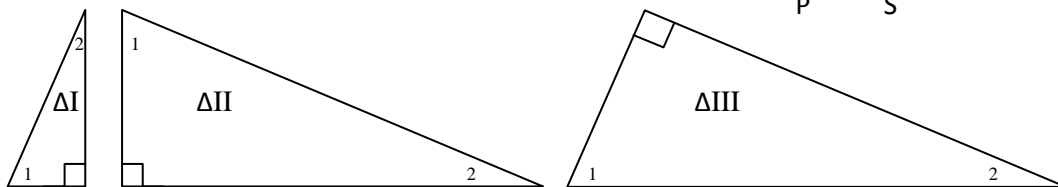
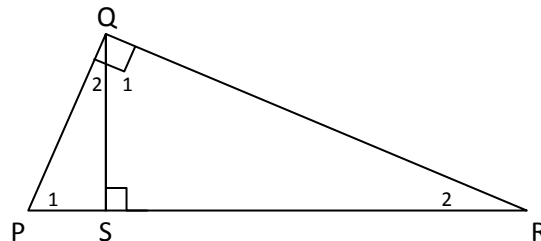


Bridge to Unit 8 – You need RED, GREEN, and BLUE colored pencils!

Right Triangle Investigation – using similarity and proportions from Unit 7

1. Since you know $\angle PQR$ is a right angle, what is the relationship between $\angle P$ and $\angle R$? _____



2. Are all the $\angle 1$'s \cong ? _____ How do you know? _____
3. Are all the $\angle 2$'s \cong ? _____ How do you know? _____
4. Which triangle similarity criteria justifies that all the triangles ΔPSQ (I), ΔQSR (II), and ΔPQR (III) are similar? _____
5. Color the short sides connecting angles labeled as 1's to right angles RED.
6. Color the long sides connecting the right angles to angles labeled as 2's GREEN.
7. Color the sides connecting $\angle 2$'s to $\angle 1$'s BLUE. These sides are the _____ of the right Δ 's.

8. Using ΔI and ΔII ,

- a. State the triangle similarity (watch correspondence): $\Delta PSQ \sim \Delta QSR$.
- b. State all the corresponding side proportions using both vertices and side variables.
 Ex. $\frac{\Delta I}{\Delta II}$: $\frac{PS}{QS} = \frac{\text{red}}{\text{red}} = \frac{\text{short leg}}{\text{short leg}} = \frac{SQ}{SR} = \frac{\text{green}}{\text{green}} = \frac{\text{long leg}}{\text{long leg}} = \frac{QP}{RQ} = \frac{\text{blue}}{\text{blue}} = \frac{\text{hypotenuse}}{\text{hypotenuse}}$

9. Using ΔII and ΔIII ,

- a. State the triangle similarity (watch correspondence): $\Delta \sim \Delta$.
- b. State all the corresponding side proportions using both vertices and side variables.
 $\frac{\Delta II}{\Delta III}$: $\frac{\text{red}}{\text{red}} = \frac{\text{green}}{\text{green}} = \frac{\text{blue}}{\text{blue}} = \frac{\text{hypotenuse}}{\text{hypotenuse}}$

10. Using ΔI and ΔIII ,

- a. State the triangle similarity (watch correspondence): $\Delta \sim \Delta$.
- b. State all the corresponding side proportions using both vertices and side variables.
 $\frac{\Delta I}{\Delta III}$: $\frac{\text{red}}{\text{red}} = \frac{\text{green}}{\text{green}} = \frac{\text{blue}}{\text{blue}} = \frac{\text{hypotenuse}}{\text{hypotenuse}}$

11. Explain how you might be able to solve a problem to find QS if all you know is that PS = 5 and SR = 6. Show your algebraic work as well as how you decided that you could use this approach. (Consider that you only know two pieces of information, but a proportion has 4 pieces of information. Why were you able to solve this?)

12. Look back at the highlighting in #10, which is what you used to do #11. Find the most important proportion within each triangle similarity that uses a duplicate piece of information and highlight those pieces using your colored pencils on the triangles below:

