

## Unit 3 - Literal Equations

Solve for the indicated variable. Show all necessary work.

1.  $-3x + b = c$ , for  $x$ .

$$\begin{aligned} -3x + b &= c \\ -b &\quad -b \\ \hline -3x &= c - b \\ -3 &\quad -3 \\ \hline x &= \frac{c - b}{-3} \end{aligned}$$

2.  $\frac{y+a}{3} = c$ , for  $y$ .

$$\begin{aligned} 3 \cdot \frac{y+a}{3} &= c \cdot 3 \\ y+a &= 3c \\ -a &\quad -a \\ \hline y &= 3c - a \end{aligned}$$

3.  $v = 4 + at$ , for  $a$ .

$$\begin{aligned} v &= 4 + at \\ -4 &\quad -4 \\ \hline v-4 &= at \\ t &\quad t \\ \hline a &= \frac{v-4}{t} \end{aligned}$$

4.  $I = prt$ , for  $r$ .

$$\begin{aligned} \frac{I}{prt} &= \frac{prt}{prt} \\ r &= \frac{I}{pt} \end{aligned}$$

5.  $d = \frac{1}{2}at^2$ , for  $a$ .

$$\begin{aligned} 2 \cdot d &= \frac{1}{2}at^2 \cdot 2 \\ \frac{2d}{t^2} &= \frac{at^2}{t^2} \\ a &= \frac{2d}{t^2} \end{aligned}$$

6.  $c = \frac{3}{4}y + b$ , for  $y$ .

$$\begin{aligned} c &= \frac{3}{4}y + b \\ -b &\quad -b \\ \hline \frac{4}{3} \cdot (c-b) &= \frac{3}{4}y \cdot \frac{4}{3} \\ \frac{4}{3}(c-b) &= y \end{aligned}$$

7.  $3x - 4y = 7$ , for  $y$ .

$$\begin{aligned} 3x - 4y &= 7 \\ -3x &\quad -3x \\ \hline -4y &= 7 - 3x \\ -4 &\quad -4 \\ \hline y &= \frac{7 - 3x}{-4} \end{aligned}$$

8.  $\frac{x+y}{a} = c$ , for  $a$ .

$$\begin{aligned} a \cdot \frac{x+y}{a} &= c \cdot a \\ \frac{x+y}{c} &= \frac{ac}{c} \\ a &= \frac{x+y}{c} \end{aligned}$$

9. (a) Sara is going to paint a circular piece of wood for the set of her school play. If the area of the wood is  $36\pi$ , then what is the radius? (Remember:  $A = \pi r^2$ )

$$\begin{aligned} A &= \pi r^2 \\ \frac{36\pi}{\pi} &= \frac{\pi r^2}{\pi} \\ 36 &= r^2 \\ r &= 6 \text{ units} \end{aligned}$$

- (b) Using the formula from part (a), represent the radius in terms of  $A$ .

*Hint:* The inverse operation of squaring ( $x^2$ ) is taking the square root  $\sqrt{\quad}$

$$\begin{aligned} \frac{A}{\pi} &= \frac{\pi r^2}{\pi} \\ \frac{A}{\pi} &= r^2 \\ r &= \sqrt{\frac{A}{\pi}} \end{aligned}$$