Geometry Chapter 6 and 5.1 Test Review KEY

Proportions and Similarity Period_____

SHOW ALL WORK

1. 9:4 or $\frac{9}{4}$ A basketball player made 36 free throws in 16 games. Find the ratio of free throws to games. $\frac{\text{THROWS}}{\text{GAMES}}$ $\frac{36}{16}$ $\boxed{\frac{9}{4}}$

2. 35 The ratio of seniors to juniors in the Math Club is 2:3. If there are 21 juniors, how many juniors and seniors are in the club?

$\frac{\text{Seniors}}{\text{Juniors}}$ $\frac{2}{3} \times \frac{x}{21}$ $\frac{3x}{3} = \frac{42}{3}$ $x = 14$ # Seniors 21 + 14 = 35

#3-4. Solve the proportions.

3. $\frac{11}{7}$ $\frac{x}{5} \times \frac{11}{35}$ $\frac{35x}{35} = \frac{55}{35} \frac{11}{7}$ $x = \boxed{\frac{11}{7}}$

4. 9 $\frac{3}{x} \times \frac{6}{x+9}$

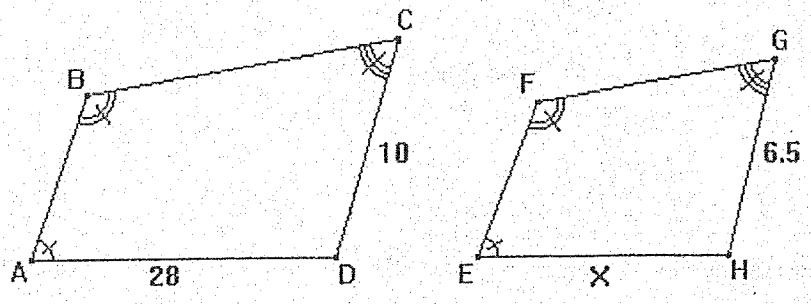
$6x = 3(x+9)$

$6x = 3x + 27$

$-3x \quad -3x$

$\frac{3x}{3} = \frac{27}{3}$ $\boxed{x = 9}$

5. 18.2 If $ABCD \sim EFGH$, find x.



$\frac{AB}{EF}$ $\frac{BC}{FG}$ $\frac{CD}{GH}$ $\frac{DA}{HE}$

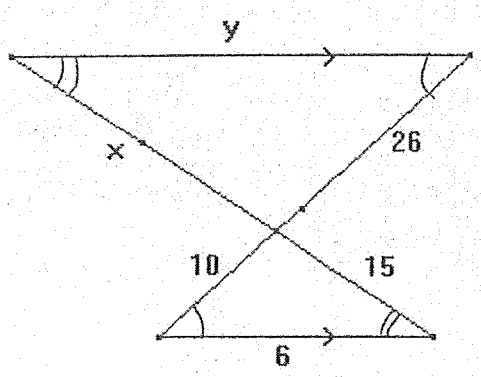
$\frac{10}{6.5} \times \frac{28}{x}$

$\frac{10x}{10} = \frac{182}{10}$

$\boxed{x = 18.2}$

#6-7. Find the value of x and y.

6. $x =$ 39 $y =$ 15.6 (or $15\frac{3}{5}$)



$\frac{y}{6} = \frac{26}{10}$ reduced.

$\frac{y}{6} \times \frac{13}{5}$

$\frac{5y}{5} = \frac{78}{5}$

$y = 15.6$

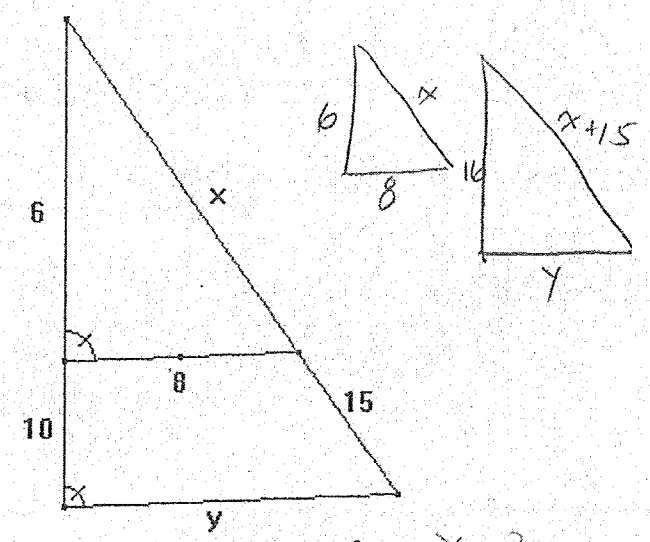
$\frac{x}{15} = \frac{26}{10}$

$\frac{x}{15} \times \frac{13}{5}$

$\frac{5x}{5} = \frac{195}{5}$

$x = 39$

7. $x =$ 9 $y =$ $21\frac{1}{3}$



$\frac{3}{8}\frac{6}{12} \times \frac{x}{x+15}$

$8x = 3(x+15)$

$8x = 3x + 15$

$-3x \quad -3x$

$5x = 15$

$x = 9$

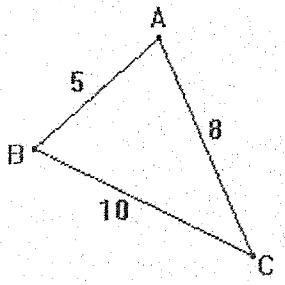
$\frac{8}{y} \times \frac{16}{16}\frac{3}{8}$

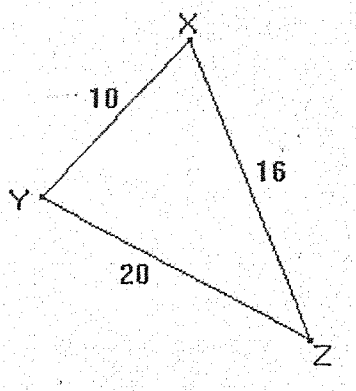
$\frac{3y}{3} = \frac{64}{3}$

$y = 21\frac{1}{3}$

Determine whether each pair of triangles is similar. Justify your answer.

8. Yes, $\triangle ABC \sim \triangle XYZ$ by SSS Similarity.





$\frac{5}{10} = \frac{8}{16} = \frac{10}{20}$

$\frac{1}{2} = \frac{1}{2} = \frac{1}{2}$

All corresponding side ratios are equal

6.1 - 6.5 REVIEW

NAME KEY

PERIOD 1

1) **BIOLOGY** Out of 274 listed species of birds in the United States, 78 species made the endangered list. Find the ratio of endangered species of birds to listed species in the United States.

$\frac{\text{ENDANGERED}}{\text{LISTED}}$ $\frac{78}{274}$ $\frac{39}{137}$ or 39:137

2) **ART** An artist in Portland, Oregon, makes bronze sculptures of dogs. The ratio of the height of a sculpture to the actual height of the dog is 2:3. If the height of the sculpture is 14 inches, find the height of the dog.

$\frac{\text{SCULPTURE HEIGHT}}{\text{ACTUAL HEIGHT}}$ $\frac{2}{3} = \frac{14}{x}$ $2x = 42$ $x = 21$

THE DOG'S HEIGHT IS 21 INCHES

Solve each proportion.

3) $\frac{2}{5} = \frac{x}{40}$

$\frac{5x}{5} = \frac{80}{5}$

$x = 16$

4) $\frac{7}{10} = \frac{21}{x}$

$\frac{7x}{7} = \frac{210}{7}$

$x = 30$

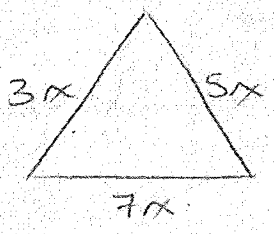
5) $\frac{20}{5} = \frac{4x}{6}$

$\frac{20x}{20} = \frac{120}{20}$

$x = 6$

Find the measures of the sides of each triangle.

6) The ratio of the measures of the sides of a triangle is 3:5:7, and its perimeter is 450 centimeters.



$3x + 5x + 7x = 450$

$15x = 450$

$x = 30$

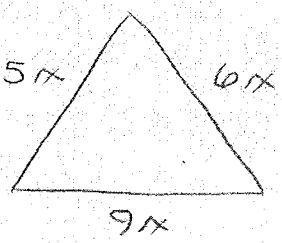
$3(30) = 9$

$5(30) = 150$

$7(30) = 210$

THE SIDES MEASURE 90 cm, 150 cm, AND 210 cm.

7) The ratio of the measures of the sides of a triangle is 5:6:9, and its perimeter is 220 meters.



$5x + 6x + 9x = 220$

$20x = 220$

$x = 11$

$5(11) = 55$

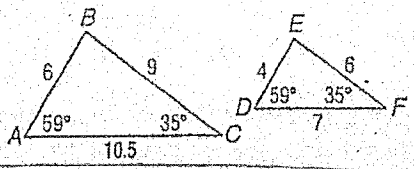
$6(11) = 66$

$9(11) = 99$

THE SIDES MEASURE 55m, 66m AND 99m.

Determine whether each pair of figures is similar. Justify your answer.

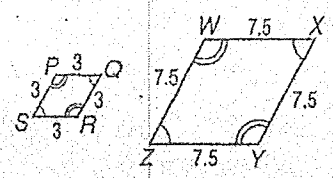
8)



Yes $\triangle ACB \sim \triangle DFE$ BY SAS or AA or SSS

scale factor is $\frac{3}{2}$

9)



SRQP ~ ZYXW by AA or SAS or SSS

scale factor $\frac{3}{7.5}$ or .4

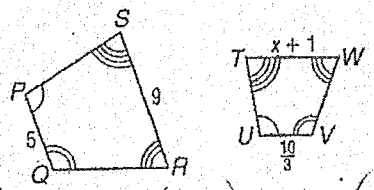
Each pair of polygons is similar. Write a similarity statement, and find x, th measure(s) of the indicated side(s), and the scale factor.

$WT = 5+1 = 6$

10) $\overline{WT}$ PQRS ~ UVWT

Scale factor

$\frac{9}{5+1} = \frac{9}{6} = \frac{3}{2}$



$\frac{5}{\frac{10}{3}} = \frac{9}{x+1}$

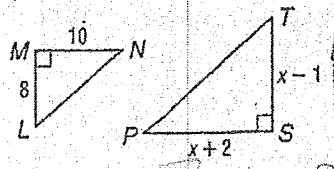
$5(x+1) = 9\left(\frac{10}{3}\right)$

$5x+5 = \frac{90}{3} = 30$

$5x = 25$

$x = 5$

11) $\overline{TS}$ and $\overline{SP}$ $\triangle MNL \sim \triangle SPT$



$TS = 12$

$PS = 3+2 = 15$

$\frac{10}{x+2} = \frac{8}{x-1}$

$10(x-1) = 8(x+2)$

$10x-10 = 8x+16$

$2x = 26$

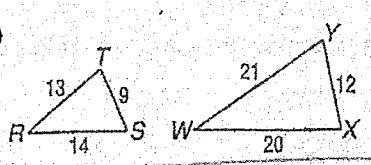
$x = 13$

Scale factor

$\frac{10}{(13)+2} = \frac{10}{15} = \frac{2}{3}$

Determine whether each pair of triangles is similar. Justify your answer.

12)

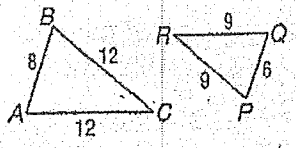


$\frac{9}{12}$ $\frac{13}{20}$ $\frac{14}{21}$

$\frac{3}{4}$ $\frac{13}{20}$ $\frac{2}{3}$

No. Side ratios are not equal, so $\triangle$ are not ~

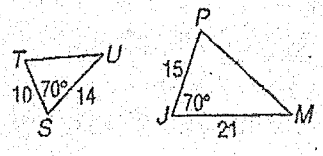
13)



$\frac{8}{6} = \frac{4}{3}$ $\frac{12}{9} = \frac{4}{3}$

Yes $\triangle ABC \sim \triangle QR$ by SSS or $\triangle PQ$

14)

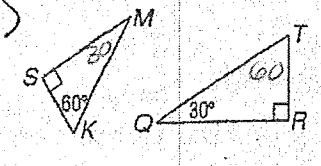


$\frac{10}{15}$ $\frac{14}{21}$

$\frac{2}{3}$ $\frac{2}{3}$

Yes $\triangle TSU \sim \triangle RJM$ by SAS.

15)



Yes, $\triangle SMK \sim \triangle RQT$ by AA.