



## Vocabulary

### Review

1. Circle each pair of *opposites*.

$\frac{1}{5} \text{ and } 5$

$-17 \text{ and } 17$

$0 \text{ and } 1$

$\frac{3}{20} \text{ and } -\frac{3}{20}$

2. An *equation* is a mathematical sentence that uses an equal sign (=). Circle each equation below.

$y - 3 = 12$

$7 = \frac{w}{7}$

$5x - 7 + 2$

$43 = 43$

Use mental math to solve each *equation*.

3.  $10 + \square = 13$

4.  $17 = 8 + \square$

5.  $43 + \square = 99$

### Vocabulary Builder

**solution** (noun) suh loo shun

**Related Word:** solve (verb)

**Definition:** A **solution** is any value or values that make an equation true.

**Example:** The **solution** of the equation  $x + 4 = 12$  is 8.

**Nonexample:** 6 is NOT a **solution** of the equation  $x - 4 = 10$ .

7 is a **solution** of  
 $x + 2 = 9$  because  
 $7 + 2 = 9$ .

### Use Your Vocabulary

6. Cross out the equation for which 24 is NOT the *solution*.

$x + 4 = 28$

$y - 2 = 22$

$3w = 24$

$\frac{48}{2} = z$

7. Circle the equation for which 20 is the *solution*.

$10 + m = 20$

$25 = n - 5$

$5x + 5 = 95$

$\frac{y}{5} = 4$

8. Circle the *solution* of  $7 - x = 9$ .

$-16$

$-2$

$2$

$16$

An equation is *true* if the expressions on either side of the equal sign are equal. An equation is *false* if the expressions on either side of the equal sign are not equal. An equation that contains one or more variables is called an **open sentence**.



## Problem 1 Classifying Equations

**Got It?** Is the equation  $3y + 6 = 5y - 8$  *true*, *false*, or *open*? Explain.

9. Does the equation contain one or more variables?

Yes / No

10. Is the equation *true*, *false*, or *open*? Explain.

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**Got It?** Is the equation  $16 - 7 = 4 + 5$  *true*, *false*, or *open*? Explain.

11.  $16 - 7 =$

12.  $4 + 5 =$

13. Does  $16 - 7 = 4 + 5$ ?

Yes / No

14. Is the equation *true*, *false*, or *open*? Explain.

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**Got It?** Is the equation  $32 \div 8 = 2 \cdot 3$  *true*, *false*, or *open*? Explain.

15.  $32 \div 8 =$

16.  $2 \cdot 3 =$

17. Does  $32 \div 8 = 2 \cdot 3$ ?

Yes / No

18. Is the equation *true*, *false*, or *open*? Explain.

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## Problem 2 Identifying Solutions of an Equation

**Got It?** Is  $m = \frac{1}{2}$  a solution of the equation  $6m - 8 = -5$ ?

19. Complete the reasoning model below.

Think	Write
I can substitute <input type="text"/> for $m$ .	$6 \cdot$ <input type="text"/> $- 8 \stackrel{?}{=} -5$
Now I can simplify.	<input type="text"/> $- 8 \stackrel{?}{=} -5$ <input type="text"/> $= -5$
Finally, I can write a sentence to answer the question.	$\frac{1}{2}$ is / is not a solution of $6m - 8 = -5$ .



### Problem 3 Writing an Equation



**Got It?** The length of the ball court at La Venta is 14 times the height of its walls. Write an equation that can be used to find the height of a model of the court that has a length of 49 cm.

20. Complete the model below.

Relate      the length of the model court is fourteen times the height of its walls

Define      Let  $h = \underline{\quad ? \quad}$ . Circle your choice below.

area of wall      height of wall      width of wall

Write       = 14 · 

21. Now write an equation that you can use to find the height of the model.



### Problem 4 Using Mental Math to Find Solutions

**Got It?** What is the solution of  $12 - y = 3$ ? Use mental math.

22. Think: "What number added to / subtracted from 12 is equal to 3?"

23. Circle the solution.

24. Check your work.

15      12      9      6



### Problem 5 Using a Table to Find a Solution

**Got It?** What is the solution of  $25 - 3p = 55$ ? Use a table.

25. Complete the table for each value of  $p$ .

$p$	$25 - 3p$	Value of $25 - 3p$
0	$25 - 3 \cdot \square$	$\square$
10	$25 - 3 \cdot \square$	$\square$
-5	$25 - 3 \cdot \square$	$\square$
-10	$25 - 3 \cdot \square$	$\square$

26. Complete each sentence.

When  $p = \square$ , the value of  $25 - 3p$  is 55.

So, the solution of  $25 - 3p = 55$  is  $\square$ .



## Problem 6 Estimating a Solution

**Got It?** What is the solution of  $3x + 3 = -22$ ? Use a table.

27. Use the table at the right to help you estimate and find the integer values of  $x$  between which the solution must lie.

28. The solution lies between  and .

$x$	$3x + 3$	Value of $3x + 3$
-2	$3 \cdot \square + 3$	<input type="text"/>
-7	$3 \cdot \square + 3$	<input type="text"/>
-8	$3 \cdot \square + 3$	<input type="text"/>
-9	$3 \cdot \square + 3$	<input type="text"/>



## Lesson Check • Do you UNDERSTAND?

**Compare and Contrast** Use two different methods to find the solution of the equation  $x + 4 = 13$ . Which method do you prefer? Explain.

29. Solve the problem using mental math.

30. Solve the problem using a table.

$x$	$x + 4$	Value of $x + 4$
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

31. Explain which method you prefer.



## Math Success

Check off the vocabulary words that you understand.

☐

equation

☐

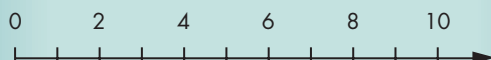
open sentence

☐

solution of an equation

Rate how well you can *solve an equation*.

Need to  
review



Now I  
get it!