

Math 9

Solving Two Step Equations with Brackets

Review: Expand the brackets.

a) $2(x - 6)$

$$2x - 12$$

b) $-3(x + 5)$

$$-3x - 15$$

c) $4(x - 2)$

$$4x - 8$$

Ex: Solve and check the following.

a) $-3(x + 5) = 6$

$$\begin{aligned} -3x - 15 &= 6 \\ +15 & \quad +15 \\ \hline -3x &= 21 \\ \hline -3 & \quad -3 \\ \hline x &= -7 \end{aligned}$$

$$x = -7$$

b) $-3(x + 5) = 6$

$$\begin{aligned} x + 5 &= -2 \\ -5 & \quad -5 \\ \hline x &= -7 \end{aligned}$$

$$x = -7$$

Check:

$$\begin{aligned} -3(x+5) &= 6 \\ -3(-7+5) &= 6 \\ -3(-2) &= 6 \\ 6 &= 6 \quad \checkmark \end{aligned}$$

Ex: Solve and check the following.

a) $\frac{2(c+2)}{3} = \frac{-5}{2}$ multiply by common denominator

$$\begin{aligned} 2(c+2) &= -15 \\ 2c + 4 &= -15 \\ -4 & \quad -4 \\ \hline 2c &= -19 \\ \hline c &= -\frac{19}{2} \end{aligned}$$

$$c = -\frac{19}{2}$$

b) $\frac{c+2}{3} = \frac{-5}{2}$

$$\begin{aligned} 2(c+2) &= -15 \\ 2c + 4 &= -15 \\ 2c &= -19 \\ c &= -\frac{19}{2} \end{aligned}$$

Fraction = Fraction
cross multiply

Check:

$$\begin{aligned} \frac{-\frac{19}{2} + 2}{3} &= \frac{-5}{2} \\ \frac{-9.5 + 2}{3} &= \frac{-5}{2} \\ \frac{-7.5}{3} &= \frac{-5}{2} \\ -2.5 &= -2.5 \quad \checkmark \end{aligned}$$

Questions: Solve. Show your work!

1) $4.2 = 2(d - 0.6)$

$$\begin{aligned} 4.2 &= 2d - 1.2 \\ +1.2 & \quad +1.2 \\ \hline 5.4 &= 2d \\ \hline \frac{5.4}{2} &= \frac{2d}{2} \\ 2.7 &= d \end{aligned}$$

2) $\frac{5(x-1)}{5} = 3(5)$

$$\begin{aligned} x - 1 &= 15 \\ +1 & \quad +1 \\ \hline x &= 16 \end{aligned}$$

Ex: Solve the following.

$$a) \frac{3}{4}(w + 2) = 1\frac{1}{3}$$

$$\frac{3w}{4} + \frac{6}{4} = \frac{4}{3}$$

$$\frac{3w+6}{4} = \frac{4}{3}$$

$$3(3w+6) = 16$$

$$9w + 18 = 16$$

$$\frac{9w}{9} = \frac{-2}{9}$$

$$w = -\frac{2}{9}$$

Leave as fraction

$$b) \frac{7}{6} = \frac{2(5-x)}{3}$$

$$6(2(5-x)) = 21$$

$$12(5-x) = 21$$

$$60 - 12x = 21$$

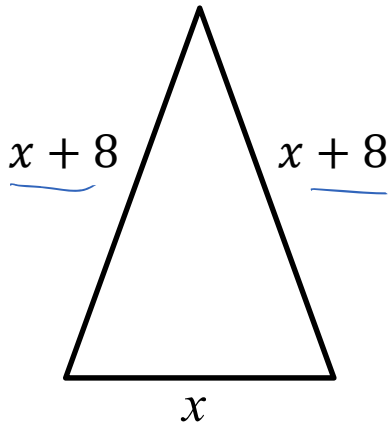
$$-12x = -39$$

$$x = \frac{39}{12}$$

$$x = \frac{13}{4}$$

Lowest Terms.

Ex. Consider the triangle below. Find the value of x if the perimeter is 46.



$$2(x+8) + x = 46$$

$$2x + 16 + x = 46$$

$$3x + 16 = 46$$

$$3x = 30$$

$$x = 10$$

combine like terms.