1) Make 33 $\underset{2}{\underline{\quad}}$ divisible by 4.

$\frac{3}{4}$

2) $\dfrac{a}{5}$ = 2, $a = 10$

3) 25% of $16.00 $= \$4$

$\dfrac{}{4}$

4) 4m + 3 = 12, m= ? $m = 2.5$

$2(4)+3 = 12$
$8 + 3 = 12$

$4m + 3 - 3 = 12 - 3$
$4m = 9$
$\dfrac{4m}{4} = \dfrac{9}{4}$
$m = 4$

5) three more than three times a number

$3n + 3$
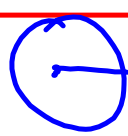
6) $A = \pi r^2$ ————————————— A goat is tied to an 8-m rope
$= 3(8 \times 8) = 3 \times 64$ in a field.
$= 192$
7) (-8) + (+9) = -17   a) What area of the field
can the goat graze?

8) Which is greater $\le$ 1/12 or 1/3?
9) What is the area of each triangle?

10) Write the expression:
3 less than 5 times a number

$5n - 3$

1) $15b + 13c - 12b + 10c + 8$

2) $10m + 12n - 5m + 3n + 5$

Collecting Like Terms

3) $5b + 7 - 3b$

$2b + 7$

4) $19m + 23n + m - 3n$

5) $15p + 7q + 5p - 4q$

$20p + 3q$

6) $12m + 37 + 13n + 4m - 9n$
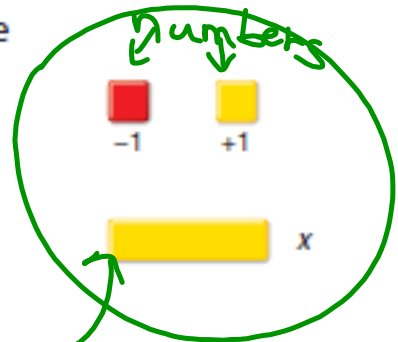
7) $12z + 5 + 3z$

$15z + 5$

8) $m + 12 - 10$

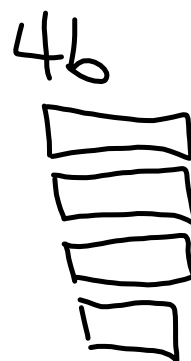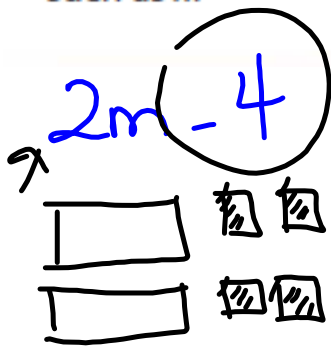$m + 2$

6.3 Solving Equations Involving In

using tiles

Focus

Recall that 1 red unit tile and 1 yellow unit tile combine to model 0.
These two unit tiles form a zero pair.

The yellow variable tile represents a variable, such as *x*.

Numbers

-1 $+1$

x

Variable (letter)

$2m - 4$

-3

$+6$

The equation is: $-6 = t + 3$

$$t + 3 = -6$$

The variable in an equation can be on the left side or the right sid

$$t + 3 = -6$$
$$t + 3 - 3 = -6 + 3$$
$$t = -9$$

Add 3 red unit tiles to each side. Remove zero pairs.
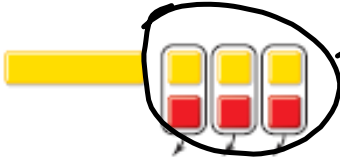
9 red unit tiles equals one variable tile.

t

We can verify the solution by replacing or yellow variable tile with 9 red unit tiles in the original equation.

The solution is $t = -9$.
At 10 a.m., the temperature was $-9°C$.

6.3 Solving Equations Involving Integers

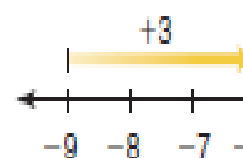We can also solve equations involving integers by inspection.

To solve $-6 = t + 3$ by inspection:

We find a number which, when 3 is added to it, gives -6.

Think of moving 3 units to the right on a number line.

To arrive at -6, we would have to start at -9.

So $t = -9$.

Practice

1. Use tiles to solve each equation.
Sketch the tiles you used.
a) $x + 4 = 8$ b) $3 + x = 10$ c) $12 = x + 2$
d) $x - 4 = 8$ e) $10 = x - 3$ f) $12 = x - 2$

2. Solve by inspection. Show your work.
a) $9 = n - 4$ b) $x + 6 = 8$ c) $2 = p - 5$
d) $x - 4 = -9$ e) $-8 = s + 6$ f) $x - 5 = -2$

3. Four less than a number is 13.
Let x represent the number.
Then, an equation is: $x - 4 = 13$
Solve the equation. What is the number?

4. Jody had some friends over to watch movies.
Six of her friends left after the first movie.
Five friends stayed to watch a second movie.
Write an equation you can use to find how many
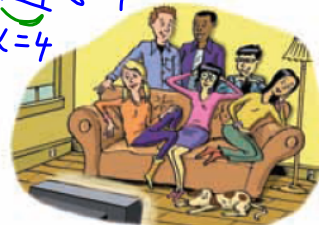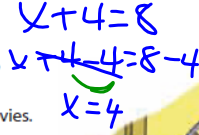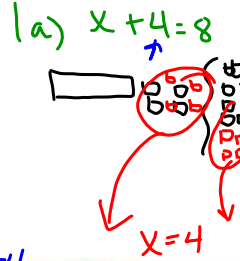of Jody's friends watched the first movie.
Solve the equation. Verify the solution.

5. Overnight, the temperature dropped 8°C to −3°C.
a) Write an equation you can solve
to find the original temperature.
b) Use tiles to solve the equation.
Sketch the tiles you used.

234   UNIT 6: Equations

(handwritten annotations)

p. 234

1a) $x + 4 = 8$

$x + 4 = 8$
$x + 4 - 4 = 8 - 4$
$x = 4$

$x = 4$

$n + 3 = 6$
$n + 3 - 3 = 6 - 3$

$n = 3$

$12 = x + 3$
$x + 3 = 12$

$4 + z = 4$

$z = 0$

equal sign

$a + 4 = 7$
$a = 3$

$3 + z = 7$
$3 + z - 3 = 7 - 3$

$x -$

$n + 3 = 5$
$3 + n = 6$

$-8 = s + 6$
$-8 + 6 = s + 6 - 6$
$-14 = s$

$-8 = s + 6$
$-14 = s$

6. **Assessment Focus** Solve each equation using tiles, and by inspection.
   Verify each solution. Show your work.
   a) $x + 6 = 13$ b) $n - 6 = 13$