

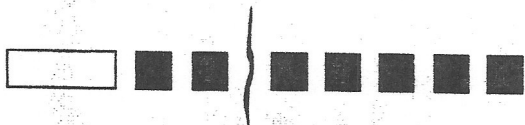
## 6.5

## Using Different Methods to Solve Equations

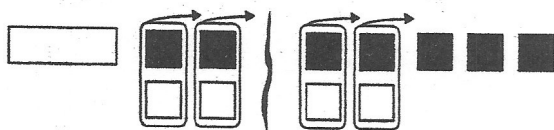


## Quick Review

- Use (algebra tiles) to solve equations that involve integers.  
For example, to solve  $x - 2 = -5$ :



Add 2 white tiles to each side, then remove zero pairs.



The solution is  $x = -3$ .

- Solve *by inspection* for simple equations that involve whole numbers.  
For example, to solve  $2x + 1 = 9$ :

Think: Which number added to 1 gives 9?

Answer:  $8 + 1 = 9$

Now think: Which number multiplied by 2 gives 8?

Answer:  $4 \times 2 = 8$

So, the solution is  $x = 4$ .

- Use *algebra* to solve any equation.

For example, to solve  $\frac{n}{5} = 10$ :

$$\frac{n}{5} = 10$$

Multiply each side of the equation by 5 to isolate  $n$ .

$$\frac{n}{5} \times 5 = 10 \times 5$$

$$n = 50$$

- Use *systematic trial* to solve an equation if you are not sure how to start.
- Use the *balance-scales model* to help you visualize the equation.  
Whichever method you choose, always *verify* your solution by substituting the solution into the original equation.

## Practice

For questions 1 to 4, use algebra, a balance-scales model, inspection, systematic trial, or tiles to solve each equation.

Verify your solutions.

1. a)  $\frac{x}{3} = 12$

The solution is: \_\_\_\_\_

c)  $3x = 12$

The solution is: \_\_\_\_\_

2. a)  $n - 5 = -3$

The solution is: \_\_\_\_\_

c)  $n + 8 = -2$

The solution is: \_\_\_\_\_

3. a)  $2x + 5 = 19$

The solution is: \_\_\_\_\_

c)  $4x - 3 = 13$

The solution is: \_\_\_\_\_

b)  $\frac{x}{2} = 8$

The solution is: \_\_\_\_\_

d)  $2x = 8$

The solution is: \_\_\_\_\_

b)  $n + 10 = 6$

The solution is: \_\_\_\_\_

d)  $n - 6 = -10$

The solution is: \_\_\_\_\_

b)  $7x + 4 = 18$

The solution is: \_\_\_\_\_

d)  $3x - 10 = 14$

The solution is: \_\_\_\_\_

4. a)  $p + 4 = 11$

b)  $t - 6 = 14$

The solution is: \_\_\_\_\_

The solution is: \_\_\_\_\_

c)  $\frac{k}{8} = 5$

d)  $5x = 45$

The solution is: \_\_\_\_\_

The solution is: \_\_\_\_\_

For questions 5 to 9, write then solve an equation to solve the problem.

5. One adult ticket costs \$5. One child ticket costs \$3.  
The total cost of 2 adult tickets and  $n$  child tickets is \$25.  
How many child tickets are there?

\_\_\_\_\_

6. Four years ago, Ellie was 12 years old.  
How old is Ellie now?

\_\_\_\_\_

7. A square has perimeter 28 cm.  
What is the length of a side of the square?

\_\_\_\_\_

8. Phillippe shared his beads with three friends.  
Each person had 6 beads.  
How many beads did Phillippe start with?

\_\_\_\_\_

9. Julie sorted 52 sports cards. She divided them into 5 equal groups.  
Julie had 12 cards left over. How many cards were in each group?

\_\_\_\_\_

10. Write a problem that can be described by the equation  $2x + 3 = 21$ .  
Solve the equation. Solve the problem.

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