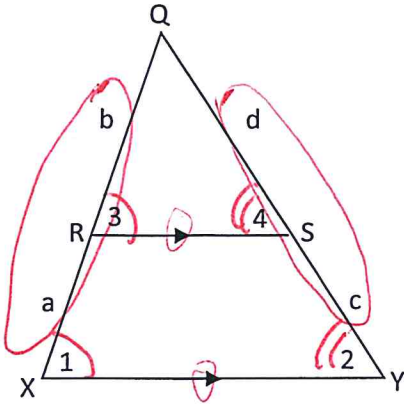


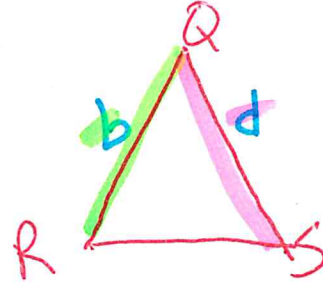
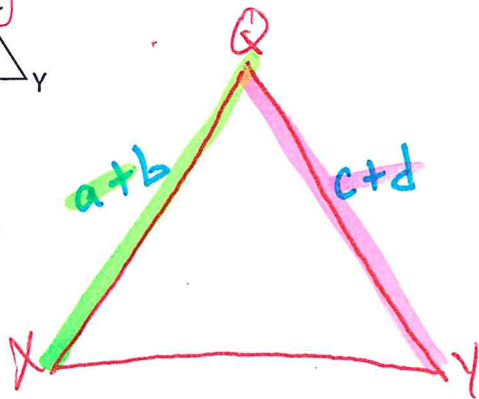
Side-Splitter Theorem



$\overline{RS} \parallel \overline{XY}$ (Given)

$\angle 1 \cong \angle 3$ and $\angle 2 \cong \angle 4$ (Corresponding $\angle$ s $\cong$)

$\triangle QXY \sim \triangle QRS$ by AA $\sim$

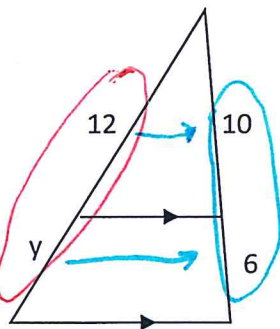


Since the $\triangle$ s are similar, corr. sides are proportional.

$$\frac{a+b}{b} = \frac{c+d}{d} \rightarrow \boxed{\frac{a}{b} = \frac{c}{d}}$$

Side-Splitter Theorem: If a line is parallel to one side of a triangle and intersects the other 2 sides, then it divides those sides proportionally.

Example 1:

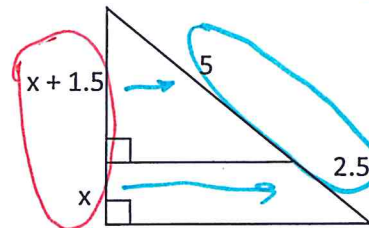


$$\frac{12}{y} = \frac{10}{6}$$

$$\frac{10y}{10} = \frac{72}{10}$$

$$\boxed{y = 7.2}$$

Example 2:



$$2.5(x+1.5)$$

$$\frac{(x+1.5)}{x} = \frac{5}{2.5}$$

$$5x = 2.5x + 3.75$$

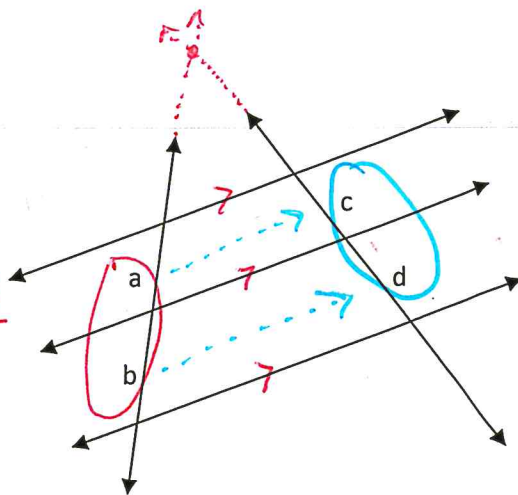
$$\frac{5x - 2.5x}{2.5} = \frac{3.75}{2.5}$$

$$\boxed{x = 1.5}$$

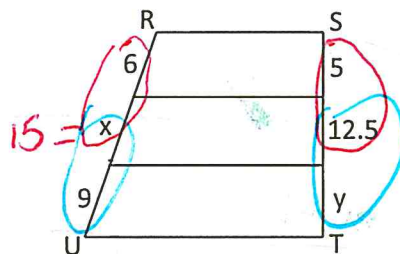
Corollary to Theorem 7-4:

If 3 (or more) parallel lines intersect 2 (or more) transversals, then the segments intercepted on the transversals are proportional.

$$\frac{a}{b} = \frac{c}{d}$$



Example 3: The segments joining the sides of trapezoid RSTU are parallel to its bases. Find x and y.



$$\frac{6}{x} = \frac{5}{12.5}$$

$$5x = 75$$

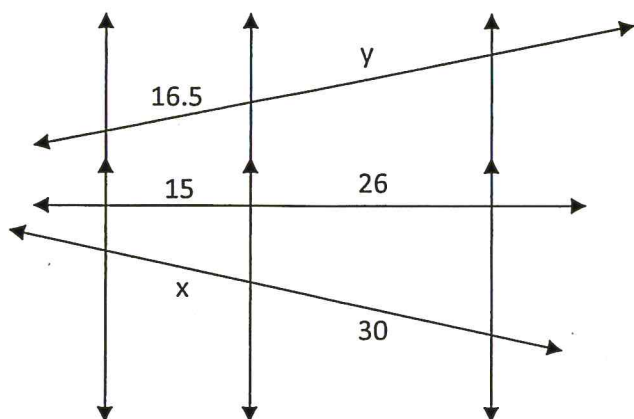
$$\boxed{x = 15}$$

$$\frac{15}{9} = \frac{12.5}{y}$$

$$15y = 112.5$$

$$\boxed{y = 7.5}$$

Quick Check: Solve for x and y.



$$x = \frac{225}{13} = 17.31$$

$$y = 28.6$$