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Class: Honors Geometry

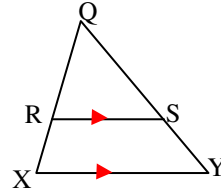
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Topic: Lesson 8-5 (Proportions in Triangles)

Theorem 8-4

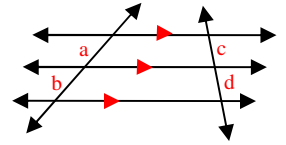
Side-Splitter Theorem

If  $\overline{RS} \parallel \overline{XY}$  then  $\frac{XR}{RQ} = \frac{YS}{SQ}$



Corollary to Theorem 8-4

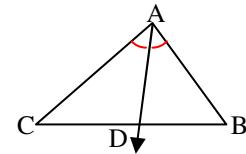
If 3  $\parallel$  lines intersect 2 transversals, the transversal segs formed by the  $\parallel$  intersecting lines are proportional:  $\frac{a}{b} = \frac{c}{d}$



Theorem 8-5

Triangle-Angle-Bisector Theorem

If  $\overline{AD}$  bisects  $\angle CAB$  then  $\frac{CD}{DB} = \frac{CA}{BA}$

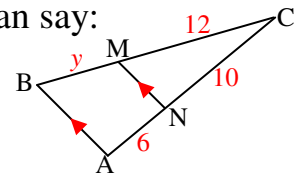


Examples

1. Find y.

Using the side-splitter theorem we can say:

$$\frac{BM}{MC} = \frac{AN}{NC}; \frac{y}{12} = \frac{6}{10}; y = \frac{12 \cdot 6}{10} = \frac{36}{5} = 7.2$$

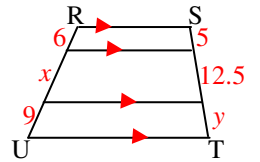


2. Solve for x and y.

Multiple  $\parallel$  lines, use Corollary to the Side-Splitter Thm:

$$\frac{x}{6} = \frac{12.5}{5}; x = \frac{6 \cdot 12.5}{5} = \frac{75}{5} = 15$$

$$\frac{y}{12.5} = \frac{9}{15} = \frac{3}{5}; y = \frac{12.5 \cdot 3}{5} = \frac{37.5}{5} = 7.5$$



3. Find the value of x.

Applying the triangle-angle-bisector theorem we have:

$$\frac{x}{24} = \frac{30}{40} = \frac{3}{4}; x = \frac{24 \cdot 3}{4} = 18$$

