Lesson 2.3 Multiplying Integers (Day 1)

Objective

- Multiply and divide integers by referring to tic-tac-toe and integer posters.

- **Common Core State Standards***7.NS.1*
- **Mathematical Practices** 2. Reason 4. Model mathematics. 5. Use tools strategically. 6. Attend to precision.7. Look for and use structures

P	N	N
N	P	N
N	N	P

Multiplying and Dividing

+ ×÷ + = +

− ×÷ − = +

− ×÷ + = −

+ ×÷ − = −

Multiplying Integers

If the signs are the same...

- Multiply and the product is positive
  $^{+}5 \times {}^{+}2 = {}^{+}10$ or $^{-}5 \times {}^{-}2 = {}^{+}10$

If the signs are different...

- Multiply and the product is negative
  $^{+}5 \times {}^{-}2 = {}^{-}10$ or $^{-}5 \times {}^{+}2 = {}^{-}10$

Dividing Integers

If the signs are the same...

- Divide and the quotient is positive
  $^{+}10 \div {}^{+}2 = {}^{+}5$ or $^{-}10 \div {}^{-}2 = {}^{+}5$

If the signs are different...

- Divide and the quotient is negative
  $^{+}10 \div {}^{-}2 = {}^{-}5$ or $^{-}10 \div {}^{+}2 = {}^{-}5$

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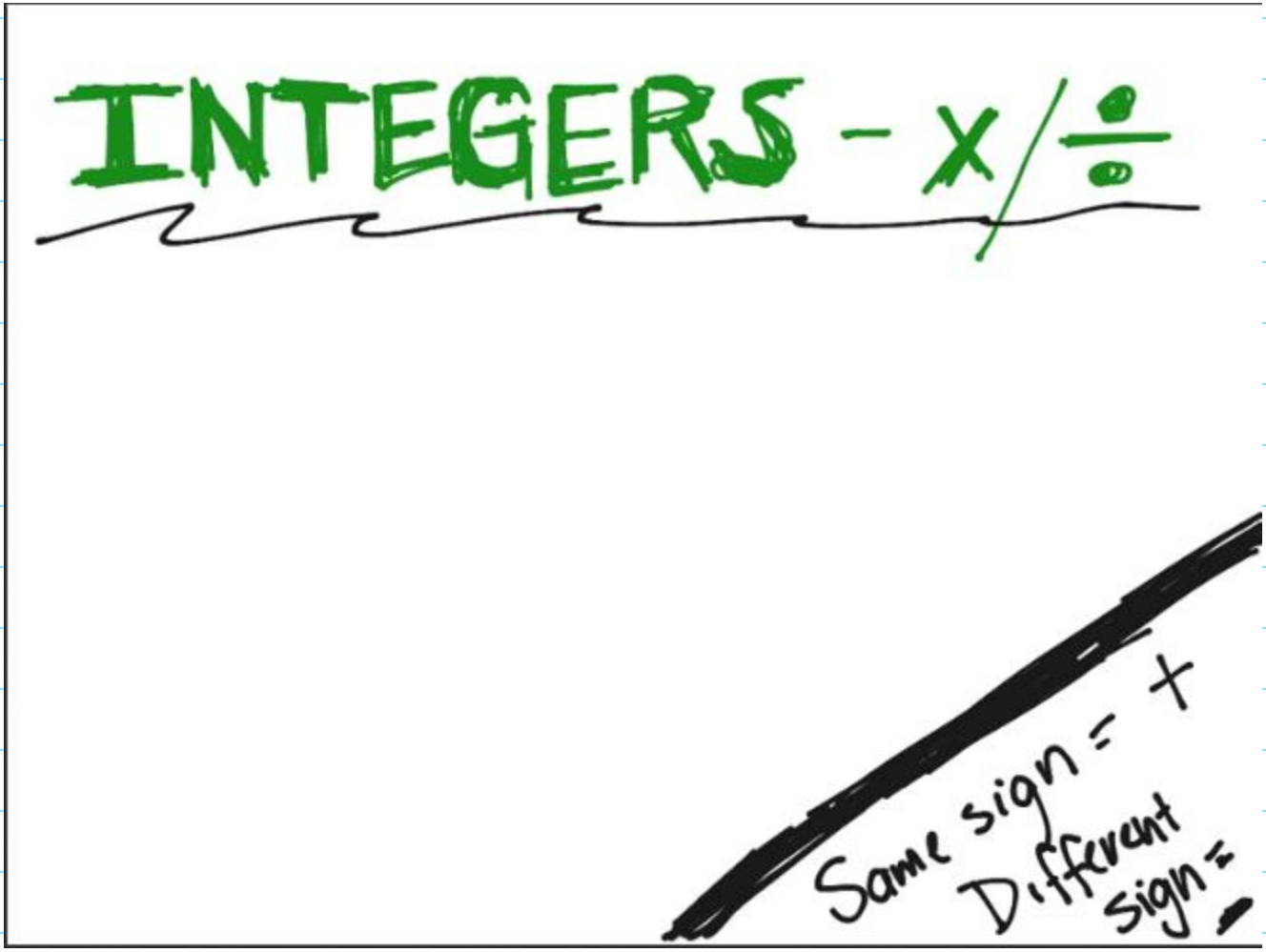

Why do these rules for integers work?

http://www.showme.com/sh/?h=R05U67M

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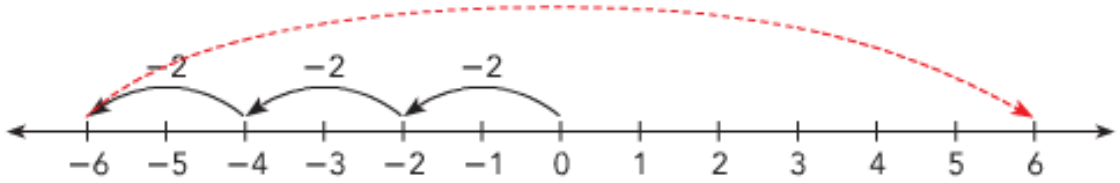
b) Evaluate $-3 \cdot (-2)$.



You can say that $-3 \cdot (-2)$ is the opposite of three groups of -2, -6.

$-3 \cdot (-2) = -(3)(-2)$

$= -(\underline{\ ?\ })$

$= \underline{\ ?\ }$

Turn in Green book 2.3 for explanation of negative times negative

Lesson 2.3 Multiplying Integers (Day 1)

Example 9 **Multiply two or more integers.**

Evaluate each product.

a) $-5(4)$

b) $-3 \cdot (-9)$

c) $2(-3)(-7)$

Lesson 2.3 Multiplying Integers (Day 1)

Example 9 Multiply two or more integers.

Evaluate each product.

a) $-5(4)$ b) $-3 \cdot (-9)$ c) $2(-3)(-7)$

Solution

a) $-5(4) = -20$ Product of two integers with different signs is negative.

b) $-3 \cdot (-9) = 27$ Product of two integers with the same sign is positive.

c) *Method 1*

$2(-3)(-7) = -6(-7)$ Product of two integers with different signs is negative.
$= 42$ Product of two integers with the same sign is positive.

Method 2

$2(-3)(-7) = 2(21)$ Product of two integers with the same sign is positive.
$= 42$ Product of two integers with the same sign is positive.

Lesson 2.3 Multiplying Integers (Day 1)

Guided Practice

Evaluate each product.

1. $9(-8)$
2. $-7 \cdot (-5)$
3. $3(-4)(6)$

Think Math

Will the product of three negative numbers be positive or negative? What about the product of four negative numbers? Explain your answers.

Lesson 2.3 Multiplying Integers (Day 1)

Guided Practice

Evaluate each product.

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2. $-7 \cdot (-5)$
3. $3(-4)(6)$

Think Math

Will the product of three negative numbers be positive or negative? What about the product of four negative numbers? Explain your answers.

Lesson 2.3 Multiplying Integers (Day 1)

Guided Practice

Evaluate each product.

1. $9(-8)$ -72

2. $-7 \cdot (-5)$ 35

3. $3(-4)(6)$ -72

Lesson 2.3 Multiplying Integers (Day 1)

We Do

Example 10 **Use multiplication in a real-world situation.**

A helicopter's altitude is changing at a rate of −17 feet per second. Find the change in altitude of the helicopter after 4 seconds.

Lesson 2.3 Multiplying Integers (Day 1)

We Do

Example 10 **Use multiplication in a real-world situation.**

A helicopter's altitude is changing at a rate of −17 feet per second. Find the change in altitude of the helicopter after 4 seconds.

Solution

Change in altitude = Rate · Time

$= -17 \cdot 4$ Substitute −17 for rate and 4 for time.

$= -68$ ft Multiply. Product of two integers with different signs is negative.

The change in altitude of the helicopter is −68 feet.

Lesson 2.3 Multiplying Integers (Day 1)

Guided Practice

Solve.

4 In a regional golf championship, Steven plays four rounds. The score for a round is recorded as positive (over par) or negative (under par). If Steven scores 6 points under par for all four rounds, what is his total score for his game?

Lesson 2.3 Multiplying Integers (Day 1)

Guided Practice

Solve.

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$\_\_?\_\_ \cdot (-6) = \_\_?\_\_$ 4; -24

His score is $\_\_?\_\_$ points. -24

Lesson 2.3 Multiplying Integers (Day 1)

Guided Practice

5 The price of a stock falls $2 each day for 9 days. Find the total change in the price of the stock during this time.

Lesson 2.3 Multiplying Integers (Day 1)

Guided Practice

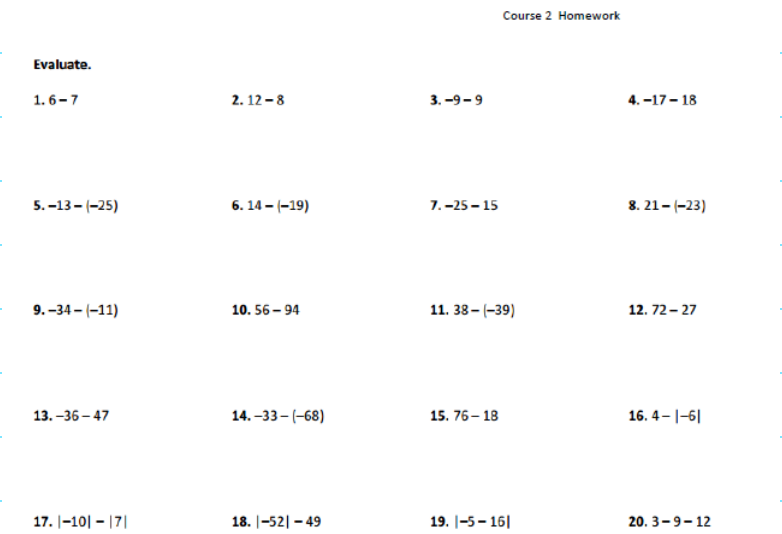
The price of a stock falls $2 each day for 9 days. Find the total change in the price of the stock during this time. Falls by $18

Lesson 2.3 Multiplying and Dividing Integers

Independent Practice #13-18 and 23-27

****Challenge #28-30****

Homework



Course 2 Homework

Evaluate.

1. 6 – 7	**2.** 12 – 8	**3.** –9 – 9	**4.** –17 – 18
5. –13 – (–25)	**6.** 14 – (–19)	**7.** –25 – 15	**8.** 21 – (–23)
9. –34 – (–11)	**10.** 56 – 94	**11.** 38 – (–39)	**12.** 72 – 27
13. –36 – 47	**14.** –33 – (–68)	**15.** 76 – 18	**16.** 4 – |–6|
17. |–10| – |7|	**18.** |–52| – 49	**19.** |–5 – 16|	**20.** 3 – 9 – 12

Lesson Check *#13*

(can find the distance between two numbers)

Lesson 2.3 Multiplying Integers

Independent Practice 2.3 # 1-21

****Challenge #35****

Homework

Practice 2.3

Evaluate each product.

1. $5 \cdot (-7)$
2. $12 \cdot (-9)$
3. $-6 \cdot 8$
4. $-3 \cdot 15$
5. $-4 \cdot (-12)$
6. $-8 \cdot (-20)$
7. $-14 \cdot 0$
8. $0 \cdot (-50)$
9. $-3 \cdot 12 \cdot 7$
10. $8 \cdot (-4) \cdot 2$
11. $20 \cdot 5 \cdot (-5)$
12. $-4 \cdot 10 \cdot (-6)$
13. $-7 \cdot (-2) \cdot 10$
14. $9 \cdot (-6) \cdot (-4)$
15. $-2 \cdot (-8) \cdot (-7)$
16. $-5 \cdot (-12) \cdot (-3)$
17. $14 \cdot 0 \cdot (-15)$
18. $-30 \cdot (-2) \cdot 0$
19. $-6 \cdot (-7) \cdot 2 \cdot 5$
20. $-8 \cdot (-2) \cdot (-4) \cdot 12$
21. $-9 \cdot (-5) \cdot (-4) \cdot (-3)$

Tuesday Homework (Demo Version)

Read each question carefully.

1) What is the sum?

-68 + 74 =

A) -6
B) 4
C) 6
D) 142

2) What is the difference?

54 - 85

A) -139
B) -31
C) 31
D) 139

3) What is the difference?

25 - (-9) =

A) -16
B) 16
C) 24
D) 34

35 *Math Journal* Umberto has trouble solving $-12 \div 3 \cdot 2 \div (-4)$. Write an explanation to help him.

Lesson Check *#5 and 11*

(can multiply two or more integers)