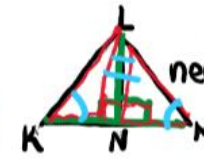
$\overline{LN} \perp \overline{KM}$

50. In this figure, $\overline{LN} \perp \overline{KM}$.



What do you need to know to prove $\triangle KLN \cong \triangle MLN$?

AAS

What information would a student need to prove $\triangle KLN \sim \triangle MLN$?

A $\angle LKN \cong \angle LMN$
B $\angle LNK \cong \angle LNM$
C $\angle KLN \cong \angle LNM$
D $\angle LKN \cong \angle NLM$

$\angle LKN \cong \angle LMN$
$\angle LNK \cong \angle LNM$
$\angle KLN \cong \angle LNM$
$\angle LKN \cong \angle NLM$

1

Congruent $\cong$

Similar $\sim$

Polygons

2

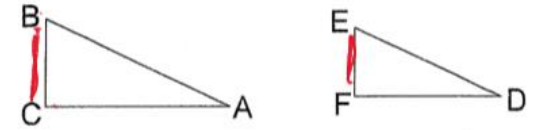
Similar Polygons

1. Corresponding angles are congruent

2. Corresponding sides* are proportional

3

Similarity Statement



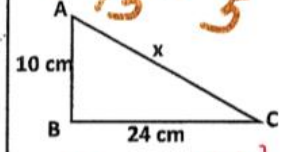
$\triangle ABC \sim \triangle DEF$

$\frac{BC}{EF} = \frac{BA}{ED}$

4

Solve for x and y.

$\frac{x}{13} = \frac{10}{5}$ $\rightarrow \frac{5x}{5} = \frac{130}{5} \rightarrow x = 26$



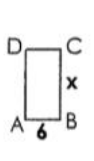
$\frac{10}{5} = \frac{24}{y}$

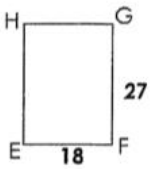
$\frac{10y}{10} = \frac{120}{10}$

$y = 12$

5

ABCD ~ EFGH. Solve for x.



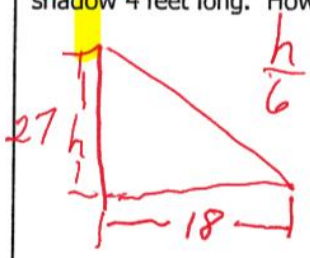


$\frac{x}{27} = \frac{6}{18}$ $\frac{18x}{18} = \frac{162}{18}$

$x = 9$

6

Ex. A tree cast a shadow 18 feet long. At the same time a person who is 6 feet tall cast a shadow 4 feet long. How tall is the tree?



$\frac{h}{6} = \frac{18}{4}$ $\quad \frac{4h}{4} = \frac{108}{4}$ $\quad h = 27$

Pause for practice: Pg. 7 and 8 Even #'s

7

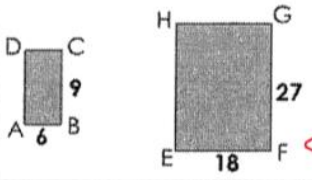
Ratio of Similar Polygons

Corresponding Sides : Corresponding Sides

same as

Perimeter : Perimeter

A : B



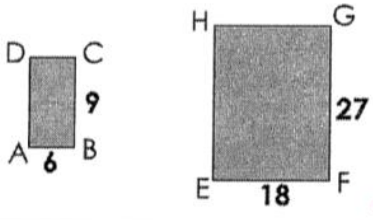
$\frac{6}{18} = \frac{30}{90}$ $\quad \frac{1}{3} = \frac{1}{3}$ $\quad 1:3$

8

Ratio of Similar Polygons

Area : Area

$A^2 : B^2$



$\frac{54}{486} = \frac{1}{9}$ $\quad 1:9$ $\quad 1^2:3^2$

$\frac{9}{27} = \frac{6}{18}$ $\quad \frac{1}{3} = \frac{1}{3}$ $\quad 1:3$

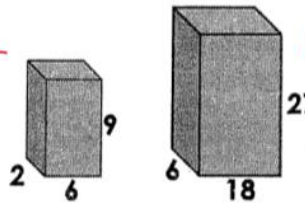
9

Ratio of Similar Figures

Volume : Volume

$A^3 : B^3$ $\quad \frac{108}{2916} = \frac{1}{27}$

$(1:3)^3$

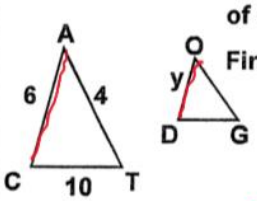


sides $\left(\frac{1}{3}\right)$ $\quad 1:27$

10

The ratio of the perimeters of two similar polygons equals the ratio of any pair of corresponding sides

The ratio of the perimeters of CAT to DOG is 3:2



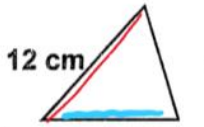
Find the value of y.

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

$\frac{3y}{3} = \frac{12}{3} \rightarrow y = 4$

11

Find the perimeter of the smaller triangle.



Perimeter = 60 cm $\quad$ **Perimeter = x**

$\frac{12}{4} = \frac{60}{x}$ $\quad \frac{12x}{12} = \frac{240}{12}$ $\quad x = 20$

12

Kuta Software - Infinite Pre-Algebra

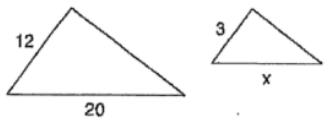
Name_____

Similar Figures

Date_____ Period____

Each pair of figures is similar. Find the missing side.

1)

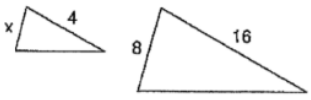


$\frac{20}{x} = \frac{12}{3}$ $x=5$

2)

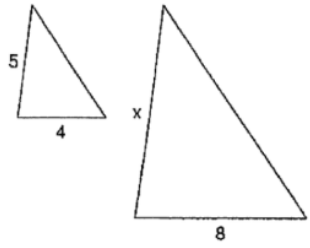
$\frac{9}{x} = \frac{3}{1}$ $3x=9$ $x=3$

3)



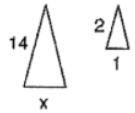
$\frac{8}{x} = \frac{16}{4}$ $x=2$

4)



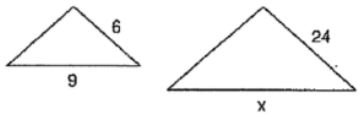
$\frac{x}{5} = \frac{8}{4}$ $x=10$

5)



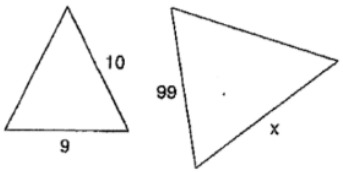
$\frac{x}{1} = \frac{14}{2}$ $x=7$

6)



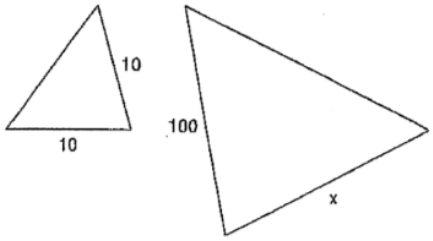
$\frac{x}{9} = \frac{24}{6}$ $x=36$

7)



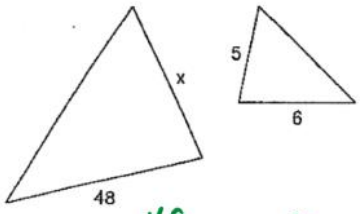
$\frac{99}{9} = \frac{x}{10}$ $x=110$

8)



$x=10$

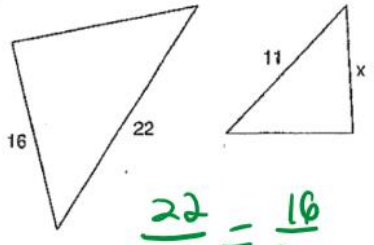
9)



$\frac{48}{6} = \frac{x}{5}$

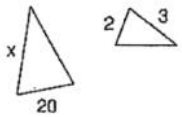
$x = 40$

10)



$\frac{22}{11} = \frac{16}{x}$ $x = 8$

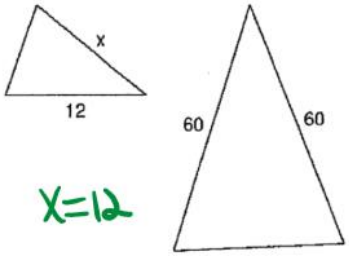
11)



$\frac{20}{2} = \frac{x}{3}$

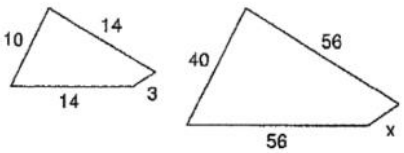
$x = 30$

12)



$x = 12$

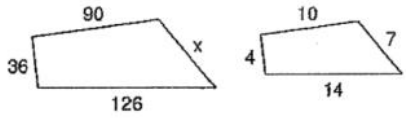
13)



$\frac{x}{3} = \frac{40}{10}$

$x = 12$

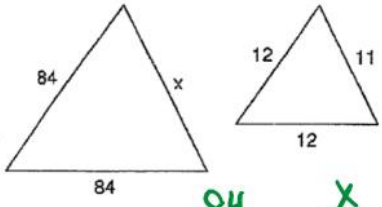
14)



$\frac{x}{7} = \frac{36}{4}$

$x = 63$

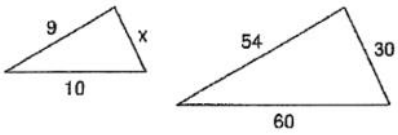
15)



$\frac{84}{12} = \frac{x}{11}$

$x = 77$

16)



$\frac{60}{10} = \frac{30}{x}$

$x = 5$