

# Solving Equations by Using Models

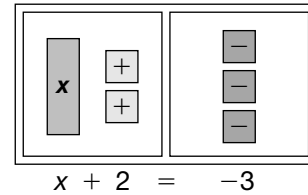
(Pages 117–121)

You can use algebra tiles to solve equations.

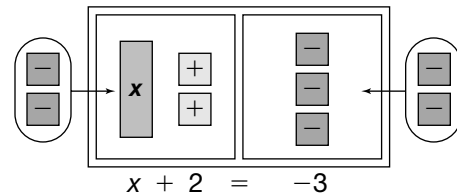
## EXAMPLE

Solve the equation  $x + 2 = -3$ .

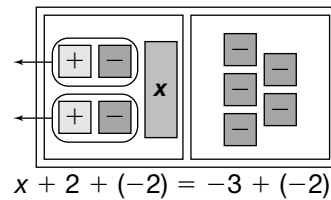
**Step 1** Use white tiles for positive values, and shaded tiles for negative values. To model the equation  $x + 2 = -3$ , place 1  $x$ -tile and 2 white square tiles on one side of the mat to represent  $x + 2$ . Place 3 shaded square tiles on the right side to represent  $-3$ .



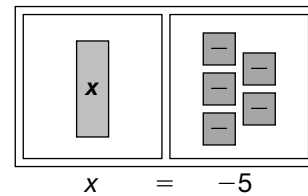
**Step 2** To get the  $x$ -tile by itself, you need to remove 2 white square tiles from each side. Since there are no white tiles on the right side, you will need to add 2 shaded tiles to each side to make 2 zero pairs on the left side of the mat.



**Step 3** Remove the zero pairs to get the  $x$ -tile by itself.



**Step 4** The  $x$ -tile on the left is matched with 5 shaded square tiles on the right. Therefore,  $x = -5$ .



## PRACTICE

Solve each equation. Use algebra tiles if necessary.

- |                  |                     |                  |
|------------------|---------------------|------------------|
| 1. $p + 3 = -3$  | 2. $n - 4 = 9$      | 3. $-5 = h - 7$  |
| 4. $-2 + x = 5$  | 5. $r + (-6) = -10$ | 6. $7 = z + 8$   |
| 7. $11 + f = 3$  | 8. $17 = b + 6$     | 9. $-4 + p = -8$ |
| 10. $a - 6 = -9$ | 11. $w + (-9) = -4$ | 12. $-1 = d - 2$ |



13. **Standardized Test Practice** What is the value of  $g$  if  $g + 7 = -3$ ?

- A  $-10$       B  $-4$       C  $4$       D  $10$

Answers: 1. -6 2. 13 3. 2 4. 7 5. -4 6. -1 7. -8 8. 11 9. 11 10. -4 11. -3 12. 1 13. A