

7.3 Equations with Brackets

Math 9

Equations with Brackets

Solve each equation. Show how you are isolating the variable.

Method 1: Divide both sides by the number in front of the brackets.

$$\begin{aligned} 2(n+7) &= 18 \\ \div 2 \quad \div 2 & \\ n+7 &= 9 \\ -7 \quad -7 & \\ n &= 2 \end{aligned}$$

$$\begin{aligned} 3(x-8) &= -2 \\ \div 3 \quad \div 3 & \\ x-8 &= -\frac{2}{3} + 8 \\ +8 & \\ x &= -\frac{2}{3} + \frac{24}{3} = 8 \\ x &= \frac{22}{3} \end{aligned}$$

$$\begin{aligned} -4(1.2+y) &= 7.2 \\ \div -4 \quad \div -4 & \\ 1.2+y &= -1.8 \\ -1.2 \quad -1.2 & \\ y &= -3 \end{aligned}$$

$$\begin{aligned} 3(t-1) &= 20 \\ \div 3 \quad \div 3 & \\ t-1 &= \frac{20}{3} + 1 \\ +1 & \\ t &= \frac{20}{3} + \frac{3}{3} \\ t &= \frac{23}{3} \end{aligned}$$

$$\begin{aligned} 2(7-k) &= -16 \\ \div 2 \quad \div 2 & \\ 7-k &= -8 \\ -7 \quad -7 & \\ -k &= -15 \\ \div -1 \quad \div -1 & \\ k &= 15 \end{aligned}$$

$$\begin{aligned} 4.2 &= 2(0.6-a) \\ \div 2 \quad \div 2 & \\ 2.1 &= 0.6-a \\ -0.6 \quad -0.6 & \\ 1.5 &= -a \\ \div -1 \quad \div -1 & \\ -1.5 &= a \end{aligned}$$

Method 2: Multiply the number in front of the brackets with the terms inside the brackets. Then solve the two-step equation.

$$\begin{aligned} 2(n+7) &= 18 \\ 2n+14 &= 18 \\ -14 \quad -14 & \\ 2n &= 4 \\ \div 2 \quad \div 2 & \\ n &= 2 \end{aligned}$$

$$\begin{aligned} 3(x-8) &= -2 \\ 3x-24 &= -2 \\ +24 \quad +24 & \\ 3x &= 22 \\ \div 3 \quad \div 3 & \\ x &= \frac{22}{3} \end{aligned}$$

$$\begin{aligned} -4(1.2+y) &= 7.2 \\ -4.8-4y &= 7.2 \\ +4.8 \quad +4.8 & \\ -4y &= 12 \\ \div -4 \quad \div -4 & \\ y &= -3 \end{aligned}$$

$$\begin{aligned} 3(t-1) &= 20 \\ 3t-3 &= 20 \\ +3 \quad +3 & \\ 3t &= 23 \\ \div 3 \quad \div 3 & \\ t &= \frac{23}{3} \end{aligned}$$

$$\begin{aligned} 2(7-k) &= -16 \\ 14-2k &= -16 \\ -14 \quad -14 & \\ -2k &= -30 \\ \div -2 \quad \div -2 & \\ k &= 15 \end{aligned}$$

$$\begin{aligned} 4.2 &= 2(0.6-a) \\ 4.2 &= 1.2-2a \\ -1.2 \quad -1.2 & \\ 3 &= -2a \\ \div -2 \quad \div -2 & \\ -\frac{3}{2} &= a \end{aligned}$$

Which method do you prefer?

Part 1 of Assignment: p.318 #1, 6, 23

Solve each equation. Show how you are isolating the variable.

$$10 \frac{(t-1)}{5} = \frac{3}{2} \cdot 10$$

$$\frac{t-1}{5} \cdot \frac{5}{5} = \frac{3}{2}$$

$$\frac{10(t-1)}{5} = \frac{30}{2}$$

$$2(t-1) = 15$$

$$2(t-1) = 15$$

$$2t - 2 = 15$$

$$2t = 17$$

$$t = \frac{17}{2} \text{ or } 8\frac{1}{2} \text{ or } 8.5$$

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

$$2(c+2) = -15$$

$$2c + 4 = -15$$

$$2c = -19$$

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

$$6 \cdot \frac{7}{6} = \frac{2(5-w) \cdot 6}{3}$$

$$\frac{42}{6} = \frac{12(5-w)}{3}$$

$$7 = 4(5-w)$$

$$7 = 20 - 4w$$

$$-13 = -4w$$

$$\frac{-13}{-4} = w$$

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

$$2 \cdot -0.25 = \frac{x-1.6}{2} \cdot 2$$

$$-0.5 = x - 1.6$$

$$1.1 = x$$

$$= \frac{3(m+2)}{4}$$

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

$$12 \cdot \frac{3}{4}(m+2) = \frac{4}{3} \cdot 12$$

$$\frac{36}{4}(m+2) = \frac{48}{3}$$

$$9(m+2) = 16$$

$$9m + 18 = 16$$

$$-18 \quad -18$$

$$9m = -2$$

$$\div 9 \quad \div 9$$

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

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

$$6 \cdot \frac{5}{2} = \frac{1}{3}(y-2) \cdot 6$$

$$\frac{30}{2} = \frac{6}{3}(y-2)$$

$$15 = 2(y-2)$$

$$15 = 2y - 4$$

$$19 = 2y$$

$$\frac{19}{2} = y$$

Part 2 of Assignment: p.320#9 – 11