

**Homework 3.3**

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**Solve each proportion.**

$$1) \frac{x}{3} = \frac{x+4}{4}$$

$$4x = 3(x+4)$$

$$4x = 3x + 12$$

$$\underline{-3x -3x}$$

$$x = 12$$

$$3) \frac{x}{10} = \frac{(x-1)}{7}$$

$$7x = 10(x-1)$$

$$7x = 10x - 10$$

$$\underline{-10x -10x}$$

$$\underline{-3x = -10}$$

$$\frac{-3x}{-3} = \frac{-10}{-3}$$

$$x = 10/3 \approx 3.\bar{3}$$

$$5) \frac{(x-3)}{3} = \frac{(x+1)}{6}$$

$$6(x-3) = 3(x+1)$$

$$6x - 18 = 3x + 3$$

$$\underline{-3x -3x}$$

$$\underline{3x - 18 = 3}$$

$$\underline{+18 +18}$$

$$\frac{3x}{3} = \frac{21}{3}$$

$$x = 7$$

$$2) \frac{(x+7)}{2} = \frac{x}{8}$$

$$8(x+7) = 2x$$

$$8x + 56 = 2x$$

$$\underline{-8x -8x}$$

$$\frac{56}{-6} = \frac{-6x}{-6}$$

$$\frac{-9.\bar{3}}{3} \approx \frac{-28}{3} = x$$

$$4) \frac{(k-3)}{5} = \frac{(k+7)}{3}$$

$$3(k-3) = 5(k+7)$$

$$3k - 9 = 5k + 35$$

$$\underline{-3k -3k}$$

$$\underline{-9 = 2k + 35}$$

$$\underline{-35 -35}$$

$$\frac{-44}{-44} = \frac{2k}{2}$$

$$\frac{-44}{-44} = \frac{2k}{2}$$

$$-22 = k$$

$$6) \frac{(p+4)}{3} = \frac{(p-7)}{4}$$

$$4(p+4) = 3(p-7)$$

$$4p + 16 = 3p - 21$$

$$\underline{-3p -3p}$$

$$\underline{p + 16 = -21}$$

$$\underline{-16 -16}$$

$$p = -37$$

**Solve each equation for the indicated variable.**

7)  $-4(3y + 7x) = -124$ , solve for x

$$-12y - 28x = -124$$

$$\underline{+12y +12y}$$

$$\underline{-28x = 12y - 124}$$

$$\underline{\frac{-28}{-28}}$$

$$x = \frac{12y - 124}{-28}$$

$$\text{or } x = \frac{12y - 124}{28}$$

8)  $96 = 6(m + 5n)$ , solve for n

$$96 = 6m + 30n$$

$$\underline{-6m -6m}$$

$$\underline{\frac{96 - 6m}{30} = \frac{30n}{30}}$$

$$\frac{16 - m}{5} = n$$

9)  $P = 2w + 2l$ , solve for w

$$\underline{-2l -2l}$$

$$\frac{P - 2l}{2} = \frac{2w}{2}$$

$$\frac{P - 2l}{2} = w$$

10)  $P = \frac{4}{3}xy^2$ , solve for x

$$\left(\frac{3}{4}\right)P = \frac{4}{3}xy^2\left(\frac{3}{4}\right)$$

$$\frac{1}{y^2} \cdot \frac{3P}{4} = xy^2\left(\frac{1}{y^2}\right)$$

$$\frac{3P}{4y^2} = x$$