Geometry
6.1-6.4 Quiz Review

Name: Key

1. In the 2002 Major League baseball season, Sammy Sosa hit 49 home runs and was at bat 556 times. Find the ratio of home runs to the number of times he was at bat. 49:556

2. There are 54 girls and 81 boys in the junior class. Find the ratio of girls to total students in the junior class.
54+81=135 54:135 2:5

3. A 4-inch by 6-inch photograph, set vertically, is enlarged to make a poster 22 inches wide. How tall is the poster? $\frac{4}{6}=\frac{22}{x}$ $4x=132$ $x=33$in

Find the measures of the angles of each triangle.

4. The ratio of the measures of three angles is 12:2:4
$12x+2x+4x=180$ $18x=180$ $x=10$ 120°, 20°, 40°

5. The ratio of the measures of three angles is 7:8:3
$7x+8x+3x=180$ $18x=180$ $x=10$ 70°, 80°, 30°

Find the measures of the sides of each shape:

6. The ratio of the measures of three sides of a triangle is 8:7:5. Its perimeter is 240 feet.
$8x+7x+5x=240$ $20x=240$ $x=12$ 96ft, 84ft, 60ft

7. The ratio of the measures of four sides in a quadrilateral is 3:7:5:2. Its perimeter is 85 cm.
$3x+7x+5x+2x=85$ $17x=85$ $x=5$ 15cm, 35cm, 25cm, 10cm

Solve each of the following proportions:

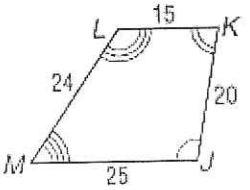
8. $\frac{10}{x}=\frac{5}{30}$ $5x=300$ $x=60$

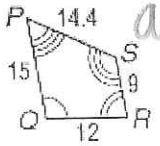
9. $\frac{b+1}{b-1}=\frac{5}{6}$ $6b+6=5b-5$ $b=-11$

10. $\frac{x+1}{3}=\frac{7}{2}$ $2x+2=21$ $2x=19$ $x=9.5$

Determine if the following polygons are similar or not and justify your answer. If they are similar, write a similarity statement.

11.



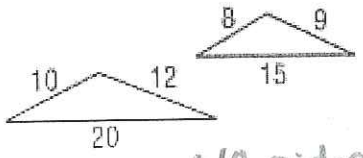


Yes, corr ∠s are ≅ & all corr sides are in proportion

$LK \cong LR$
$LL \cong LS$
$LM \cong LP$
$LJ \cong LQ$

$\frac{15}{9}=\frac{20}{12}=\frac{24}{14.4}=\frac{25}{15}$

12.

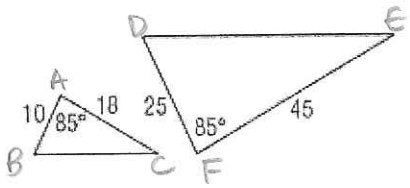


$\frac{9}{12}=\frac{8}{10}=\frac{15}{20}$

$0.75=0.8=0.75$

NO, sides are not in proportion

13.



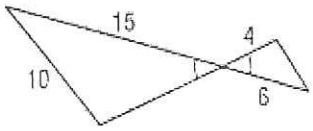
$\angle A \cong \angle F$

$\frac{10}{25} = \frac{18}{45}$

$0.4 = 0.4$

Yes by SAS Similarity

14.



No, there is no similarity statement that would work (or not enough info given)

15. If $\Delta ABC \sim \Delta DEC$, find x and the scale factor of ΔABC to ΔDEC

$\frac{3x-2}{2x} \times \frac{25}{20}$

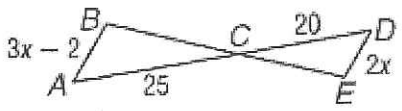
$60x - 40 = 50x$

$10x = 40$

$\boxed{x = 4}$

$\frac{25}{20}$

$\boxed{\frac{5}{4}}$



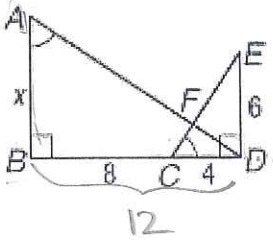
16. Identify the similar triangles and then find x.

$\Delta ABD \sim \Delta CDE$

$\frac{6}{12} = \frac{4}{x}$

$6x = 48$

$\boxed{x = 8}$



17. The triangles are similar in the picture to the right. Write a similarity statements, and find x, the measures of $\overline{PQ}$ and $\overline{QR}$, and the scale factor.

$\Delta PQT \sim \Delta RQS$

$\boxed{PQ = 4}$

$\boxed{QR = 8}$

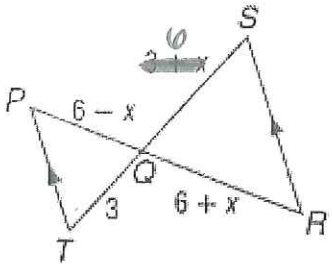
Scale Factor $\frac{3}{6}$ $\boxed{\frac{1}{2} \text{ or } 2}$

$\frac{6-x}{6+x} = \frac{3}{6}$

$36 - 6x = 18 + 3x$

$18 = 9x$

$\boxed{2 = x}$



18. The polygons are similar in the picture to the right. Write a similarity statement, find x, the measures of the $\overline{FE}, \overline{EH}, \overline{GF}$, and the scale factor.

$ABCD \sim EFGH$

$\boxed{FE = 28}$

$\boxed{EH = 20}$

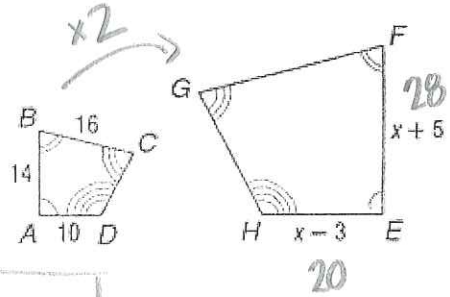
$\boxed{GF = 32}$

$\frac{14}{x+5} = \frac{10}{x-3}$

$14x - 42 = 10x + 50$

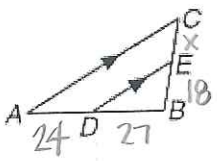
$4x = 92$

$\boxed{x = 23}$



$\boxed{S.F. = \frac{1}{2} \text{ or } 2}$

19. If $AD = 24$, $DB = 27$, and $EB = 18$, find CE.



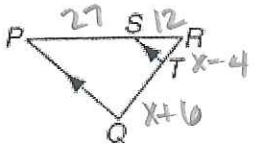
$\frac{18}{27} = \frac{x}{24}$

$27x = 432$

$x = 16$

$\boxed{CE = 16}$

20. Find x, QT, and TR if $QT = x + 6$, $SR = 12$, $PS = 27$, and $TR = x - 4$.



$\frac{12}{27} = \frac{x-4}{x+6}$

$12x + 72 = 27x - 108$

$180 = 15x$

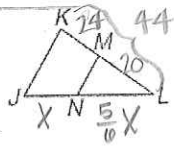
$\boxed{12 = x}$

$\boxed{QT = 18}$

$\boxed{TR = 8}$

Determine whether $\overline{JK} \parallel \overline{NM}$.

21. $JN = 18$, $JL = 30$, $KM = 21$, and $ML = 35$



$\frac{12}{18} = \frac{35}{21}$ $\frac{2}{3} \neq \frac{5}{3}$ NO, sides are not in proportion

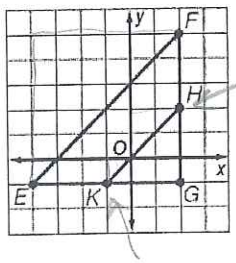
22. $KM = 24$, $KL = 44$, and $NL = \frac{5}{6}JN$

$\frac{20}{24} \times \frac{5/6x}{x}$

$20x = 20x$

Yes, sides are in proportion

Triangle EFG has vertices $E(-4, -1)$, $F(2, 5)$, and $G(2, -1)$. Point K is the midpoint of $\overline{EG}$ and H is the midpoint of $\overline{FG}$.



(2, 2)

(-1, -1)

23. Show that $\overline{EF}$ is parallel to $\overline{KH}$.

slope $\overline{EF} = \frac{6}{6} = 1$ slope $\overline{KH} = \frac{3}{3} = 1$

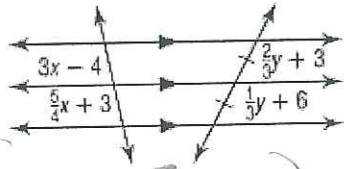
Same slope so $\overline{EF} \parallel \overline{KH}$

24. Show that $KH = \frac{1}{2}EF$.

$EF = \sqrt{(2-4)^2 + (5-1)^2} = \sqrt{36+36} = \sqrt{72} = 6\sqrt{2}$

$KH = \sqrt{(2-1)^2 + (2-1)^2} = \sqrt{9+9} = \sqrt{18} = 3\sqrt{2}$

25. Find x and y.



$4\left(3x - 4 = \frac{5}{4}x + 3\right)$

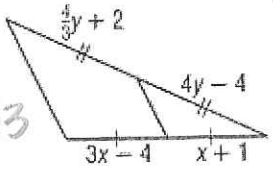
$12x - 16 = 5x + 12$

$7x = 28$ $\boxed{x = 4}$

$\left(\frac{2}{3}y + 3 = \frac{1}{3}y + 6\right)3$

$2y + 9 = y + 18$

26. Find x and y.



$3\left(\frac{4}{3}y + 2 = 4y - 4\right)$

$4y + 6 = 12y - 12$

$18 = 8y$

$\boxed{2.25 = y}$

$3x - 4 = x + 1$

$2x = 5$ $\boxed{x = 2.5}$

27. **MAPS** The distance from Wilmington to Ash Grove along Kendall is 820 feet and along Magnolia, 660 feet. If the distance between Beech and Ash Grove along Magnolia is 280 feet, what is the distance between the two streets along Kendall?

$\frac{280}{660} = \frac{x}{820}$

$229600 = 660x$

$\boxed{\text{about } 348 \text{ ft}}$