A **one-step equation** contains **one operation**.

Operation: addition	Operation: subtraction
$x + 2 = 3$	$x - 12 = 8$
$y + 99 = 100$	$100 = k - 85$

- **One-step equations** require one **inverse operation** to solve for the **variable**.
- To keep an equation **balanced**, **inverse operations** must be done on both sides of the equation.

Inverse operation — Balance

$$\begin{array}{r} x + 2 = 5 \\ -2 = -2 \\ \hline x + 0 = 3 \\ x = 3 \end{array}$$

- The **solution** is the value of the variable that makes the equation true.

Inverse operation — Balance

$$\begin{array}{r} x + 2 = 5 \\ -2 = -2 \\ \hline x + 0 = 3 \end{array}$$

Solution $x = 3$

$x + 2 = 5$
$(3) + 2 = 5$
$5 = 5$ ✓

NOT a Solution $x = 4$

$x + 2 = 5$
$(4) + 2 = 5$
$6 \neq 5$ ✗

CFU

Which equation contains one operation? Explain.

A $m + 7 = 10$
B $3m + 4 = 7$

Which inverse operation would solve the one-step equation? Explain.

$x - 4 = 6$
A addition
B subtraction

Why is **2** subtracted on both sides of the equation?

Why is **3** the solution to the equation $x + 2 = 5$?

Which is the solution for the following one-step equation? Explain.

$m + 7 = 10$

A 10 **B** 3 **C** 7

In your own words, what is a one-step equation?

1 Read the equation.
2 Determine the inverse operation.
3 Solve for the variable.
4 Check and interpret the solution. "*When _____ the equation is true.*"

1

$k + 5 = 6$

When _____, the equation is true.

2

$g + 14 = 16$

When _____, the equation is true.

3

$p - 9 = 13$

When _____, the equation is true.

4

$s - 10 = 22$

When _____, the equation is true.

1 Read the word problem and equation.
2 Identify the equation values in the word problem. (underline)
3 Solve for the variable.
4 Check and interpret the solution.

1 Isabella is baking muffins. The recipe calls for 8 cups of sugar. Isabella has already added 3 cups of sugar. How many more cups of sugar does she need to add?

$c + 3 = 8$

2 Yesterday, Samuel had $7. He was given more money today and now has $10. How much money was Samuel given today?

$m + 7 = 10$

3 Shannon had some money in her pocket. She spent $4 for school supplies. She now has $11. How much money did she have at the start?

$c - 4 = 11$

4 Jessie had a box with marbles. He lost 5 of them during a game and now has 8. How many marbles did Jessie start with?

$m - 5 = 8$

Skill Closure

1 Read the equation.
2 Determine the inverse operation.
3 Solve for the variable.
4 Check and interpret the solution. "*When _____ the equation is true.*"

1

$w + 25 = 32$

When _____, the equation is true.

2

$h - 70 = 19$

When _____, the equation is true.

Concept Closure

Write an explanation. Explain why the student's solution is incorrect.

Sam is trying to solve the equation. After applying one inverse operation, his solution was $m = 8$. Explain why his solution is incorrect and what possible error he may have made.

$m + 2 = 6$

Sam's solution

$m = 8$

Summary Closure

What did you learn today about solving one-step equations?

Word Bank

equation
one-step
balanced
inverse operation

1 Read the equation.
2 Determine the inverse operation.
3 Solve for the variable.
4 Check and interpret the solution. "*When _____ the equation is true.*"

1. $q + 3 = 9$

2. $h + 25 = 52$

3. $m - 6 = 12$

4. $w - 27 = 16$

1 Read the word problem and equation.
2 Identify the equation values in the word problem.
3 Solve for the variable.
4 Check and interpret the solution.

5. Angelina needs to save $20. She has already saved $9. How much more money does Angelina need to save?

$m + 9 = 20$

6. Norman had brought some baseball trading cards to his friend's house. He gave 7 to his friend. Norman now has 18. How many baseball trading cards did Norman bring to his friend's house?

$c - 7 = 18$

Listening

Listen to the word problems. Solve the equation. Interpret the results.

1 $f + 2 = 6$ **Gabriel needs to** _____	**2** $c - 8 = 14$ **Louisa** _____

Listen to the word problems. Answer the questions.

3 $p + 105 = 288$ **Marisol** _____	**4** $p - 45 = 29$ **There were** _____

Look at the problem. Answer the questions.

Emily has a book with 288 pages. She has read 105 pages. How many more pages does she need to read.

p + 105 = 288

Which of the following statements are true?

a	The inverse operation used to solve this problem is subtraction (–).	**Yes**	**No**
b	The meaning of the solution to this problem is the number of pages read.	**Yes**	**No**
c	The meaning of the solution to this problem is the number of pages left to read.	**Yes**	**No**
d	The first step in solving the equation is to subtract 288 to both sides of the equation.	**Yes**	**No**
e	The solution to the equation is 183.	**Yes**	**No**

Reading

Solve one-step word problems.

1 Aika wants to save $100. She already has $28 in her piggy bank. How much more does she need?

$m + 28 = 100$

2 Amadi has a certain number of minutes to use the computer. He has used 32 minutes already. If he can only use the computer for 28 additional minutes, how many minutes of computer time did he have? $t - 32 = 28$

3 Mrs. Dunbar's class has 31 children in it. Elsa counted 18 girls in the class. Which equation represents Mrs. Dunbar's class?

A $b - 18 = 31$

B $b + 18 = 31$

C $b - 31 = 18$

D $b + 31 = 18$

Solve and interpret the correct equation.

4 The library has a particular number of computers. Nine are being used and 11 are available for students to use. How many computers does the library have altogether? Which equation represents the computers in the library?

A $c - 11 = 9$

B $c + 11 = 9$

C $c - 9 = 11$

D $c + 9 = 11$

Solve and interpret the correct equation.

Writing

Read the problem.

Explain the error. Explain how to calculate the correct answer.

1. Estevan earned some money mowing lawns. He spent $30 taking his friends to eat. He has $32 left. How much did he earn?

$$\begin{array}{r} m - 30 = 32 \\ +30 \quad +32 \\ \hline m = 64 \end{array}$$

Solve the problems.
Explain what is different about solving the two problems.

2. $a + 80 = 101$	**3.** $k - 223 = 17$