

# Notes

## Lesson 3.2.5

### Determining Similarity

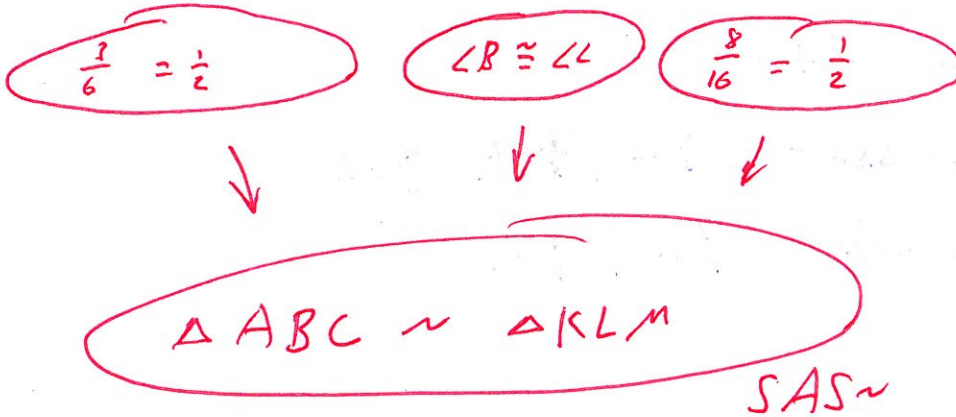
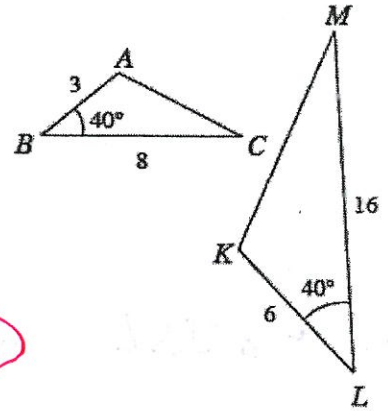
You now have a complete list of the three triangles similarity conditions (AA  $\sim$ , SAS  $\sim$ , and SSS  $\sim$ ) that can be used to verify that two triangles are similar. Today you will continue to practice applying these conditions and using flowcharts to organize your reasoning.

3-94. Lynn wants to show that the triangles below are similar.

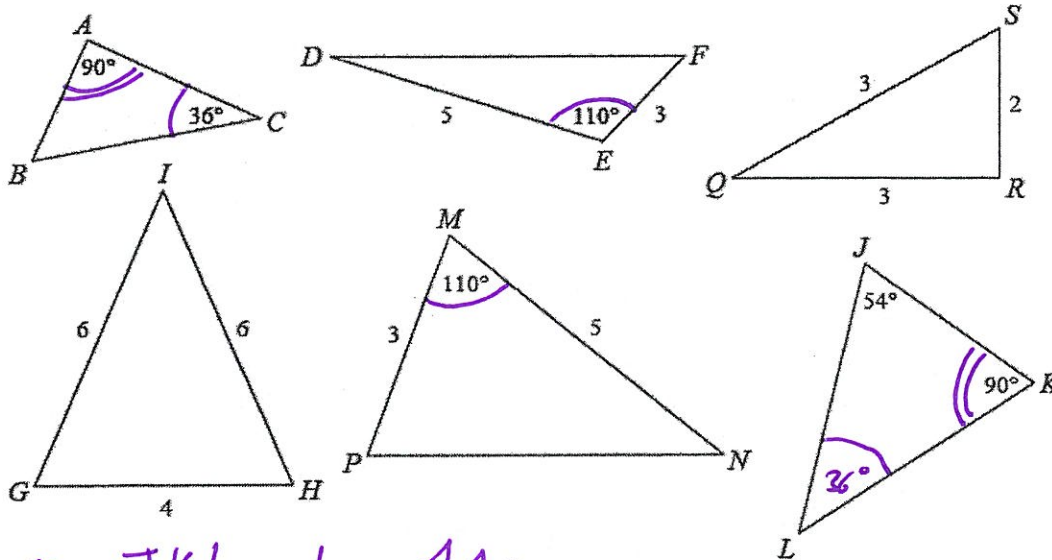
- a. What similarity condition should Lynn use?

SAS  $\sim$

- b. Make a flowchart showing that these triangles are similar.



3-95. Below are six triangles, none of which is drawn to scale. Among the six triangles are three pairs of similar triangles. Identify the similar triangles, write a congruency statement, state the condition you used to prove they are similar and state the side ratio if you can.



$\triangle ABC \sim \triangle JKL$  by AA~

$\triangle IGH \sim \triangle QRS$  by SSS~  $\frac{6}{3} = 2, \frac{6}{3} = 2, \frac{4}{2} = 2$

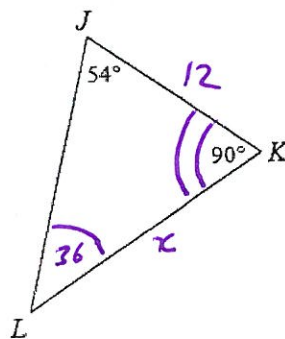
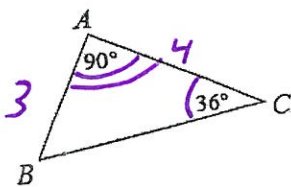
$\triangle PMN \sim \triangle FED$  by SAS~  $\frac{3}{3} = 1, \frac{5}{5} = 1$

3-96. Revisit the similar triangles from problem 3-95.

a. Which pair of triangles are congruent? How do you know?

$\triangle PMN \sim \triangle FED$ , because the ratio is 1

b. Suppose that in problem 3-95,  $AB = 3$  cm,  $AC = 4$  cm, and  $KJ = 12$  cm. Find all the other side lengths in  $\triangle ABC$  and  $\triangle JKL$ .



LK = 16 cm

BC = 5 cm

LJ = 20 cm

$3^2 + 4^2 = c^2$

$25 = c^2$

$5 = c$

$\frac{3}{12} = \frac{4}{x}$

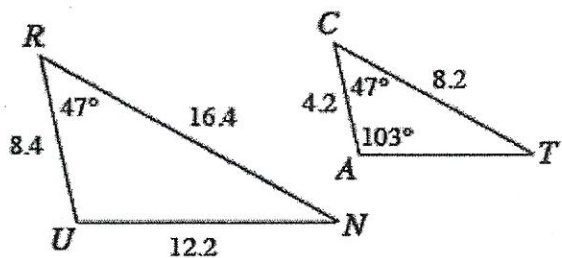
$x = 16$

$12^2 + 16^2 = c^2$

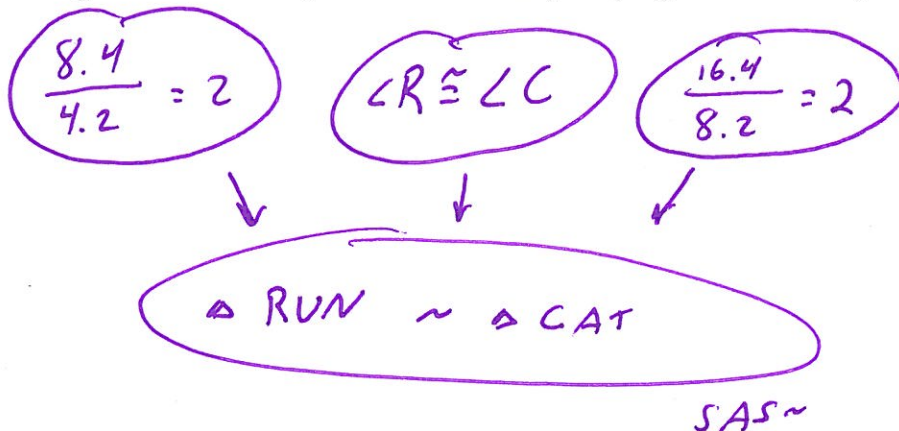
$400 = c^2$

$20 = c$

3-97. Examine the triangles below.



Are these triangles similar? If so, make a flowchart justifying their similarity.



a. Charles has  $\triangle CAT \sim \triangle RUN$  as the conclusion of his flowchart. Leesa has  $\triangle NRU \sim \triangle TCA$  as her conclusion. Who is correct? Why?

Both are correct

b. Are  $\triangle CAT$  and  $\triangle RUN$  congruent? Explain how you know.

No, because the side ratio is 2

c. Find all the missing side lengths and all the angle measures of  $\triangle CAT$  and  $\triangle RUN$ .

AT = 6.1

$\angle U = 103^\circ$

$\angle N = 30^\circ$

$\angle T = 30^\circ$

$$\frac{16.4}{8.2} = \frac{12.2}{x}$$

$$16.4x = 100.04$$

$$x = 6.1$$

