5.4 Solving Proportions p.188

There are 3 ways to solve proportions. They are:

Method 1: Using a COMMON FACTOR by multiplying or dividing a ratio

a) $\frac{5}{7} \overset{(3)}{=} \frac{x}{21}$ $\overset{(3)}{}$ $x = 15$

b) $\frac{70}{13} \overset{\div 10}{=} \frac{7}{a}$ $a = 1.3$

How can you check that you got the correct solution? cross products property

Method 2: REDUCING a ratio first; then multiply or divide:

a) $\frac{1}{14}\frac{\cancel{2}}{\cancel{28}} = \frac{7}{x}$ $x = 98$

b) $\frac{y}{5} = \frac{\cancel{6}}{\cancel{12}}\frac{1}{2}$ $y = 2.5$

How can you check that you got the correct solution? cross multiply

Method 3: Using the CROSS PRODUCTS PROPERTY

a) $\frac{x}{8} = \frac{7}{10}$

$\frac{56}{10} = \frac{10x}{10}$

$5.6 = x$

b) $\frac{9}{y} = \frac{3}{17}$

$\frac{153}{3} = \frac{3y}{3}$

$51 = y$

c) $\frac{0.45}{4.2} = \frac{p}{14}$

$\frac{6.3}{4.2}$ $p = 1.5$

d) $\frac{11}{10} = \frac{n}{14}$

$\frac{154}{10}$ $n = 15.4$

e) $\frac{2}{7} = \frac{x}{28}$

$\frac{56}{7}$ $x = 8$

f) $\frac{12}{5} = \frac{6}{b}$

$\frac{30}{12}$ $b = 2.5$

g) $\frac{2.4}{6} = \frac{2.8}{s}$

$\frac{16.8}{2.4}$ $s = 7$

h) $\frac{3.6}{k} = \frac{0.2}{0.5}$

$\frac{1.8}{0.2}$ $k = 9$

i) $\frac{t}{5} = \frac{12}{80}$

$\frac{60}{80}$ $t = 0.75$

j) $\frac{3.6}{18} = \frac{0.2}{x}$

$\frac{3.6}{3.6}$ $x = 1$

Solve for the variable:

[3]

1) $\frac{2x}{5} = \frac{9}{15}$

$\frac{45}{15} = 3$

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

$x = 1.5$

2) $\frac{4}{k+3} = \frac{8}{14}$

$\frac{56}{8} = 7$

$k+3 = 7$

$-3 \quad -3$

$k = 4$

3) $\frac{40}{b+1} = \frac{15}{3}$

$\frac{120}{15} = 8$

$b+1 = 8$

$-1 \quad -1$

$b = 7$

4) $\frac{5x}{3} = \frac{80}{12}$

$\frac{240}{12} = 20$

$5x = 20$

$x = 4$

5) $\frac{7}{2} = \frac{x+1}{6}$

$\frac{42}{2} = 21$

$x + 1 = 21$

$-1 \quad -1$

$x = 20$

6) $\frac{3x}{10} = \frac{9}{4}$

$\frac{90}{4} = 22.5$

$\frac{3x}{3} = \frac{22.5}{3}$

$x = 7.5$

7) $\frac{c-10}{6} = \frac{7}{3}$

$\frac{42}{3} = 14$

$c - 10 = 14$

$+10 \quad +10$

$c = 24$

8) $\frac{20}{9} = \frac{10}{s+2}$

$\frac{90}{20} = 4.5$

$s + 2 = 4.5$

$-2 \quad -2$

$s = 2.5$

9) $\frac{8x}{13} = \frac{64}{52}$

$\frac{832}{52} = 16$

$8x = 16$

$x = 2$

10) $\frac{n}{121} = \frac{52}{22}$

$\frac{6292}{22} = 286$

HOW CAN YOU CHECK THAT YOU GOT THE CORRECT SOLUTION?

plug in your solution for the variable and cross multiply