

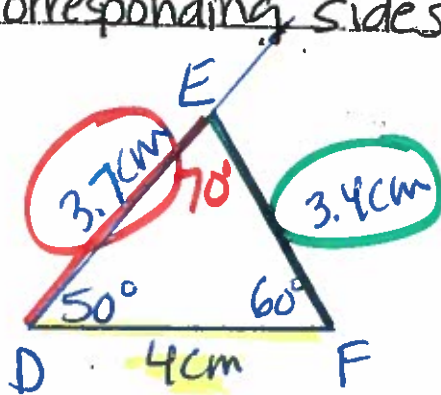
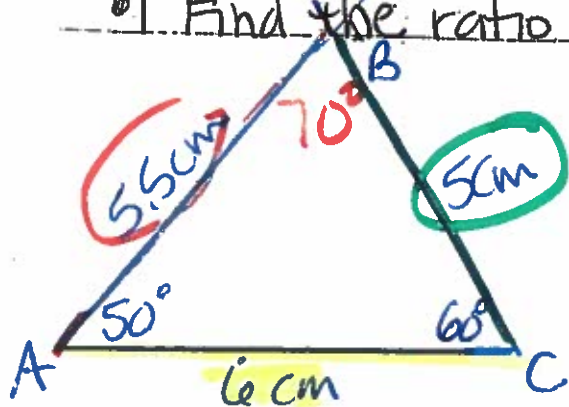
7-3 Proving Triangles Similar

Check skills needed at top of p. 382

1. SSS 2. SAS 3. ASA

Activity: Δ 's w/ 2 pairs of $\cong \angle$'s

- Draw 2 Δ 's, different sizes, each with a $50^\circ \angle$ and $60^\circ \angle$.
- Measure the sides to nearest mm.
- Find the ratio of corresponding sides.



$$\frac{AC}{DF} = \frac{AB}{DE} = \frac{BC}{EF}$$

- ① corresponding \angle 's congruent
 ② sides should be proportional

1. The Δ 's are similar.
2. If 2 \angle 's of one Δ are \cong to 2 \angle 's of another Δ , then the 2 Δ 's are \sim .

AA \sim

\sim
 \rightarrow
 Similar

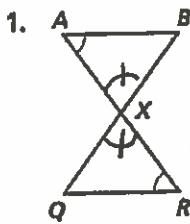
There are 3 ways to prove that the 2 Δ 's are \sim .

① Angle-Angle Similarity Postulate
AA \sim (2 \angle 's are \cong to 2 \angle 's in a second Δ , then the Δ 's are similar)

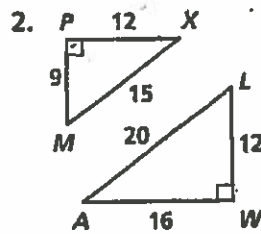
② Side-Angle-Side Similarity Theorem
SAS \sim (If the \angle of 1 Δ is \cong to the \angle of a 2nd Δ , and the sides including the 2 \angle 's are proportional, then the 2 Δ 's are \sim)

③ Side-Side-Side Similarity Thm.
SSS \sim If the corresponding sides of 2 Δ 's are proportional, then the Δ 's are similar.

Explain why the triangles are similar. Write a similarity statement for each pair.



$\Delta AQB \sim \Delta RXQ$
 by AA \sim



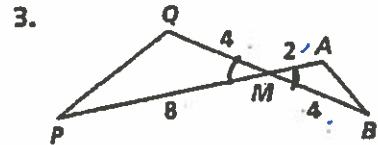
$$\frac{9}{12} = \frac{12}{16} = \frac{15}{20}$$

$$.75 = .75 = .75$$

SSS \sim or SAS \sim

to show

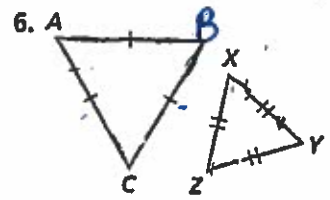
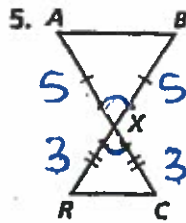
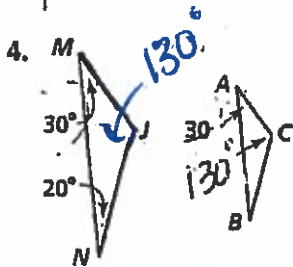
$\Delta MPX \sim \Delta LWA$



$$\frac{8}{4} = \frac{4}{2}$$

$$\frac{2}{4} = \frac{4}{8}$$

$\Delta QMP \sim \Delta AMB$
 by SAS \sim

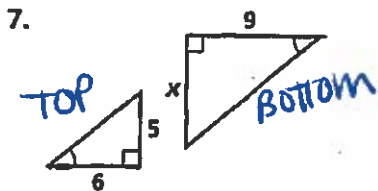


$\triangle MJN \sim \triangle ACB$
AA \sim

$\triangle AXB \sim \triangle CXR$
by SAS \sim

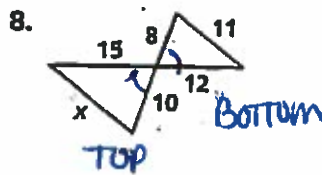
$\triangle ABC \sim \triangle XYZ$
by SSS \sim

Algebra Find the value of x.



$\frac{6}{9} = \frac{5}{x}$

$x = 7.5$

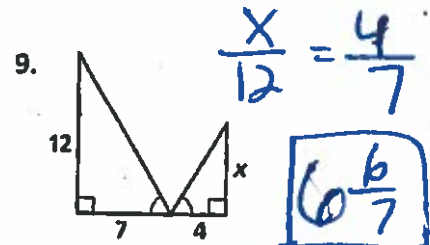


$\frac{x}{11} = \frac{15}{12}$

OR

$\frac{x}{11} = \frac{10}{8}$

$x = 13.75$

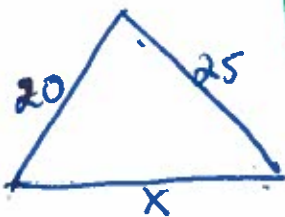
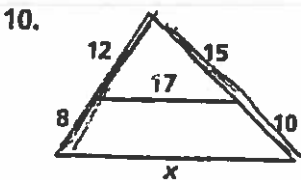


$\frac{x}{12} = \frac{4}{7}$

$x = \frac{48}{7}$

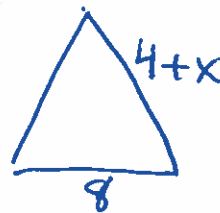
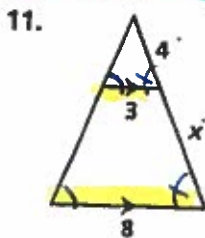
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(1-19, 21-25, 27+28)



$\frac{17}{x} = \frac{12}{20}$

$x = 28 \frac{1}{3}$

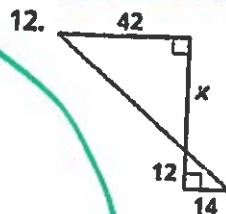


~~$\frac{4}{4+x} = \frac{3}{8}$~~

$3(4+x) = 32$

$12 + 3x = 32$
 $-12 \quad -12$
 $3x = 20$

$x = 6 \frac{2}{3}$



$\frac{12}{x} = \frac{14}{42}$

$x = 36$

Indirect measurement

13. Natasha places a mirror on the ground 24 ft from the base of an oak tree. She walks backward until she can see the top of the tree in the middle of the mirror. At that point, Natasha's eyes are 5.5 ft above the ground, and her feet are 4 ft from the image in the mirror. Find the height of the oak tree.

