

1. Find the ratio of 2 h to 20 min. [A] 1:600 [B] 6:1 [C] 6:5 [D] 1:10
 120 to 20
 6:1

2. Write the ratio of vowels to consonants in LETHBRIDGE in lowest terms.
 [A] 3:7 [B] 2:3 3:7 [C] 3:2 [D] 7:3

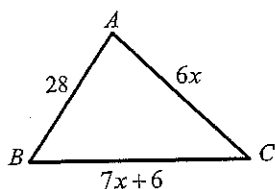
3. Rewrite the fraction so that the numerator and denominator have the same units. Then simplify.

$$\frac{3 \text{ yards}}{48 \text{ inches}} \quad \frac{36}{108} \quad \frac{108}{48} \rightarrow \frac{54}{24} \rightarrow \frac{27}{12} \rightarrow \frac{9}{4} \text{ inches}$$

4. According to a recent survey, 20 out of every 25 students do not walk to school. Which of the following represents the ratio of walkers to total students?

[A] 5 [B] $\frac{4}{5}$ [C] $\frac{1}{5}$ $\frac{20}{25} \rightarrow \frac{4}{5}$ [D] $\frac{1}{4}$

5. The ratios of the side lengths of triangle ABC are 7:9:12 (AB:AC:BC). Solve for x.



$$\frac{6x}{9} = \frac{28}{7} \quad 42x = 252 \quad \boxed{x=6}$$

6. Solve: $\frac{7}{26} = \frac{x}{13}$ $\frac{91}{26} = \frac{26x}{26}$ $\boxed{3\frac{1}{2} = x}$

7. If $\frac{3}{x-4} = \frac{7}{x}$, then _____. [A] x=4 [B] x=3 [C] x = $\frac{7}{3}$ [D] x=7
 $3x = 7(x-4)$ $3x = 7x - 28$ $-4x = -28$ $\frac{-4x}{-4} = \frac{-28}{-4}$ $\boxed{x=7}$

8. Which of the following is a proportion?

[A] A is to B [B] $\frac{\text{grams}}{\text{cubic cm}}$ [C] $\frac{15 \text{ in.}}{3 \text{ in.}} = \frac{15 \text{ lb}}{9 \text{ lb}}$ [D] XY = AB

9. Solve the proportion $\frac{5}{x-1} = \frac{7}{x}$.

$$5x = 7(x-1)$$

$$5x = 7x - 7$$

$$-2x = -7$$

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

$$\boxed{x = 3.5}$$

10. If $\frac{P}{Q} = \frac{R}{S}$, which of the following is NOT true?

[A] $\frac{Q}{P} = \frac{S}{R}$

[B] $\frac{R}{S} = \frac{P}{Q}$

[C] $PS = RQ$

[D] $PR = SQ$

11. Mr. Jones has taken a survey of college students and found that 1 out of 3 students are liberal arts majors. If a college has 9000 students, what is the best estimate of the number of students who are liberal arts majors?

[A] 3000

[B] 27,000

[C] 135

[D] 300

12. A student took a geometry test worth 200 points. How many points did she earn if she got 79% of the answers correct?

$\frac{79}{100} = \frac{x}{200}$

$\begin{array}{r} 200 \\ \times 79 \\ \hline 1800 \\ 14000 \\ \hline 15800 \end{array}$
 $x = 1580$

13. Assume the exchange rate of Canadian dollars to American dollars is 1 to 0.77. If a stove costs \$529.50 in Canadian dollars, then what would its price be in American dollars?

[A] \$407.72

[B] \$506.50

[C] \$452.50

[D] \$687.66

$\frac{1}{.77} = \frac{529.50}{x}$ * 407.72

14. If $\frac{a}{b} = \frac{c}{d}$, then _____.

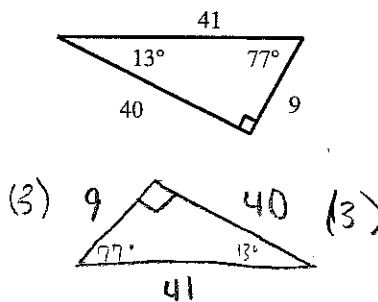
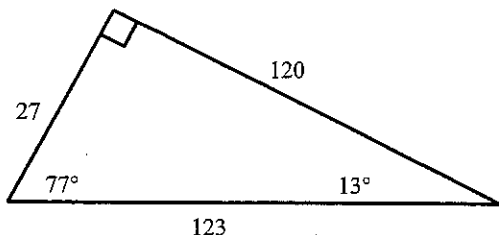
[A] $ac = bd$

[B] $\frac{a}{b} = \frac{a+c}{b+d}$

[C] $\frac{a+b}{b} = \frac{c+d}{d}$

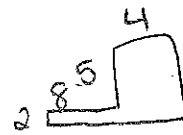
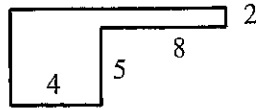
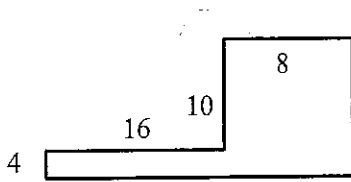
[D] $\frac{a+b}{b} = \frac{c+b}{d}$

15. Are the two triangles (not drawn to scale) similar? If so, explain why they are.



yes they are because the sides are proportional (x3) and the angles are congruent

16. Are the two polygons similar? (They are not drawn to scale, but assume all angles are 90° .) If not, explain why.



yes they are

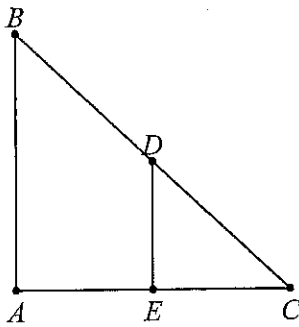
[A] No; $\frac{4}{8} \neq \frac{5}{16}$

[B] No; $\frac{4}{8} \neq \frac{5}{4}$

[C] Yes

[D] not enough information to tell

17. In the diagram, $\triangle ABC$ is similar to $\triangle EDC$. Write the statement of proportionality.



$$\frac{AB}{ED} = \frac{AC}{EC} = \frac{BC}{DC}$$

18. If two polygons are SIMILAR, then the corresponding angles must be _____.

[A] supplementary

[B] linear pairs

[C] congruent

[D] complementary

19. If two polygons are SIMILAR, then the corresponding sides must be _____.

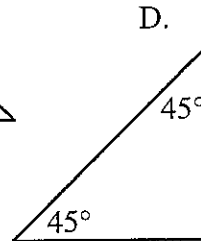
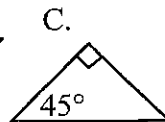
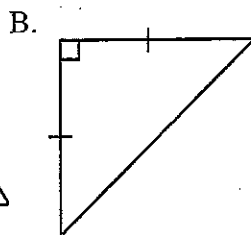
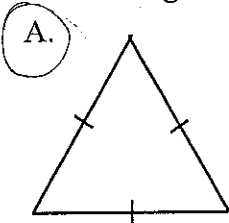
[A] similar

[B] parallel

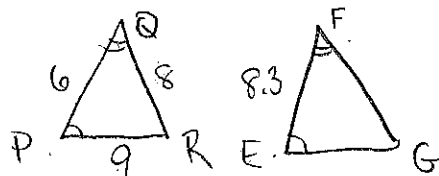
[C] proportional

[D] congruent

20. Which triangle is not similar to any of the others?

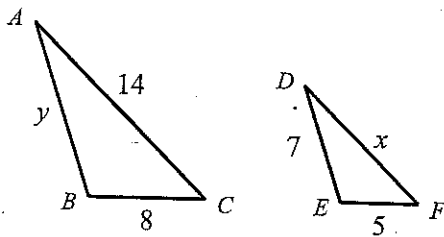


21. $\triangle PQR$ and $\triangle EFG$ are similar with $m\angle P = m\angle E$ and $m\angle Q = m\angle F$. If PQ , QR , and PR are 6 inches, 8 inches, and 9 inches respectively, and EF is 8.3 inches, find EG . (Answer to the nearest tenth.)



$$\frac{6}{8.3} = \frac{9}{x} \quad \frac{6x = 74.7}{6} \quad \boxed{x = 12.45}$$

22. Given that $\triangle ABC \sim \triangle DEF$, solve for x and y .



$$\frac{5}{8} = \frac{7}{y}$$

$$\frac{5}{8} = \frac{x}{14}$$

$$\frac{5y}{5} = \frac{56}{5}$$

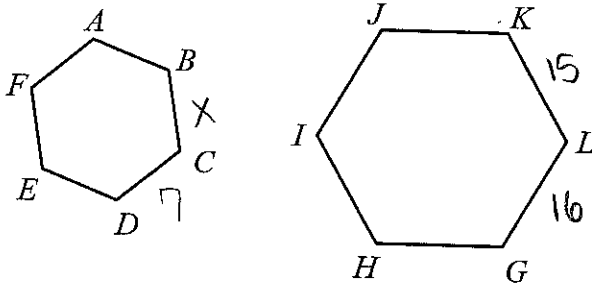
$$y = 11\frac{1}{5}$$

$$\frac{8x}{8} = \frac{70}{8}$$

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

- [A] $x = 8.75, y = 11.2$ [B] $x = 8.75, y = 10.2$ [C] $x = 7.75, y = 10.2$ [D] $x = 7.75, y = 11.2$

23. In the figure (not drawn to scale), the hexagon $ABCDEF$ is similar to hexagon $JKLMHI$. Find length BC to the nearest tenth if $KL = 15$, $LG = 16$, and $CD = 7$.



$$\frac{7}{16} = \frac{x}{15}$$

$$\frac{105}{16} = \frac{16x}{16}$$

$$x = 6.56$$

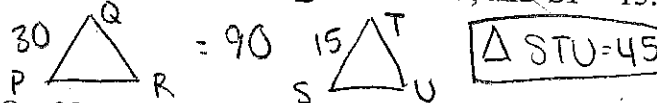
24. A photo needs to be enlarged from an original with a length of 3 inches and a width of 1 inches to a size where the new width is 5 inches. What is the new length? What is the scale factor?

$\frac{3}{1}$ ← scale factor

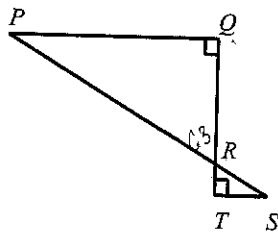
$$\frac{3}{1} = \frac{x}{5}$$

$$x = 15$$

25. The perimeter of $\triangle PQR$ is 90, $PQ = 30$, $\triangle PQR \sim \triangle STU$, and $ST = 15$. What is the perimeter of $\triangle STU$?



26. In the figure shown, $PQ = 32$ centimeters, $ST = 8$ centimeters and $m\angle QRP = 63^\circ$. Find $m\angle S$.



$$\frac{63}{32} = \frac{x}{8}$$

$$x = 15.75$$

$$180 - 153 = 27$$

$$m\angle S = 27$$

27. One way to show that two triangles are similar is to show that C.

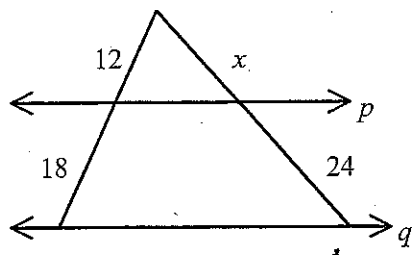
[A] two sides of one are proportional to two sides of the other

[B] a side of one is congruent to a side of the other

[C] two angles of one are congruent to two angles of the other

[D] an angle of one is congruent to an angle of the other

28. If $p \parallel q$, solve for x .



$$\frac{36}{24} = \frac{18}{x}$$

$$\frac{48}{3} = \frac{3x}{3}$$

$$16 = x$$