# Bellwork
# 12/09/2011

1. **Verify that $\Delta ABC \sim \Delta DEF$ for the given information.**

   **$\Delta ABC$: AC=6, AB=9, BC=12**
   **$\Delta DEF$: DF=2, DE=3, EF=4**

$\frac{6}{2}$ $\frac{9}{3}$ $\frac{12}{4}$ SSS ~ Thm.

$\frac{3}{1} = \frac{3}{1} = \frac{3}{1}$ ✓

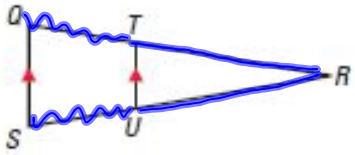
# Geometry
## 6.6 Use Proportionality Theorems
## Standard(s): 4,6

## Vocabulary:

**THEOREMS** *For Your Notebook*

**THEOREM 6.4** Triangle Proportionality Theorem

If a line parallel to one side of a triangle intersects the other two sides, then it divides the two sides proportionally.

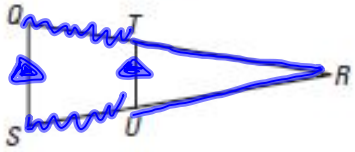



If $\overline{TU} \parallel \overline{QS}$, then $\frac{RT}{TQ} = \frac{RU}{US}$.

*Proof:* Ex. 22, p. 402

**THEOREM 6.5** Converse of the Triangle Proportionality Theorem

If a line divides two sides of a triangle proportionally, then it is parallel to the third side.



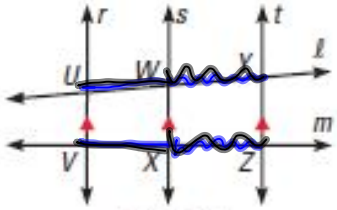

If $\frac{RT}{TQ} = \frac{RU}{US}$, then $\overline{TU} \parallel \overline{QS}$.

*Proof:* Ex. 26, p. 402

**THEOREMS** *For Your Notebook*

**THEOREM 6.6**

If three parallel lines intersect two transversals, then they divide the transversals proportionally.

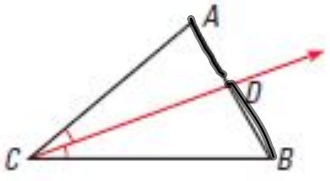



$\frac{UW}{WY} = \frac{VX}{XZ}$

*Proof:* Ex. 23, p. 402

**THEOREM 6.7**

If a ray bisects an angle of a triangle, then it divides the opposite side into segments whose lengths are proportional to the lengths of the other two sides.



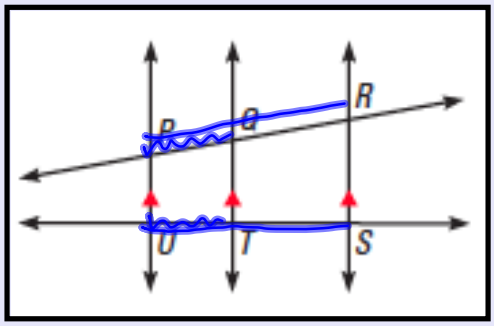

$\frac{AD}{DB} = \frac{CA}{CB}$

*Proof:* Ex. 27, p. 403

$\frac{AD}{DB} = \frac{CA}{CB}$

# Complete a Statement

Complete the statement.



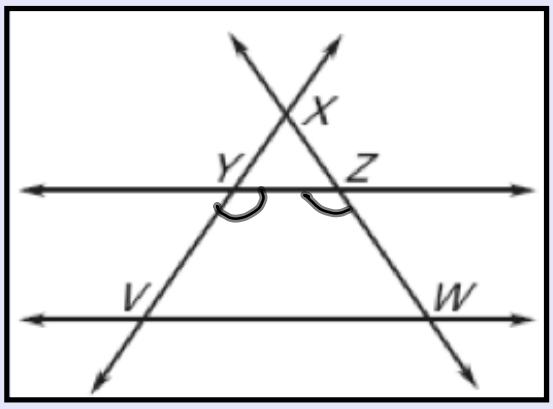

$$\frac{PQ}{QR} = \frac{UT}{TS}$$

$$\frac{TS}{UT} = \frac{QR}{PQ}$$

$$\frac{PQ}{PR} = \frac{UT}{US}$$

# Use Proportions

Use the information to determine if $\overline{YZ} \| \overline{VW}$. If so, explain why.




$\frac{XY}{XV} = \frac{XZ}{XW}$

Yes, Thm. 6.5

$\frac{XY}{YV} = \frac{XZ}{ZW}$

Yes, Thm 6.5

$\triangle XYZ \sim \triangle XVW$

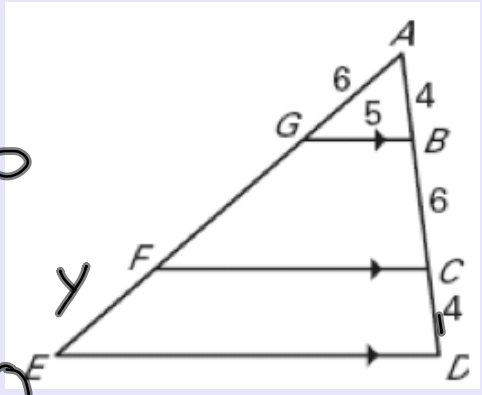
Yes, the def of $\sim \triangle$'s

$\angle VYZ \cong \angle WZY$

No

# Find a Side Length

Find the given side lengths.




GF $\frac{6}{x}=\frac{4}{6}$ $4x=36$ $GF=9$

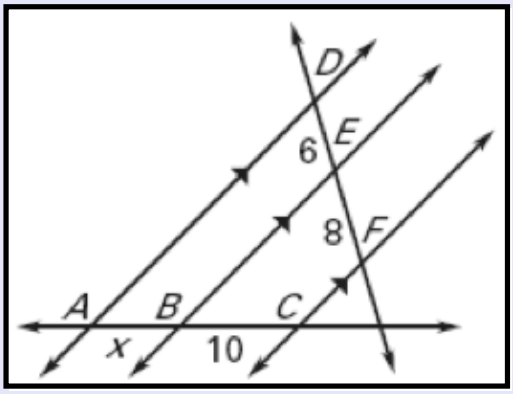
FC $\frac{5}{y}=\frac{4}{10}$ $4y=50$ $FC=12.5$

ED $\frac{5}{x}=\frac{4}{14}$ $4x=70$ $ED=17.5$

FE $\frac{6}{y}=\frac{4}{4}$ $4y=24$ $FE=6$

# Find Missing Variables

Find the value of the variables.




$$\frac{x}{10} = \frac{6}{8}$$

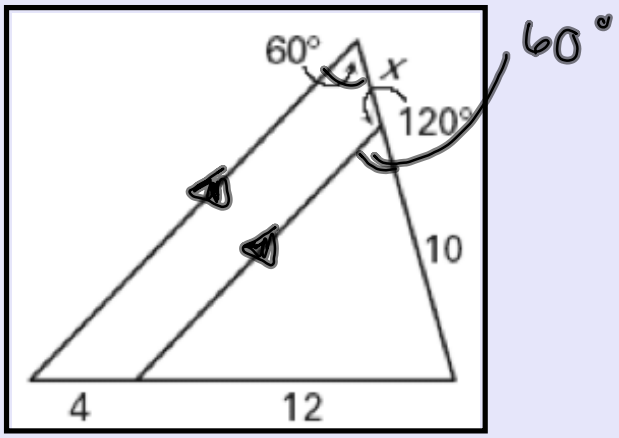
$$8x = 60$$

$$x = 7.5$$

$$\frac{4}{12} = \frac{x}{10}$$

$$12x = 40$$

$$x = 3\frac{1}{3}$$



# Homework Assignment

## Worksheet 6.6B