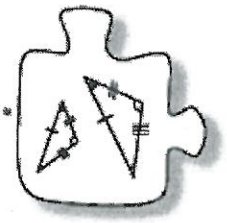
Notes

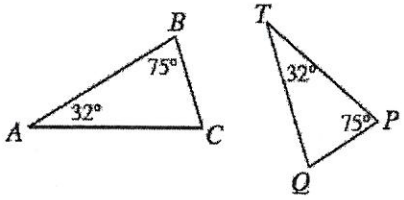
3.2.2 How can I organize my information?



Creating a Flowchart

In Lesson 3.2.1, you developed the AA ~ and SAS ~ conditions to help confirm that triangles are similar. Today you will continue working with similarity and will learn how to use flowcharts to organize your reasoning.

3-59. Examine the triangles at right.

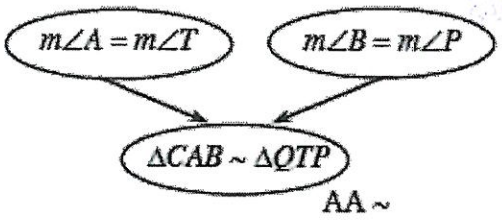


a. Are these triangles similar? Use full sentences to explain your reasoning.

Yes, $\angle B$ is $\cong$ to $\angle P$ and $\angle A$ is $\cong$ to $\angle T$, $\therefore$ $\triangle CAB \sim \triangle QTP$ by AA~

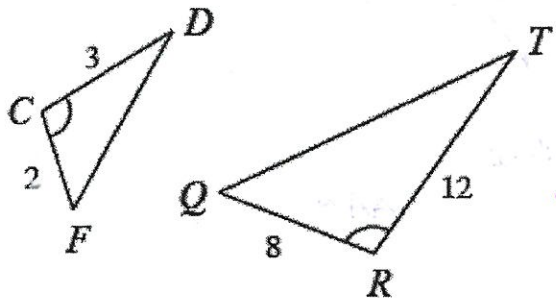
b. Julio decided to use a diagram (called a **flowchart**) to explain his reasoning. Compare your explanation to Julio's flowchart. Did Julio use the same reasoning you used?

JULIO'S FLOWCHART



3-60. Besides showing your reasoning, a flowchart can be used to organize your work as you determine whether or not triangles are similar.

a. Are these triangles similar? Which triangle similarity condition can you use?



Yes, by SAS~

$\frac{12}{3} = 4$, $\frac{8}{2} = 4$, $\angle C \cong \angle R$

b. What facts must you know to use the triangle similarity condition you chose? Julio started to list the facts in a flowchart below. Copy them on your paper and complete the third oval.

Facts:

$\frac{12}{3}=4$ $\frac{8}{2}=4$ $\angle C \cong \angle R$

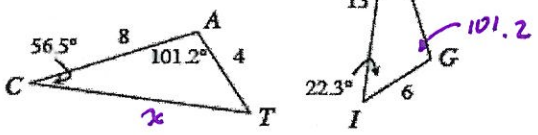
c. Once you have the needed facts in place, you can conclude that you have similar triangles. Add to your flowchart by making an oval and filling in your conclusion.

Conclusion: $\triangle COF \sim \triangle RTQ$ SAS ~

d. Finally, draw arrows to show the flow of the facts that lead to your conclusion and record the similarity condition you used, following Julio's example from problem 3-59.

3-61. Now examine the triangles below.

180 - 56.5 - 22.3



a. Are these triangles similar? Justify your conclusion using a flowchart.

Yes,

$\angle C \cong \angle R$ $\angle A \cong \angle G$

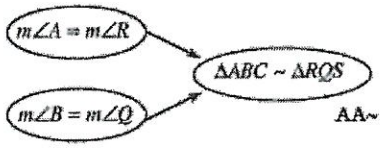
$\triangle CAT \sim \triangle PGI$ AA ~

b. What is the length of *CT*? How do you know?

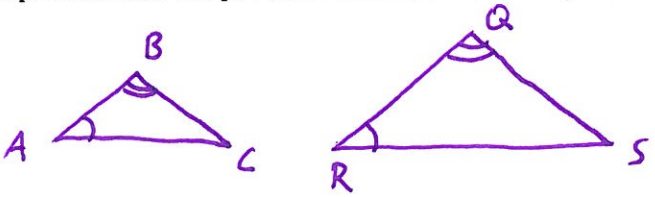
$\frac{15}{x} = \frac{6}{4}$

$\frac{6x}{6} = \frac{60}{6}$ $x = 10$

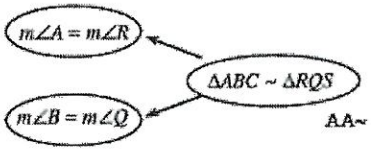
3-62. Lindsay was solving a math problem and drew the flowchart below:



a. Draw and label two triangles that could represent Lindsay's problem. What question did the problem ask her? How can you tell?

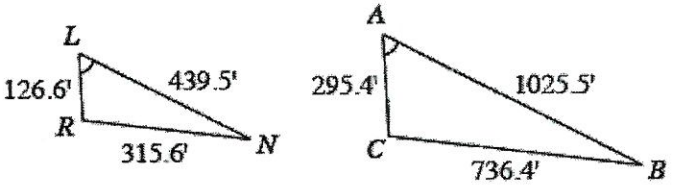


b. Lindsay's teammate was working on the same problem and made a mistake in his flowchart: How is this flowchart different from Lindsay's? Why is this the wrong way to explain the reasoning in Lindsay's problem?



The arrows are pointing in the wrong direction.

3-63. Ramon is examining the triangles below. He suspects they may be similar by SAS ~.



a. Which pair of corresponding sides do you think Ramon is relying on? Why?

$\overline{LR}$ w/ $\overline{AC}$ & $\overline{LN}$ w/ $\overline{AB}$

b. Set up ovals for the facts you need to know to show that the triangles are similar. Complete any necessary calculations and fill in the ovals.

$\frac{126.6}{295.4} = .428$ $\quad \angle L \cong \angle A$ $\quad \frac{439.5}{1025.5} = .428$

$\Delta LRN \sim \Delta ACB$ SAS~

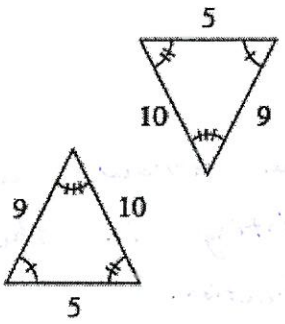
c. Are the triangles similar? If so, complete your flowchart and name an appropriate similarity condition. If not, explain how you know.

METHODS AND MEANINGS

MATH NOTES

Congruent Shapes

If two figures have the same shape and are the same size, they are **congruent**. Since the figures must have the same shape, they must be similar. Two figures are congruent if they meet both of the following conditions:



Two figures are congruent if they meet both of the following conditions:

- The two figures are similar, and
- Their side lengths have a common ratio of 1.

Another way to prove that two shapes are congruent is to show that there is a rigid motion that takes one exactly onto the other.