

Solve each equation for the indicated variable.

1. Solve $6 = mx + b$ for x

$$\begin{aligned} 6 - b &= mx \\ \frac{6-b}{m} &= x \end{aligned}$$

2. Solve $6x = \frac{4-k}{6}b$ for k

$$\begin{aligned} 6x &= \frac{4-k}{6}b \\ -4 & \quad -4 \\ \frac{6x-4}{-1} &= \frac{-k}{-1} \\ -6x+4 &= k \end{aligned}$$

3. Solve $A = P + Prt$ for t

$$\begin{aligned} A - P &= Prt \\ \frac{A-P}{Pr} &= t \end{aligned}$$

4. Solve $3x - 4y = 12$ for y

$$\begin{aligned} -4y &= 12 - 3x \\ -4 & \quad -4 \quad -4 \\ \frac{-4y}{-4} &= \frac{12-3x}{-4} \\ y &= -3 + \frac{3}{4}x \end{aligned}$$

Write each number in terms of i , perform the indicated operation, and write the answer in simplest form.

5. $\sqrt{-100} - \sqrt{-9}$
 $= (10i) - (3i)$
 $= 7i$

6. $-4\sqrt{-3} \cdot \sqrt{-3}$
 $= -4i\sqrt{3} \cdot i\sqrt{3}$
 $= -4(i^2)3$
 $= -12(-1)$
 $= 12$

7. $\sqrt{-2} \cdot \sqrt{-18}$

8. $-4\sqrt{-3} \cdot \sqrt{-3}$

Solve each quadratic equation.

9. $3x^2 - 12 = 0$
 $\frac{3x^2}{3} = \frac{12}{3}$
 $\sqrt{x^2} = \sqrt{4}$
 $x = \pm 2$

10. $d^2 - 2d = 0$
 $d(d-2) = 0$
 $d = 0$ or $d-2 = 0$
 $d = 2$

11. $s^2 - s = 0$
 $s(s-1) = 0$
 $s = 0$ or $s-1 = 0$
 $s = 1$

Test Review

Name Key

-60	5
2	30
3	20
4	15
5	12
6	10

$$12. \begin{array}{r} x^2 + 2x = 8 \\ -8 \quad -8 \\ \hline \end{array} \quad \begin{array}{r} -8 \\ 4(-2) \\ \hline \end{array}$$

$$x^2 + 2x - 8 = 0$$

$$(x+4)(x-2) = 0$$

$$\begin{array}{r} x+4=0 \\ -4 \quad -4 \\ \hline \end{array} \quad \begin{array}{r} x-2=0 \\ +2 \quad +2 \\ \hline \end{array}$$

$x = -4$ $x = 2$

$$15. \sqrt{(x-5)^2} = \sqrt{-7}$$

$$x-5 = \pm i\sqrt{7}$$

$$\begin{array}{r} +5 \qquad \qquad +5 \\ \hline \end{array}$$

$x = 5 \pm i\sqrt{7}$

$$13. \begin{array}{r} y^2 - 2y = 4 \\ -4 \quad -4 \\ \hline \end{array} \quad \begin{array}{r} -4 \\ -2 \\ \hline \end{array}$$

$$y^2 - 2y - 4 = 0$$

$$y = \frac{+2 \pm \sqrt{4 - 4(-4)}}{2}$$

$$= \frac{2 \pm \sqrt{20}}{2} = \frac{2 \pm 2\sqrt{5}}{2}$$

$y = 1 \pm \sqrt{5}$

$$16. \sqrt{(x+1)^2} = \sqrt{-4}$$

$$x+1 = \pm 2i$$

$$\begin{array}{r} -1 \qquad \qquad -1 \\ \hline \end{array}$$

$x = -1 \pm 2i$

$$14. \begin{array}{r} 20 = 3r^2 + 5r \\ -20 \quad -20 \\ \hline \end{array}$$

$$0 = 3r^2 + 5r - 20$$

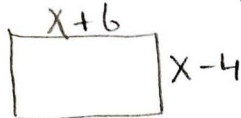
$$r = \frac{-5 \pm \sqrt{25 - 4(-60)}}{3}$$

$$= \frac{-5 \pm \sqrt{49}}{3}$$

$$= \frac{-5 \pm 7}{3} = \frac{-12}{3} = -4$$

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

17. The length of a rectangle is 6 inches longer than a number. The width is 4 inches less than the same number. The height is 2 in. If the volume of the rectangle is 832 in³, find the dimensions of the rectangle.



$$\frac{832}{2} = \frac{2}{2} (x-4)(x+6)$$

$$416 = x^2 - 4x + 6x - 24$$

$$416 = x^2 + 2x - 24$$

$$\begin{array}{r} -416 \qquad \qquad -416 \\ \hline \end{array}$$

$$0 = x^2 + 2x - 440$$

$$0 = (x+22)(x-20)$$

$$\begin{array}{r} x+22=0 \\ -22 \quad -22 \\ \hline \end{array} \quad \begin{array}{r} x-20=0 \\ +20 \quad +20 \\ \hline \end{array}$$

$x = -22$ $x = 20$

Reject

440	2
44	10
22	20

$20+6 = 26$

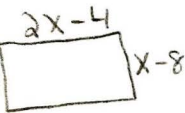
$20-4 = 16$

CHECK:

$26(16)(2) = 832$

✓

18. The length of a rectangle is 4 inches less than twice a number. The width is 8 inches less than the same number. The height is 4 in. Find the dimensions of the rectangle if its volume is 1536 in³.



$$\frac{1536}{4} = \frac{4}{4} (x-8)(2x-4)$$

$$384 = 2x^2 - 4x - 16x + 32$$

$$384 = 2x^2 - 20x + 32$$

$$\begin{array}{r} -384 \qquad \qquad -384 \\ \hline \end{array}$$

$$0 = 2x^2 - 20x - 352$$

$$0 = \frac{2}{2} (x^2 - 10x - 176)$$

$$0 = x^2 - 10x - 176$$

$$x = \frac{+10 \pm \sqrt{100 - 4(-176)}}{2}$$

$$x = \frac{10 \pm \sqrt{804}}{2} = \frac{10 \pm 2\sqrt{201}}{2} = 5 \pm \sqrt{201}$$

804
 \wedge
 $4 \cdot 201$
 \wedge
 22 \wedge
 $3 \cdot 67$

-176	-10
4	44
8	22
16	11

19. Collin is building a deck on the back of his house. He has enough lumber for the deck to be 144

square feet. The length should be 10 feet more than its width. What should the dimensions of the

deck be? AREA $\square = lw$

$$144 = x(x+10)$$

$$144 = x^2 + 10x$$

$$\begin{array}{r} -144 \qquad \qquad -144 \\ \hline \end{array}$$

$$0 = x^2 + 10x - 144$$

$b^2 - 4ac = 40$, can't factor

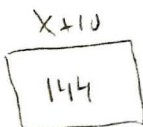
$$x = \frac{-10 \pm \sqrt{100 - 4(-144)}}{2}$$

NO SOLUTION

$$x = \frac{-10 \pm \sqrt{-476}}{2}$$

$$= \frac{-10 \pm i\sqrt{476}}{2}$$

$x = 5 \pm i\sqrt{119}$



Solve.

$$20. \frac{8}{b+10} = \frac{4}{2b-7}$$

$$8(2b-7) = 4(b+10)$$

$$16b - 56 = 4b + 40$$

$$-4b + 56 \quad -4b + 56$$

$$\frac{12b}{12} = \frac{96}{12}$$

$$b = 8$$

$$21. \frac{n+12}{4} = \frac{n}{16}$$

$$16(n+12) = 4n$$

$$16n + 192 = 4n$$

$$-16n \quad -16n$$

$$\frac{192}{-12} = \frac{-12n}{-12}$$

$$-16 = n$$

Write down the elements in the following sets.

Let $U = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$; $A = \{0, 1, 2, 3, 5, 8\}$; $B = \{0, 2, 4, 6\}$; $C = \{1, 3, 5, 7\}$

$$22. A \cup B = \{0, 1, 2, 3, 4, 5, 6, 8\}$$

$$23. A \cap B = \{0, 2\}$$

$$24. B \cup C = \{0, 1, 2, 3, 4, 5, 6, 7\}$$

$$25. A \cup C = \{0, 1, 2, 3, 5, 7, 8\}$$