

# Chapter 2 Test

1. Sort the equations into the bin that correctly describes its solution.  
8.EE.7, 8.EE.7a

$$0.25n + 4 = 0.4(n + 4)$$

$$-3(6n - 1) = -18n + 3$$

$$8n - 28 - n = 7(n - 4)$$

$$5(2z + 4) = 7z + 8$$

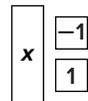
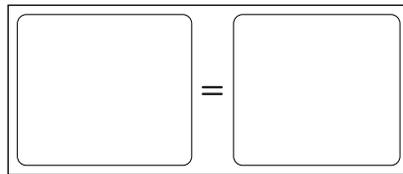
$$17 - 3(2n - 5) = 30 - 6n$$

$$-2(8x + 2) = -16x + 2$$

No Solution	One Solution	Infinitely Many Solutions

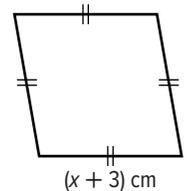
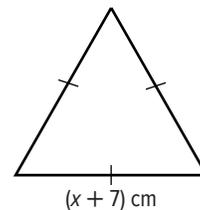
2. Yuriko ran 3 more than twice as many miles as Paul did yesterday. Yuriko ran 7 miles yesterday. Let  $x$  represent the number of miles Paul ran. 8.EE.7, 8.EE.7b

**Part A:** Draw algebra tiles on the equation mat to model this situation.



**Part B:** Solve to find  $x$ . How many miles did Paul run?

3. Jorge buys two magnets. Each magnet is shaped like an equilateral polygon, and they have the same perimeter. Select whether each statement is true or false.  
8.EE.7, 8.EE.7b



**True    False**

- The value of  $x$  is 4.
- The perimeter of the triangular magnet is 30 centimeters.
- The perimeter of the rhombus magnet is 48 centimeters.
- The equation  $3(x + 7) - 4(x + 3) = 0$  can be solved to find the value of  $x$ .

4. Write a number in each box to make an equation that has exactly one real solution. 8.EE.7, 8.EE.7a

1	2	3	4	5
6	7	8	9	10

$$3(2a + 1) - a = \boxed{\phantom{00}}a + \boxed{\phantom{00}}$$

5. In one physical education class,  $\frac{5}{8}$  of the students were playing basketball. After 3 more students joined, 18 students were playing basketball. How many students are in the class? Circle all the equations that could represent this situation. Then find the answer. 8.EE.7, 8.EE.7b

$\frac{5}{8}x = 18 + 3x$	$\frac{5}{8}(x + 3) = 18$	$\frac{5}{8}x = 18 - 3$
$18 = \frac{5}{8}x - 3$	$\frac{5}{8}x + 3 = 18$	$\frac{5}{8}x + 3x = 18$

There are  $\boxed{\phantom{00}}$  students in the class.

6. SkateWorld charges \$10.00 for admission plus \$2.50 per hour to rent ice skates. IceLand charges \$7.00 for admission plus \$4.00 per hour to rent ice skates. Write an equation to find  $h$ , the number of hours for which the total cost is the same at both skating rinks. Then solve the equation and state what the cost is for that number of hours. 8.EE.7, 8.EE.7b

Equation:  $\boxed{\phantom{00000}} = \boxed{\phantom{00000}}$

$h = \boxed{\phantom{0000}}$

Cost for that number of hours:  $\boxed{\phantom{000000}}$

7. Jonah is 20 inches shorter than 2 times Shayna's height. Aisha is 1.5 times as tall as Shayna. Jonah and Aisha are the same height. Let  $s$  represent Shayna's height in inches. Select whether each statement is true or false. 8.EE.7, 8.EE.7b

**True    False**

- |                          |                          |  |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Jonah's height, in inches, can be represented as $20 - 2s$ . |
| <input type="checkbox"/> | <input type="checkbox"/> | Aisha's height, in inches, can be represented as $1.5s$ .    |
| <input type="checkbox"/> | <input type="checkbox"/> | Shayna's height is 33 inches.                                |
| <input type="checkbox"/> | <input type="checkbox"/> | Jonah and Aisha are each 60 inches tall.                     |

8. Select all of the equations that have infinitely many solutions. 8.EE.7, 8.EE.7a

- $6x + 7 - 2x = 4x - 7$   
  $9x - (2x + 5) = 7x - 5$   
  $-5(2x + 3) = -10x + 15$   
  $5 - (3x - 2) = 2x + 2$   
  $12x + 3 + x = 4 + 13x - 1$

9. Write a number in each box to make an equation with a solution of 5. 8.EE.7, 8.EE.7a, 8.EE.7b

$2(3b - 4) = \square b + \square$

10. The table shows expressions to represent the number of eighth-grade students enrolled in different world language classes. The number of students enrolled in French and German is equal to the number of students enrolled in Chinese and Spanish. 8.EE.7, 8.EE.7b

Class	Number of Students
Chinese	$2n$
French	$7n + 6$
German	$4n - 2$
Spanish	$2(4n + 6)$

**Part A:** Model the situation with an equation. Write the appropriate expression in each box.

+  =  +

**Part B:** Solve the equation. Then identify the number of students enrolled in each language class.

$n = \square$

Chinese:  students

German:  students

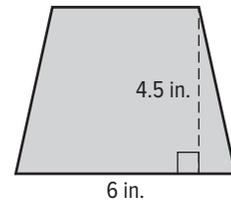
French:  students

Spanish:  students

11. Complete the equation so that it has an infinite number of solutions. Write one number in each box. 8.EE.7, 8.EE.7a

$2(4k - 2) - 2k = \square k - \square$

- 12.** Pearl is making a quilt. One quilt piece is shaped like the trapezoid shown. The fabric to make the quilt piece has an area of 22.5 square inches. The formula for the area of a trapezoid is  $A = \frac{1}{2}h(b_1 + b_2)$ . 8.EE.7, 8.EE.7b



**Part A:** Write an equation you can use to find the length of the top base in the quilt piece. Then find the base length.

Equation:

Base length:

**Part B:** Steve wants to make a quilt piece like Pearl's but with a bottom base that is twice as long. He claims that the area of his quilt piece will be double the area of Pearl's piece. Is Steve's claim accurate? Why or why not?

- 13.** Select the correct equation for each situation. Then solve each problem. 8.EE.7, 8.EE.7b

**Part A:** Dorian deposits \$75 in his bank account. It is 10% of the total amount of money he earned last month working part-time. How much money did Dorian earn last month?

Equation:  Solution:

**Part B:** A rope is 75 feet long. It is 10 times the length Carmen needs for her jump rope. How many feet of rope does Carmen need?

Equation:  Solution:

$\frac{10}{x} = 75$

$75 = 1.1x$

$75x = 10$

$0.1x = 75$

$0.01x = 75$

$10x = 75$

- 14.** Angles  $A$  and  $B$  are supplementary. The measure of angle  $B$  is 5 less than 4 times the measure of angle  $A$ . Write an equation to represent this situation and define the variable you choose. Then find the measures of the angles. 8.EE.7, 8.EE.7b

15. Jacob is solving an equation. His work is shown.  
8.EE.7, 8.EE.7b

**Part A:** Circle the first step in which Jacob's work shows an error.

**Part B:** Describe Jacob's error(s) and how he should correct his work.

Equation: $-0.5(20x - 10) - 2 = 13$	
Step 1:	$-10x - 5 - 2 = 13$
Step 2:	$-10x - 7 = 13$
Step 3:	$\begin{array}{r} -10x - 7 = 13 \\ \quad + 7 \quad + 7 \\ \hline -10x = 20 \end{array}$
Step 4:	$\begin{array}{r} -10x = 20 \\ \quad -10 \quad -10 \\ \hline x = -2 \end{array}$

**Part C:** Find the correct value of  $x$ .

$x =$

16. Sylvia and Raul are computer technicians who make house calls. Sylvia charges a flat fee of \$35.50 plus \$16 per hour. Raul charges a \$15.50 flat fee plus \$20 per hour. Select whether each statement is true or false. 8.EE.7, 8.EE.7b

**True    False**

- For 2 hours of work, Sylvia charges more than Raul.
- For 6 hours of work, Raul charges less than Sylvia.
- The equation  $35.5x + 16 = 15.5x + 20$  can be solved to find the number of hours for which the total cost is the same to hire either technician.
- Both technicians charge the same amount for a 5-hour job.

17. The table shows the total distance Mr. Wilder drove each day last week. The total distance Mr. Wilder drove last week is two thirds of the distance he drove this week. Write and solve an equation to show how far Mr. Wilder drove this week. 8.EE.7, 8.EE.7b

Day	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Miles	9.5	12.5	5.5	7.8	5.5	3.2	10.0

Equation:

Miles this week:

18. Write a number in each box to make an equation that has no real solution. 8.EE.7, 8.EE.7a

$$4(a - 2) + a = \square a - \square$$

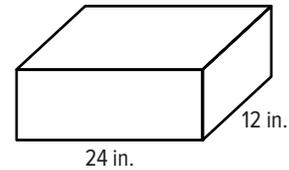
1	2	3	4	5
6	7	8	9	0

19. The perimeter of a rectangular carpet is 44 feet. The length of the carpet is  $(3n + 3)$  feet and the width is  $(2n - 1)$  feet. Select whether each statement is true or false. 8.EE.7, 8.EE.7b

**True**   **False**

- The equation  $3n + 3 + 2n - 1 = 44$  can be solved to find the value of  $n$ .
- The width of the carpet is 4 feet.
- The length of the carpet is 15 feet.
- The carpet is a square.
- The equation  $44 - 2(2n - 1) = 2(3n + 3)$  can be solved to find the dimensions of the carpet.

20. An online shopping company uses boxes like the one shown to ship purchases to customers. 8.EE.7, 8.EE.7b



**Part A:** The shipping box needs 1,224 square inches of cardboard to make its six sides, without overlap. What is the height of the box? Use the formula for surface area of a prism  $S.A. = 2wh + 2lw + 2lh$  to write an equation. Then find the box height.

Equation:

Height of box:

**Part B:** Would packing material with volume 2500 cubic inches fit into this shipping box? Explain.