Review for Chapter 8 Similarity Test

2/11

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Simplify/Reduce the Ratio

1) $\frac{15\text{ cm}}{2\text{ m}}$ · 100

$\frac{15\text{cm}}{200\text{ cm}} = \frac{\cancel{5}\cdot 3}{\cancel{5}\cdot 40}$

$\frac{3}{40}$

2) $\frac{5\text{ ft.}}{25\text{ in.}}$ ·12

$\frac{60\text{in}}{25\text{in}} = \frac{\cancel{5}\cdot 12}{\cancel{5}\cdot 5}$

$\frac{12}{5}$

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Cross Product Property

1. $\frac{4}{9} = \frac{10}{x}$ $x = 22.5$

2. $\frac{5}{2} = \frac{6}{x}$ $x = \frac{12}{5}$

$5x = 12$

3. $\frac{5}{2} = \frac{2}{x}$ $x = .8$

$5x = 4$

4. $\frac{21}{27} = \frac{x}{18}$ $x = 14$

$21 \cdot 18 = 27x$

5. $\frac{15}{21} = \frac{20}{y}$ $x = 28$

$15y = 21 \cdot 20$

6. $\frac{26}{b} = \frac{39}{9}$ $x = 6$

$26 \cdot 9 = 39b$

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Solve the proportion.

1. $\frac{5}{3} = \frac{y+2}{6}$

$5 \cdot 6 = 3(y+2)$

$30 = 3y + 6$

$24 = 3y$

$y = 8$

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

$3(x-6) = 2x$

$3x - 18 = 2x$

$x = 18$

3. ~~$\frac{3}{x} = \frac{8}{x-4}$~~

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Scale Word Problem

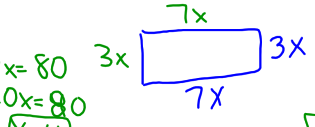
1.

The perimeter of a rectangle is 80 feet. The ratio of the length to the width is 7 to 3. Find the length and the width of the rectangle.

$3x + 7x + 3x + 7x = 80$

$20x = 80$

$x = 4$



Length $7 \cdot 4 = 28$

Width $3 \cdot 4 = 12$

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2.

A backpacker in the Rocky Mountains hikes 5.5 miles in 2 hours. If he continues hiking at the same constant rate, how far will he have hiked in 7 hours? Write and solve a proportion to find the answer.

$\frac{\text{miles}}{\text{hours}}$

$\frac{5.5}{2} = \frac{x}{7}$

$x = 19.25$ miles

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3.

Haley was organizing her closet and realized that she has 8 shirts for every 5 pairs of jeans. If Haley has 40 shirts, then how many pairs of jeans does she have?

Shirts / Jeans

$\frac{8}{5} = \frac{40}{x}$

$x = 25$

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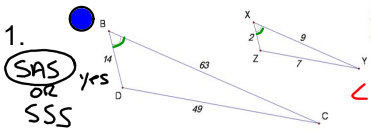
Are they Similar? SSS, AA, SAS

Find if the following triangles are similar. IF they are similar, find the scale factor AND write a similarity statement.

1.



SAS or SSS

Yes

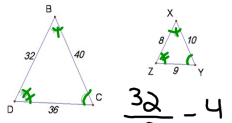
Scale Factor 7/1

Similarity Statement $\triangle BDC \sim \triangle XZY$

$\angle B \cong \angle X$

$\frac{14}{2} \stackrel{?}{=} \frac{63}{9} \checkmark = \frac{7}{1}$

2.



SSS

SAS

AA

Scale Factor 4/1

Similarity Statement $\triangle BDC \sim \triangle XZY$

$\frac{32}{8} = \frac{4}{1}$

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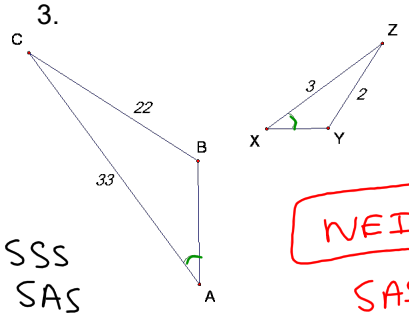
3.



SSS

SAS

AA

NEI

SAS doesn't work!

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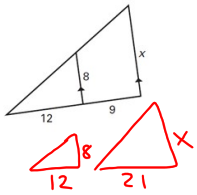
Solve for the variable. These are similar.

4.

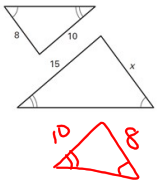


$\frac{12}{21} = \frac{8}{x}$

$12x = 168$

$x = 14$

5.



$\frac{15}{10} = \frac{x}{8}$

$120 = 10x$

$x = 12$

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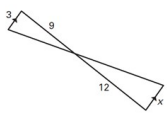
6.

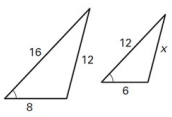


$\frac{3}{x} = \frac{9}{12}$

$36 = 9x$

$4 = x$

7.



$\frac{16}{12} = \frac{12}{x}$

$16x = 144$

$x = 9$

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8.

List all pairs of congruent angles.

$\angle S \cong \angle E$

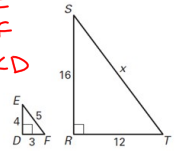
$\angle T \cong \angle F$

$\angle R \cong \angle D$

Find the scale factor of $\triangle RST$ to $\triangle DEF$.

$\frac{16}{4} = \frac{4}{1}$

Find the value of x.



$\frac{4}{16} = \frac{5}{x}$

$4x = 80$

$x = 20$

9. The perimeter of a rectangle is 98 inches. The ratio of the length to the width is 4:3. Find the length and the width.

$4x + 3x + 4x + 3x = 98$

$14x = 98$

$x = 7$

length $4 \cdot 7 = 28$

width $= 3 \cdot 7 = 21$

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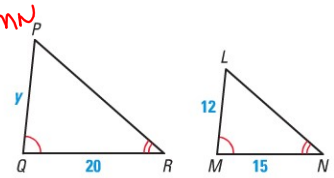
10.

$\triangle PQR \sim$? $\triangle LMN$

$\frac{LM}{PQ} = \frac{?}{QR}$ MN

$\frac{12}{y} = \frac{15}{20}$

$y =$? $y=16$



The scale factor of $\triangle LMN$ to $\triangle PQR$ is ?.

$\frac{15}{20} = \frac{3}{4}$

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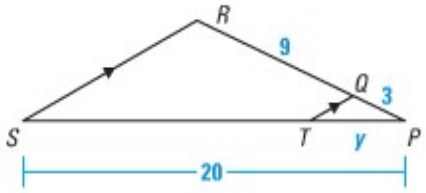
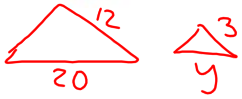
11.

Find the value of y.



ST $20-y$



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