

Adv. Geometry 6.2 - Using Proportions key

Copy and complete the statement.

1. If $\frac{6}{x} = \frac{5}{y}$, then $\frac{6}{5} = \frac{?}{?}$. $\left(\frac{x}{y}\right)$
2. If $\frac{x}{12} = \frac{y}{26}$, then $\frac{x}{y} = \frac{?}{?}$. $\left(\frac{12}{26}\right)$
3. If $\frac{x}{4} = \frac{7}{y}$, then $\frac{x+4}{4} = \frac{?}{?}$. $\left(\frac{7+y}{y}\right)$
4. If $\frac{9}{2} = \frac{x}{y}$, then $\frac{11}{2} = \frac{?}{?}$. $\left(\frac{x+y}{y}\right)$

Decide whether the statement is true or false.

5. If $\frac{x}{y} = \frac{8}{3}$, then $\frac{y}{x} = \frac{3}{8}$. $\left(T\right)$
6. If $\frac{x}{y} = \frac{8}{3}$, then $\frac{3}{x} = \frac{y}{8}$. $\left(F\right)$
7. If $\frac{x}{y} = \frac{8}{3}$, then $\frac{x}{8} = \frac{3}{y}$. $\left(F\right)$
8. If $\frac{x}{y} = \frac{8}{3}$, then $\frac{x}{8} = \frac{y}{3}$. $\left(T\right)$
- $3x = 8y$
- $\frac{16}{6} = \frac{8}{3}$
- $\frac{3}{16} = \frac{6}{8}$
- $\frac{18}{8} = \frac{3}{6}$

Use the diagram and the given information to find the unknown length.

11. Given $\frac{AB}{BC} = \frac{AE}{ED}$, find BC.

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

$24 = 12x$

$x = 2$

12. Given $\frac{AB}{BC} = \frac{AE}{ED}$, find BC.

$\frac{12}{x} = \frac{18}{15}$

$180 = 18x$

$10 = x$

13. Given $\frac{FD}{FE} = \frac{CD}{BE}$, find BE.

$\frac{12}{9} = \frac{16}{x}$

$12x = 144$

$x = 12$

14. Given $\frac{AB}{BC} = \frac{FE}{ED}$, find AC.

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

$x = \frac{20}{6} = \frac{10}{3}$

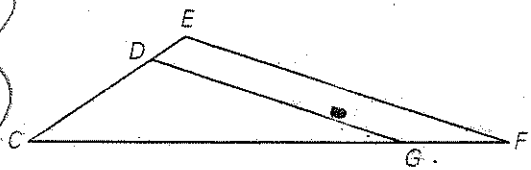
$AB = \frac{10}{3} + 5 = \frac{10}{3} + \frac{15}{3} = \frac{25}{3}$

Mexican Pesos In November, 2005, the exchange rate of Mexican pesos to U.S. dollars was 10.77 to 1. While on vacation, you paid 205 pesos for a sombrero at a gift shop.

22. What was the price of the sombrero in U.S. dollars?
- $\frac{10.77}{1} = \frac{205}{x}$
- $x = \frac{205}{10.77} = 19.03$
23. If the exchange rate were 9.24 Mexican pesos to 1 U.S. dollar, what would have the cost been in U.S. dollars?
- $\frac{9.24}{1} = \frac{205}{x}$
- $x = 22.19$

In the diagram, $\frac{DE + CD}{CD} = \frac{GF + CG}{CG}$. State whether the indicated proportion is true or false.

8. $\frac{DE}{CD} = \frac{GF}{CG}$ $\left(T\right)$
9. $\frac{CD}{DE} = \frac{CG}{GF}$ $\left(T\right)$
10. $\frac{DE}{CD} = \frac{GF}{CF}$ $\left(F\right)$
11. $\frac{DE}{CE} = \frac{GF}{CF}$ $\left(T\right)$



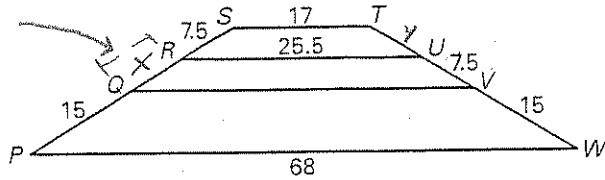
In the diagram, $\frac{PQ}{QR} = \frac{WV}{VU}$, $\frac{QR}{RS} = \frac{VU}{UT}$ and $\frac{PW}{QV} = \frac{QV}{ST}$. Find the unknown length.

14. Find UT .

$$\frac{15}{x} = \frac{15}{7.5} \quad x = 7.5$$

15. Find QV .

$$QR = 7.5$$



$$\frac{7.5}{7.5} = \frac{7.5}{UT}$$

$$UT = 7.5$$

(15)

$$\frac{68}{QV} = \frac{QV}{17}$$

$$1156 = (QV)^2$$

$$34 = QV$$

Find the values of a and b .

1. $\frac{a}{5} = \frac{a+14}{10} = \frac{3a}{b}$

$$\frac{a}{5} = \frac{a+14}{10}$$

$$10a = 5a + 70$$

$$5a = 70$$

$$a = 14$$

$$\frac{14}{5} = \frac{42}{b}$$

$$14b = 210$$

$$b = 15$$

2. $\frac{a}{10} = \frac{2}{b} = \frac{b+1}{15}$

$$\frac{2}{b} = \frac{b+1}{15}$$

$$30 = b^2 + b$$

$$0 = b^2 + b - 30$$

$$0 = (b+6)(b-5)$$

$$b = -6 \quad b = 5$$

$$\frac{a}{10} = \frac{2}{-6}$$

$$a = \frac{20}{-6} = \frac{10}{-3}$$

$$\frac{a}{10} = \frac{2}{5}$$

$$a = 4$$

3. $\frac{1}{a} = \frac{6}{5a+9} = \frac{4}{b}$

$$\frac{1}{a} = \frac{6}{5a+9}$$

$$5a+9 = 6a$$

$$9 = a$$

$$\frac{1}{9} = \frac{4}{b}$$

$$b = 36$$

4. You know from Property 4 of the properties of proportions that if $\frac{a}{b} = \frac{c}{d}$, then it follows that $\frac{a+b}{b} = \frac{c+d}{d}$. Is it also true that if $\frac{a}{b} = \frac{c}{d}$, then $\frac{a \times b}{b} = \frac{c \times d}{d}$?

Explain why or why not. Give examples to support your reasoning.

NO IF $\frac{1}{2} = \frac{3}{6}$ then $\frac{1 \times 2}{2} = \frac{3 \times 6}{6}$

$$1 \neq 3$$