$

$5(1.25) + 0.75$

$6.25 + 0.75$

$BC = 7$