LESSON 7-5

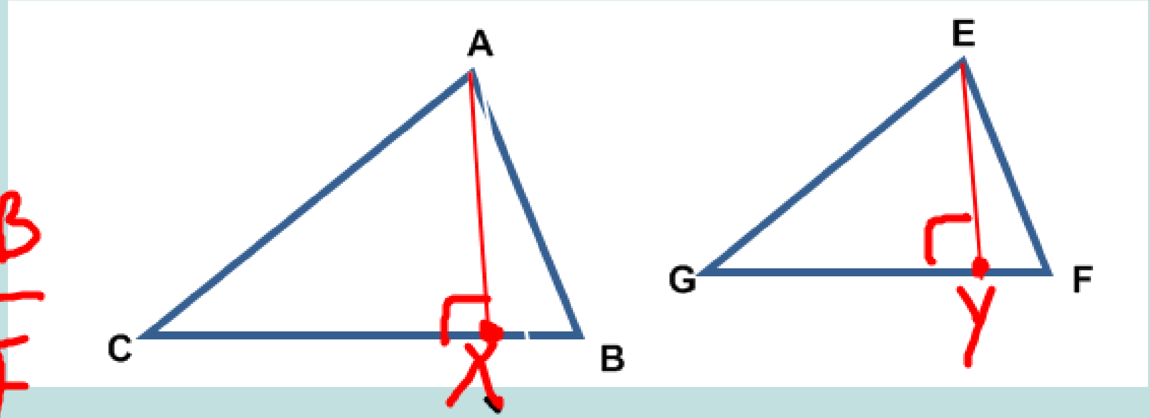
Parts of Similar Triangles

You will recognize and use proportional relationships of corresponding segments of similar triangles.

You will use the Triangle Angle Bisector Theorem

$\sim\Delta's$ have corr altitudes that are proportional to corr sides

$\Delta ABC \sim \Delta EFG$



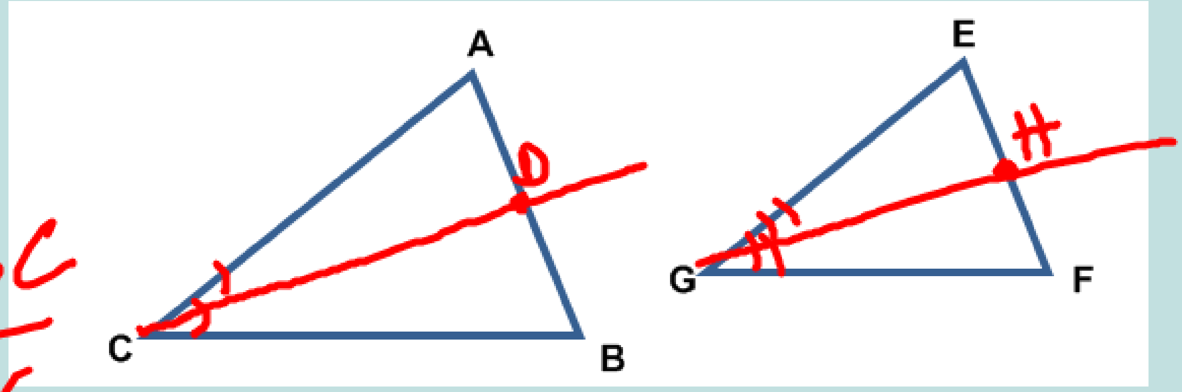
$$\frac{AX}{EY} = \frac{AC}{EG} = \frac{AB}{EF} = \frac{CB}{GF}$$

↑

Altitudes

$\sim\Delta's$ have corr angle bisectors

$\Delta ABC \sim \Delta EFG$



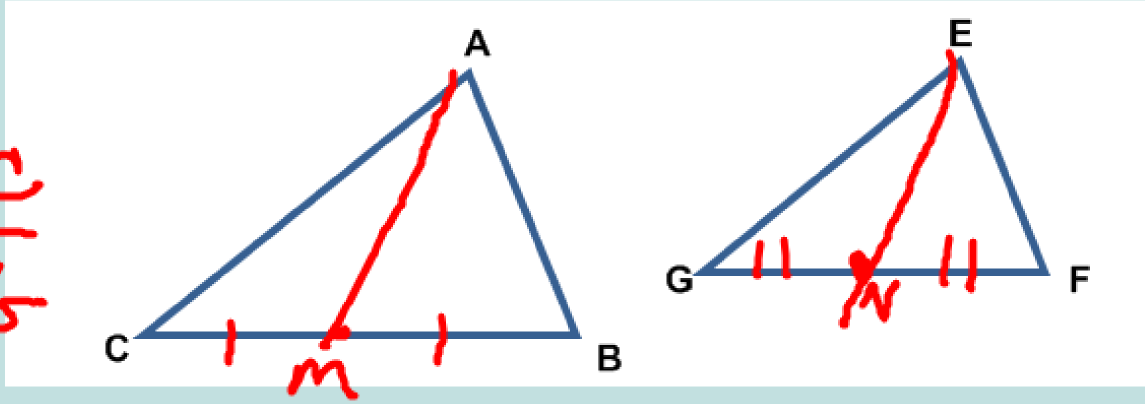
$$\frac{CD}{GH} = \frac{AC}{EG} = \frac{AB}{EF} = \frac{BC}{FG}$$

angle bisectors

$\sim\Delta's$ have corr medians prop. to corr sides

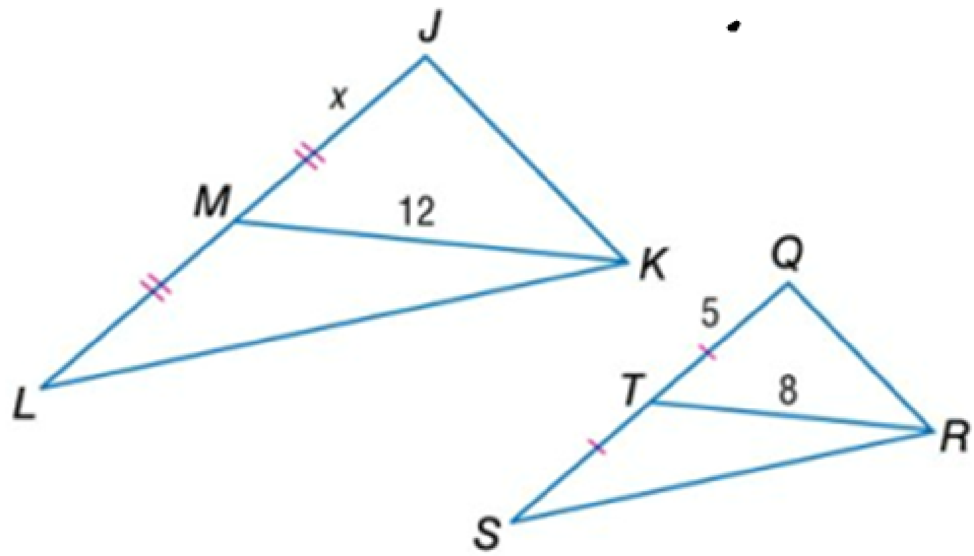
$$\frac{AM}{EN} = \frac{AB}{EF} = \frac{CB}{GF} = \frac{AC}{EG}$$

Medians



EXAMPLE 1 Use Special Segments in Similar Triangles

In the figure, $\Delta LJK \sim \Delta SQR$. Find the value of x.



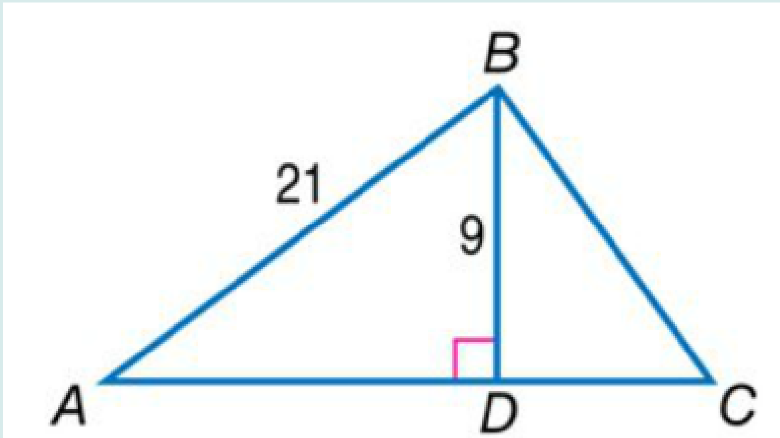
$$\frac{x}{5} = \frac{12}{8}$$

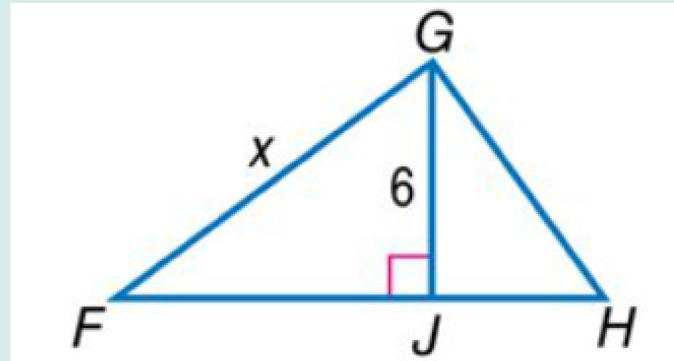
$$\frac{8x}{8} = \frac{60}{8}$$

$$x = 7.5$$

$$\cancel{\frac{2x}{10}} \quad \cancel{\frac{x}{5}}$$

In the figure, $\Delta ABC \sim \Delta FGH$. Find the value of x.





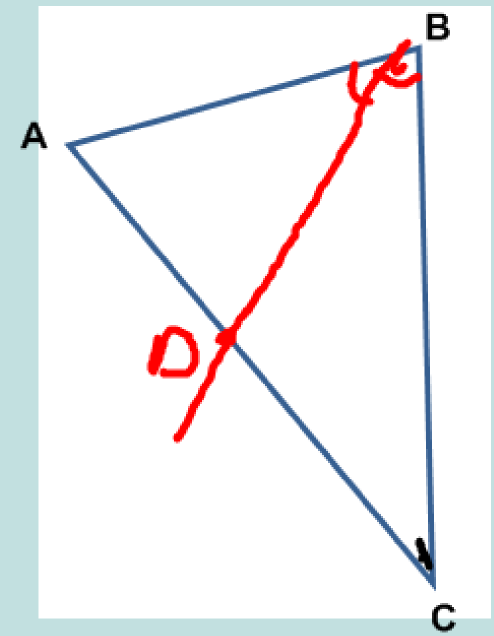
$$\frac{9}{6} = \frac{21}{x}$$

$$9x = 126$$

$$\frac{9x}{9} = \frac{126}{9}$$

$$x = 14$$

Triangle Angle Bisector Thm



Angle Bisector splits the
opp side into prop'l
parts to the sides
touching the parts

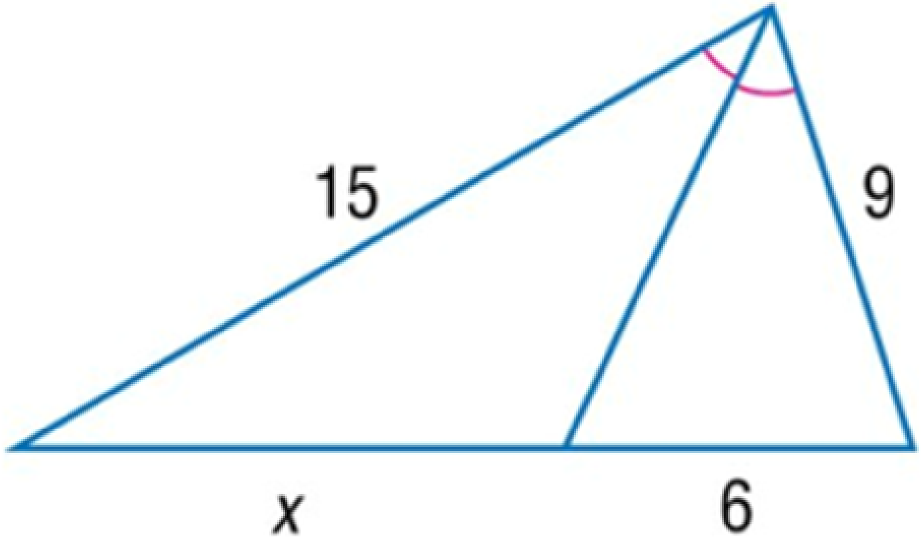
$$\frac{AD}{DC} = \frac{AB}{BC}$$

sides touching

parts

EXAMPLE 3 Use the Triangle Angle Bisector Theorem

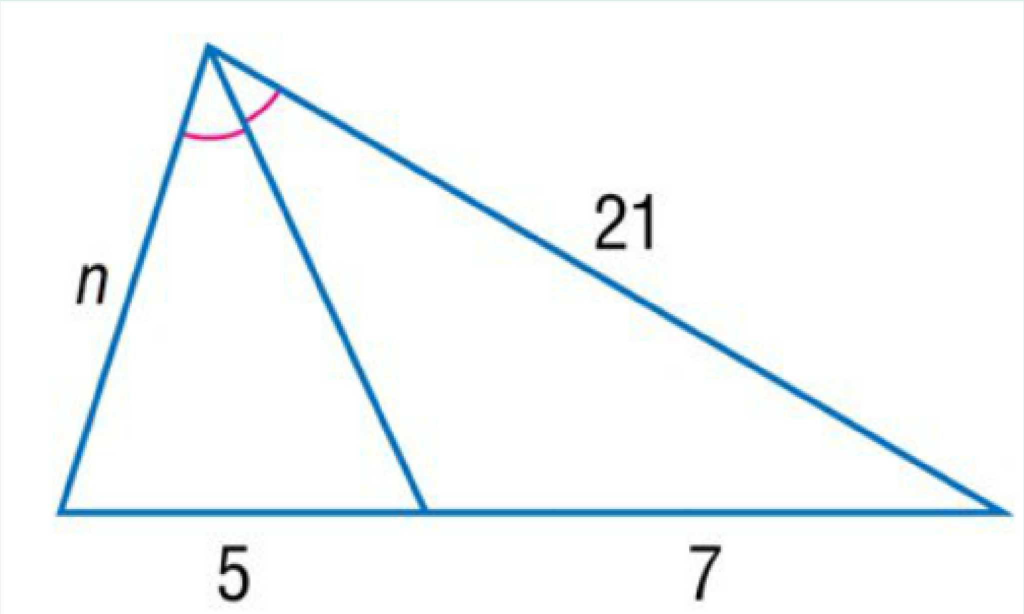
Find *x*.



parts $\left\{ \frac{x}{6} = \frac{15}{9} \right\}$ sides touching

$$\frac{9x}{9} = \frac{90}{9} \quad x = 10$$

Find *n*.



$$\frac{n}{5} = \frac{21}{7}$$

$$7n = 105$$

$$\frac{7n}{7} = \frac{105}{7}$$

$$n = 15$$