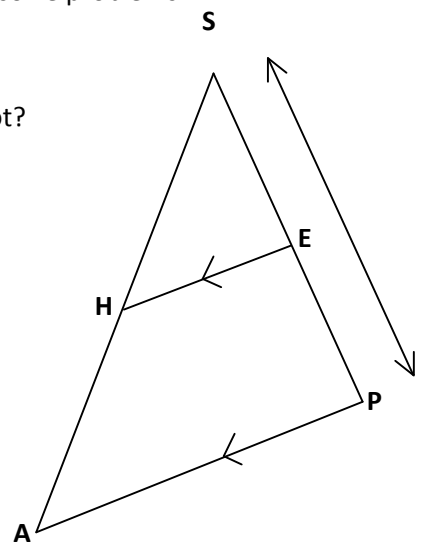
Geometry (G-SRT.4) Name: _____

Unit 7 Notes6: Side-Splitting Theorem Date: _____ Period: _____

I can describe the Side Splitting Theorem. I can use this Theorem and its corollary to solve problems.

Review and Explore: Using what you know about similarity, answer the following.



1. Are there similar polygons shown in the diagram to the right? Why or why not?

2. Solve for the missing measurements (variables in the diagram).

3. Using your answers from #2, test each of the following proportions to identify whether they are true or false.

   a) $\frac{SH}{SA} = \frac{SE}{SP}$ **True** **False**

   b) $\frac{SH}{HA} = \frac{HE}{AP}$ **True** **False**

   c) $\frac{AS}{HS} = \frac{HE}{AP}$ **True** **False**

   d) $\frac{SP}{SE} = \frac{HE}{AP}$ **True** **False**

   e) $\frac{EP}{SE} = \frac{HA}{SH}$ **True** **False**

4. Using one of the descriptions below, fill in the proportions used in each part of #3 with their corresponding labels. The first one has been done as an example.

   Description Choices: **1.** Small side **2.** Large side **3.** Neither

   a) $\frac{SH}{SA} = \frac{SE}{SP} \rightarrow \frac{small\,\Delta side}{large\,\Delta side} = \frac{small\,\Delta side}{large\,\Delta side}$

   b) $\frac{SH}{HA} = \frac{HE}{AP}$

   c) $\frac{AS}{HS} = \frac{HE}{AP}$

   d) $\frac{SP}{SE} = \frac{HE}{AP}$

   e) $\frac{EP}{SE} = \frac{HA}{SH}$

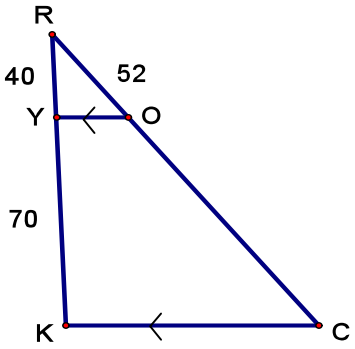
5. What occurred that caused the false proportion(s)?

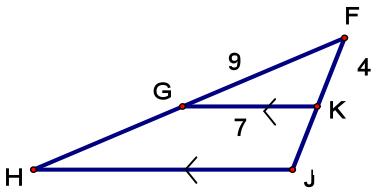
6. Did any true statements surprise you? Why?

The Side Splitting Theorem states: _____

_____

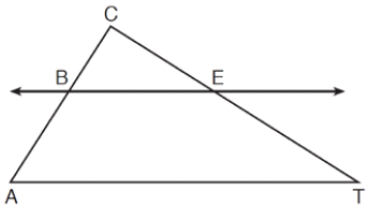
Examples:

1. 

2. 

3. If $BE \parallel AT$, CB = 3, CA = 10, and CE = 6, what is ET?

   a) 5
   b) 14
   c) 20
   d) 26



4. In ΔABC, D is on AB, and E is on BC such that $DE \parallel AC$. If DB = 2, DA = 7, and DE = 3, what is AC?

Explore:

a) $\frac{GA}{AB} = \frac{GD}{DE}$ **True** **False**

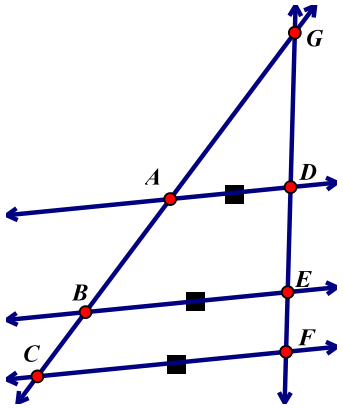
b) $\frac{GA}{BC} = \frac{GD}{DE}$ **True** **False**

c) $\frac{AB}{EF} = \frac{DE}{BC}$ **True** **False**

d) $\frac{AC}{DF} = \frac{GB}{GE}$ **True** **False**

e) $\frac{BC}{AB} = \frac{EF}{DE}$ **True** **False**

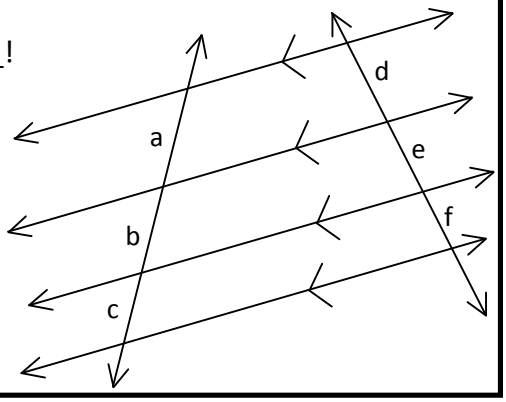
f) $\frac{FD}{ED} = \frac{BA}{CA}$ **True** **False**



Corollary (Result) of Side Splitting Theorem: If multiple parallel lines intersect _____, then the segments _____ are proportional.

Just be careful to always match up _____!

Examples:



Complete the proportions.

a) $\frac{AB}{BC} = \frac{DE}{\square}$

b) $\frac{AC}{DF} = \frac{AB}{\square}$

c) $\frac{GE}{DF} = \frac{\square}{AC}$

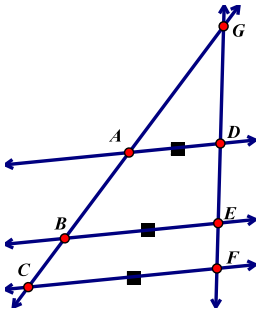
d) $\frac{GF}{DE} = \frac{GC}{\square}$

e) $\frac{\square}{DF} = \frac{BC}{EF}$

f) $\frac{CB}{CG} = \frac{FE}{\square}$

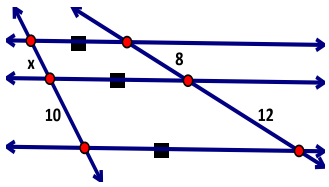
g) $\frac{GA}{\square} = \frac{AD}{BE}$

h) $\frac{CF}{AD} = \frac{\square}{DG}$



Examples: Find the values for the missing variables.

a)



b)