

PART I GET STARTED**Today's Mathematics**

We will connect subtraction to adding the opposite and use that connection to evaluate integer expressions.

Essential Question

Why does subtracting an integer produce the same result as adding its opposite?

DO NOW

Add. Show enough thinking that someone can follow your sign choice.

1. $-8 + 13$

2. $15 + (-22)$

3. $-19 + (-6)$

4. $-12 + 12$

SEE IT

A diver moves from -28 feet to 8 feet.

1. Write an expression for final position minus starting position.

2. Rewrite the subtraction as addition.

3. Find the vertical distance traveled.

QUICK WRITE | 2 MINUTES

Explain why subtracting a negative number can increase a value.

PART II INVESTIGATE**SAME RESULT, TWO FORMS**

Rewrite each subtraction as addition of the opposite. Use a number line or integer chips to confirm the result.

Subtraction	Add the opposite	Result	What changed?
$7 - 11$			
$-4 - 6$			
$5 - (-3)$			
$-8 - (-8)$			

THINK LIKE A MATHEMATICIAN

1. What happens to the subtraction sign?
2. What happens to the sign of the number being subtracted?
3. Why does subtracting a negative move right on a number line?

CREATE

Write a subtraction expression with a value of 9.

PART III MAKE SENSE AND PRACTICE**WHAT WE CAN CONCLUDE**

1. Rewrite subtraction as addition of the opposite: $a - b = a + (-b)$. 2. Keep the first number, change subtraction to addition, and use the opposite of the second number. 3. Then apply the rules for adding integers.

WORKED MODEL

Evaluate $-14 - (-9)$. $-14 - (-9) = -14 + 9 = -5$

FOCUSED PRACTICE

1. Evaluate $9 - 15$, $-7 - 12$, and $18 - (-5)$.
2. The temperature changes from -16 degrees F to 11 degrees F. Write and evaluate a subtraction expression for the change.

MATH WRITE | 5 MINUTES

Use a number-line example to explain why $a - (-b) = a + b$ when b is positive.

PART IV PUZZLE PRACTICE

Homework

Name _____

Date _____

WHAT DID THE SEA SAY TO THE SAND?

Write the letter of each answer in the box containing the exercise number.

SUBTRACT AND EVALUATE.

1. $3 - 11$

8. $11 - 22 - (-8)$

2. $-5 - 12$

9. $-14 - 7 - (-25)$

3. $14 - (-10)$

10. $17 + 8 - (-15)$

4. $-9 - (-7)$

11. $-9 - (-4) - 2$

5. $25 - (-8)$

12. $-16 + 5 - 12$

6. $-13 - (-13)$

13. High 7 degrees F; low -5 degrees F. Difference?

7. $-6 + 15 - (-4)$

14. Mast 22 ft above water; boat bottom 3 ft below. Difference?

ANSWERS

J. 24	V. -3
I. 0	O. 33
H. 12	A. -23
S. 25	E. -7
W. -8	U. 13
N. -17	D. -2
G. 40	T. 4

CRACK THE CODE

2	5	9	13	6	2	10	6	9	3	7	14	9	1	12	8	11	4
---	---	---	----	---	---	----	---	---	---	---	----	---	---	----	---	----	---