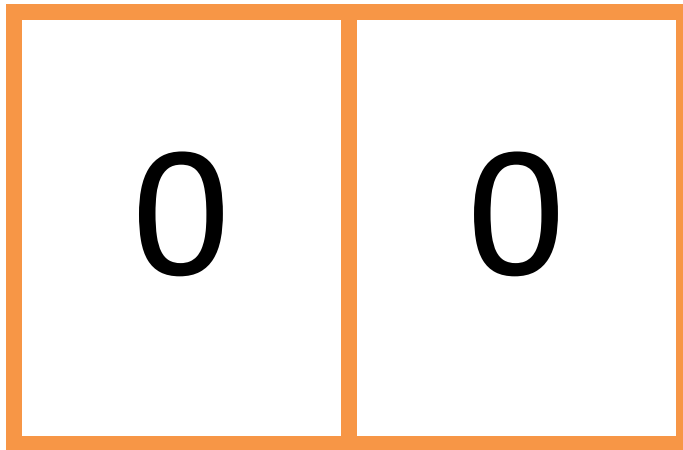


## The Integer Cards

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

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



Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 1: Opposite Quantities Combine to Make Zero

### Exit Ticket

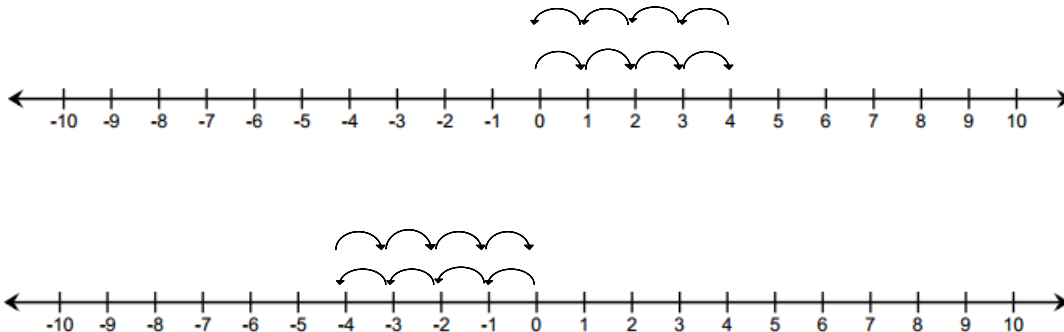
1. Your hand starts with the 7 card. Find three different pairs that would complete your hand and result in a value of zero.

7		
7		
7		

2. Write an equation to model the sum of the situation below.

A hydrogen atom has a zero charge because it has one negatively charged electron and one positively charged proton.

3. Write an equation for each diagram below. How are these equations alike? How are they different? What is it about the diagrams that lead to these similarities and differences?



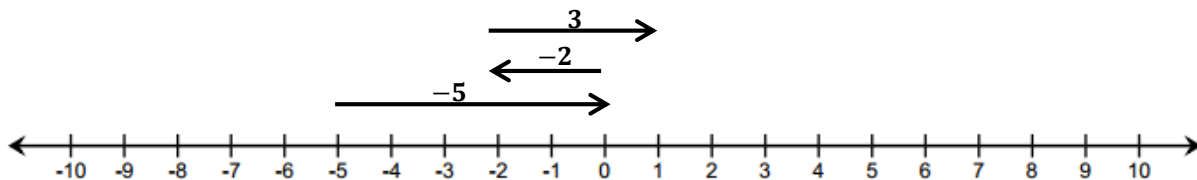
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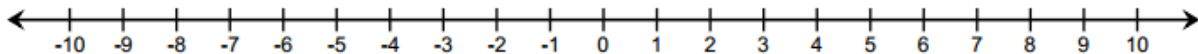
## Lesson 2: Using the Number Line to Model the Addition of Integers

### Exit Ticket

Jessica made the addition model below of the expression  $(-5) + (-2) + 3$ .



- Do the arrows correctly represent the numbers that Jessica is using in her expression?
- Jessica used the number line diagram above to conclude that the sum of the three numbers is 1. Is she correct?
- If she is incorrect, find the sum, and draw the correct model.



- Write a real-world situation that would represent the sum.

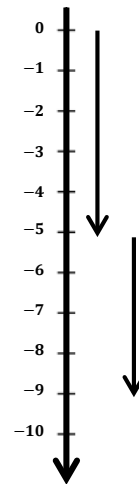
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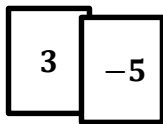
## Lesson 3: Understanding Addition of Integers

### Exit Ticket

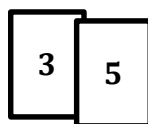
- Refer to the diagram to the right.
  - Write an equation for the diagram to the right. \_\_\_\_\_
  - Find the sum. \_\_\_\_\_
  - Describe the sum in terms of the distance from the  $p$ -value. Explain.
  - What integers do the arrows represent? \_\_\_\_\_
- Jenna and Jay are playing the Integer Game. Below are the two cards they selected.
  - How do the models for these two addition problems differ on a number line? How are they the same?



Jenna's Hand

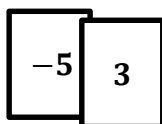


Jay's Hand

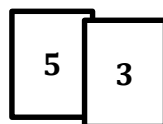


- If the order of the cards changed, how do the models for these two addition problems differ on a number line? How are they the same?

Jenna's Hand



Jay's Hand



Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 4: Efficiently Adding Integers and Other Rational Numbers

### Exit Ticket

1. Write an addition problem that has a sum of  $-4\frac{3}{5}$  and
  - a. Both addends ( $p$ -value and  $q$ -value) have the same sign.
  - b. The two addends ( $p$ -value and  $q$ -value) have different signs.
2. In the Integer Game, what card would you need to draw to get a score of 0 if you have a  $-16$ ,  $-35$ , and 18 in your hand?

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 5: Understanding Subtraction of Integers and Other Rational Numbers

### Exit Ticket

1. If a player had the following cards, what is the value of his hand?

1	-7	4
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- a. Identify two different ways the player could get to a score of 5 by adding or removing only one card. Explain.
- b. Write two equations for part (a), one for each of the methods you came up with for arriving at a score of 5.
2. Using the rule of subtraction, rewrite the following subtraction expressions as addition expressions and find the sums.
- a.  $5 - 9$
- b.  $-14 - (-2)$



Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 6: The Distance Between Two Rational Numbers

### Exit Ticket

Two 7<sup>th</sup> grade students, Monique and Matt, both solved the following math problem:

If the temperature drops from  $7^{\circ}\text{F}$  to  $-17^{\circ}\text{F}$ , by how much did the temperature *decrease*?

The students came up with different answers. Monique said the answer is  $24^{\circ}\text{F}$ , and Matt said the answer is  $10^{\circ}\text{F}$ . Who is correct? Explain, and support your written response with the use of a formula and a vertical number line diagram.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 7: Addition and Subtraction of Rational Numbers

## Exit Ticket

At the beginning of the summer, the water level of a pond is 2 feet below its normal level. After an unusually dry summer, the water level of the pond dropped another  $1\frac{1}{3}$  feet.

1. Use a number line diagram to model the pond's current water level in relation to its normal water level.
2. Write an equation to show how far above or below the normal water level the pond is at the end of the summer.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 8: Applying the Properties of Operations to Add and Subtract Rational Numbers

### Exit Ticket

Mariah and Shane both started to work on a math problem and were comparing their work in math class. Are both of their representations correct? Explain, and finish the math problem correctly to arrive at the correct answer.

#### Math Problem

Jessica's friend lent her \$5. Later that day Jessica gave her friend back  $1\frac{3}{4}$  dollars.

Which rational number represents the overall change to the amount of money Jessica's friend has?

Mariah started the problem as follows:

$$\begin{aligned} -5 - \left(-1\frac{3}{4}\right) \\ = -5 + 1 - \frac{3}{4} \end{aligned}$$

Shane started the problem as follows:

$$\begin{aligned} -5 - \left(-1\frac{3}{4}\right) \\ = -5 + \left(1\frac{3}{4}\right) \\ = -5 + \left(1 + \frac{3}{4}\right) \end{aligned}$$

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Number Correct: \_\_\_\_\_

**Integer Addition – Round 1****Directions:** Determine the sum of the integers, and write it in the column to the right.

1.	$8 + (-5)$	
2.	$10 + (-3)$	
3.	$2 + (-7)$	
4.	$4 + (-11)$	
5.	$-3 + (-9)$	
6.	$-12 + (-7)$	
7.	$-13 + 5$	
8.	$-4 + 9$	
9.	$7 + (-7)$	
10.	$-13 + 13$	
11.	$14 + (-20)$	
12.	$6 + (-4)$	
13.	$10 + (-7)$	
14.	$-16 + 9$	
15.	$-10 + 34$	
16.	$-20 + (-5)$	
17.	$-18 + 15$	

18.	$-38 + 25$	
19.	$-19 + (-11)$	
20.	$2 + (-7)$	
21.	$-23 + (-23)$	
22.	$45 + (-32)$	
23.	$16 + (-24)$	
24.	$-28 + 13$	
25.	$-15 + 15$	
26.	$12 + (-19)$	
27.	$-24 + (-32)$	
28.	$-18 + (-18)$	
29.	$14 + (-26)$	
30.	$-7 + 8 + (-3)$	
31.	$2 + (-15) + 4$	
32.	$-8 + (-19) + (-11)$	
33.	$15 + (-12) + 7$	
34.	$-28 + 7 + (-7)$	

Number Correct: \_\_\_\_\_

Improvement: \_\_\_\_\_

**Integer Addition – Round 2****Directions:** Determine the sum of the integers, and write it in the column to the right.

1.	$5 + (-12)$	
2.	$10 + (-6)$	
3.	$-9 + (-13)$	
4.	$-12 + 17$	
5.	$-15 + 15$	
6.	$16 + (-25)$	
7.	$-12 + (-8)$	
8.	$-25 + (-29)$	
9.	$28 + (-12)$	
10.	$-19 + (-19)$	
11.	$-17 + 20$	
12.	$8 + (-18)$	
13.	$13 + (-15)$	
14.	$-10 + (-16)$	
15.	$35 + (-35)$	
16.	$9 + (-14)$	
17.	$-34 + (-27)$	

18.	$23 + (-31)$	
19.	$-26 + (-19)$	
20.	$16 + (-37)$	
21.	$-21 + 14$	
22.	$33 + (-8)$	
23.	$-31 + (-13)$	
24.	$-16 + 16$	
25.	$30 + (-43)$	
26.	$-22 + (-18)$	
27.	$-43 + 27$	
28.	$38 + (-19)$	
29.	$-13 + (-13)$	
30.	$5 + (-8) + (-3)$	
31.	$6 + (-11) + 14$	
32.	$-17 + 5 + 19$	
33.	$-16 + (-4) + (-7)$	
34.	$8 + (-24) + 12$	

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 9: Applying the Properties of Operations to Add and Subtract Rational Numbers

### Exit Ticket

1. Jamie was working on his math homework with his friend, Kent. Jamie looked at the following problem.

$$-9.5 - (-8) - 6.5$$

He told Kent that he did not know how to subtract negative numbers. Kent said that he knew how to solve the problem using only addition. What did Kent mean by that? Explain. Then, show your work and represent the answer as a single rational number.

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Work Space:

Answer: \_\_\_\_\_

2. Use one rational number to represent the following expression. Show your work.

$$3 + (-0.2) - 15\frac{1}{4}$$

Number Correct: \_\_\_\_\_

**Integer Subtraction – Round 1****Directions:** Determine the difference of the integers, and write it in the column to the right.

1.	$4 - 2$	
2.	$4 - 3$	
3.	$4 - 4$	
4.	$4 - 5$	
5.	$4 - 6$	
6.	$4 - 9$	
7.	$4 - 10$	
8.	$4 - 20$	
9.	$4 - 80$	
10.	$4 - 100$	
11.	$4 - (-1)$	
12.	$4 - (-2)$	
13.	$4 - (-3)$	
14.	$4 - (-7)$	
15.	$4 - (-17)$	
16.	$4 - (-27)$	
17.	$4 - (-127)$	
18.	$14 - (-6)$	
19.	$23 - (-8)$	
20.	$8 - (-23)$	
21.	$51 - (-3)$	
22.	$48 - (-5)$	

23.	$(-6) - 5$	
24.	$(-6) - 7$	
25.	$(-6) - 9$	
26.	$(-14) - 9$	
27.	$(-25) - 9$	
28.	$(-12) - 12$	
29.	$(-26) - 26$	
30.	$(-13) - 21$	
31.	$(-25) - 75$	
32.	$(-411) - 811$	
33.	$(-234) - 543$	
34.	$(-3) - (-1)$	
35.	$(-3) - (-2)$	
36.	$(-3) - (-3)$	
37.	$(-3) - (-4)$	
38.	$(-3) - (-8)$	
39.	$(-30) - (-45)$	
40.	$(-27) - (-13)$	
41.	$(-13) - (-27)$	
42.	$(-4) - (-3)$	
43.	$(-3) - (-4)$	
44.	$(-1,066) - (-34)$	

Number Correct: \_\_\_\_\_

Improvement: \_\_\_\_\_

**Integer Subtraction – Round 2****Directions:** Determine the difference of the integers, and write it in the column to the right.

1.	$3 - 2$	
2.	$3 - 3$	
3.	$3 - 4$	
4.	$3 - 5$	
5.	$3 - 6$	
6.	$3 - 9$	
7.	$3 - 10$	
8.	$3 - 20$	
9.	$3 - 80$	
10.	$3 - 100$	
11.	$3 - (-1)$	
12.	$3 - (-2)$	
13.	$3 - (-3)$	
14.	$3 - (-7)$	
15.	$3 - (-17)$	
16.	$3 - (-27)$	
17.	$3 - (-127)$	
18.	$13 - (-6)$	
19.	$24 - (-8)$	
20.	$5 - (-23)$	
21.	$61 - (-3)$	
22.	$58 - (-5)$	

23.	$(-8) - 5$	
24.	$(-8) - 7$	
25.	$(-8) - 9$	
26.	$(-15) - 9$	
27.	$(-35) - 9$	
28.	$(-22) - 22$	
29.	$(-27) - 27$	
30.	$(-14) - 21$	
31.	$(-22) - 72$	
32.	$(-311) - 611$	
33.	$(-345) - 654$	
34.	$(-2) - (-1)$	
35.	$(-2) - (-2)$	
36.	$(-2) - (-3)$	
37.	$(-2) - (-4)$	
38.	$(-2) - (-8)$	
39.	$(-20) - (-45)$	
40.	$(-24) - (-13)$	
41.	$(-13) - (-24)$	
42.	$(-5) - (-3)$	
43.	$(-3) - (-5)$	
44.	$(-1,034) - (-31)$	



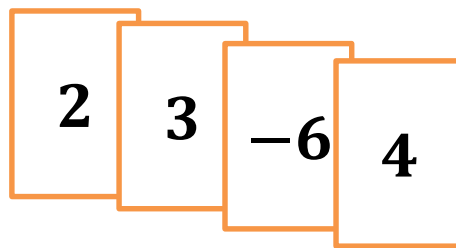
Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 10: Understanding Multiplication of Integers

### Exit Ticket

1. Natalie is playing the Integer Game and only shows you the four cards shown below. She tells you that the rest of her cards have the same values on them and match one of these four cards.



- a. If all of the matching cards will increase her score by 18, what are the matching cards?
- b. If all of the matching cards will decrease her score by 12, what are the matching cards?
2. A hand of six integer cards has one matching set of two or more cards. If the matching set of cards is removed from the hand, the score of the hand will increase by six. What are the possible values of these matching cards? Explain. Write an equation using multiplication showing how the matching cards yield an increase in score of six.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 11: Develop Rules for Multiplying Signed Numbers

### Exit Ticket

1. Create a real-life example that can be modeled by the expression  $-2 \times 4$ , and then state the product.
2. Two integers are multiplied and their product is a positive number. What must be true about the two integers?

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 12: Division of Integers

### Exit Ticket

1. Mrs. McIntire, a seventh grade math teacher, is grading papers. Three students gave the following responses to the same math problem:

Student one:  $\frac{1}{-2}$

Student two:  $-\left(\frac{1}{2}\right)$

Student three:  $-\frac{1}{2}$

On Mrs. McIntire's answer key for the assignment, the correct answer is  $-0.5$ . Which student answer(s) is (are) correct? Explain.

2. Complete the table below. Provide an answer for each integer division problem and write a related equation using integer multiplication.

Integer Division Problem	Related Equation Using Integer Multiplication
$-36 \div (-9) = \underline{\hspace{2cm}}$	
$24 \div (-8) = \underline{\hspace{2cm}}$	
$-50 \div 10 = \underline{\hspace{2cm}}$	
$42 \div 6 = \underline{\hspace{2cm}}$	

## Fluency Exercise: Integer Division

1. $-56 \div (-7) =$	15. $-28 \div (-7) =$	29. $-14 \div (-7) =$
2. $-56 \div (-8) =$	16. $-28 \div (-4) =$	30. $-14 \div (-2) =$
3. $56 \div (-8) =$	17. $28 \div 4 =$	31. $14 \div (-2) =$
4. $-56 \div 7 =$	18. $-28 \div 7 =$	32. $-14 \div 7 =$
5. $-40 \div (-5) =$	19. $-20 \div (-5) =$	33. $-10 \div (-5) =$
6. $-40 \div (-4) =$	20. $-20 \div (-4) =$	34. $-10 \div (-2) =$
7. $40 \div (-4) =$	21. $20 \div (-4) =$	35. $10 \div (-2) =$
8. $-40 \div 5 =$	22. $-20 \div 5 =$	36. $-10 \div 5 =$
9. $-16 \div (-4) =$	23. $-8 \div (-4) =$	37. $-4 \div (-4) =$
10. $-16 \div (-2) =$	24. $-8 \div (-2) =$	38. $-4 \div (-1) =$
11. $16 \div (-2) =$	25. $8 \div (-2) =$	39. $4 \div (-1) =$
12. $-16 \div 4 =$	26. $-8 \div 4 =$	40. $-4 \div 1 =$
13. $-3 \div (-4) =$	27. $4 \div (-8) =$	41. $1 \div (-4) =$
14. $-3 \div 4 =$	28. $-4 \div 8 =$	42. $-1 \div 4 =$

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 13: Converting Between Fractions and Decimals Using Equivalent Fractions

### Exit Ticket

1. Write 3.0035 as a fraction. Explain your process.
2. This week is just one of 40 weeks that you spend in the classroom this school year. Convert the fraction  $\frac{1}{40}$  to decimal form.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 14: Converting Rational Numbers to Decimals Using Long Division

### Exit Ticket

1. What is the decimal value of  $\frac{4}{11}$ ?
2. How do you know that  $\frac{4}{11}$  is a repeating decimal?
3. What causes a repeating decimal in the long division algorithm?

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 15: Multiplication and Division of Rational Numbers

### Exit Ticket

Harrison made up a game for his math project. It is similar to the Integer Game; however, in addition to integers, there are cards that contain other rational numbers such as  $-0.5$  and  $-0.25$ . Write a multiplication or division equation to represent each problem below. Show all related work.

1. Harrison discards three  $-0.25$  cards from his hand. How does this affect the overall point value of his hand? Write an equation to model this situation.
2. Ezra and Benji are playing the game with Harrison. After Ezra doubles his hand's value, he has a total of  $-14.5$  points. What was his hand's value before he doubled it?
3. Benji has four  $-0.5$  cards. What is his total score?

Number Correct: \_\_\_\_\_

**Integer Multiplication – Round 1****Directions:** Determine the product of the integers, and write it in the column to the right.

1.	$-2 \bullet -8$	
2.	$-4 \bullet 3$	
3.	$5 \bullet -7$	
4.	$1 \bullet -1$	
5.	$-6 \bullet 9$	
6.	$-2 \bullet -7$	
7.	$8 \bullet -3$	
8.	$0 \bullet -9$	
9.	$12 \bullet -5$	
10.	$-4 \bullet 2$	
11.	$-1 \bullet -6$	
12.	$10 \bullet -4$	
13.	$14 \bullet -3$	
14.	$-5 \bullet -13$	
15.	$-16 \bullet -8$	
16.	$18 \bullet -2$	
17.	$-15 \bullet 7$	
18.	$-19 \bullet 1$	
19.	$12 \bullet 12$	
20.	$9 \bullet -17$	
21.	$-8 \bullet -14$	
22.	$-7 \bullet 13$	

23.	$-14 \bullet -12$	
24.	$15 \bullet -13$	
25.	$16 \bullet -18$	
26.	$24 \bullet -17$	
27.	$-32 \bullet -21$	
28.	$19 \bullet -27$	
29.	$-39 \bullet 10$	
30.	$43 \bullet 22$	
31.	$11 \bullet -33$	
32.	$-29 \bullet -45$	
33.	$37 \bullet -44$	
34.	$-87 \bullet -100$	
35.	$92 \bullet -232$	
36.	$456 \bullet 87$	
37.	$-143 \bullet 76$	
38.	$439 \bullet -871$	
39.	$-286 \bullet -412$	
40.	$-971 \bullet 342$	
41.	$-773 \bullet -407$	
42.	$-820 \bullet 638$	
43.	$591 \bullet -734$	
44.	$491 \bullet -197$	



Number Correct: \_\_\_\_\_

Improvement: \_\_\_\_\_

**Integer Multiplication – Round 2****Directions:** Determine the product of the integers, and write it in the column to the right.

1.	$-9 \bullet -7$	
2.	$0 \bullet -4$	
3.	$3 \bullet -5$	
4.	$6 \bullet -8$	
5.	$-2 \bullet 1$	
6.	$-6 \bullet 5$	
7.	$-10 \bullet -12$	
8.	$11 \bullet -4$	
9.	$3 \bullet 8$	
10.	$12 \bullet -7$	
11.	$-1 \bullet 8$	
12.	$5 \bullet -10$	
13.	$3 \bullet -13$	
14.	$15 \bullet -8$	
15.	$-9 \bullet 14$	
16.	$-17 \bullet 5$	
17.	$16 \bullet 2$	
18.	$19 \bullet -7$	
19.	$-6 \bullet 13$	
20.	$1 \bullet -18$	
21.	$-14 \bullet -3$	
22.	$-10 \bullet -17$	

23.	$-22 \bullet 14$	
24.	$-18 \bullet -32$	
25.	$-24 \bullet 19$	
26.	$47 \bullet 21$	
27.	$17 \bullet -39$	
28.	$-16 \bullet -28$	
29.	$-67 \bullet -81$	
30.	$-36 \bullet 44$	
31.	$-50 \bullet 23$	
32.	$66 \bullet -71$	
33.	$82 \bullet -29$	
34.	$-32 \bullet 231$	
35.	$89 \bullet -744$	
36.	$623 \bullet -22$	
37.	$-870 \bullet -46$	
38.	$179 \bullet 329$	
39.	$-956 \bullet 723$	
40.	$874 \bullet -333$	
41.	$908 \bullet -471$	
42.	$-661 \bullet -403$	
43.	$-520 \bullet -614$	
44.	$-309 \bullet 911$	

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 16: Applying the Properties of Operations to Multiply and Divide Rational Numbers

### Exit Ticket

1. Evaluate the expression below using the properties of operations.

$$18 \div \left(-\frac{2}{3}\right) \times 4 \div (-7) \times (-3) \div \left(\frac{1}{4}\right)$$

2. a. Given the expression below, what will the sign of the product be? Justify your answer.

$$-4 \times \left(-\frac{8}{9}\right) \times 2.78 \times \left(1\frac{1}{3}\right) \times \left(-\frac{2}{5}\right) \times (-6.2) \times (-0.2873) \times \left(3\frac{1}{11}\right) \times A$$

- b. Give a value for  $A$  that would result in a positive value for the expression.

- c. Give a value for  $A$  that would result in a negative value for the expression.

Number Correct: \_\_\_\_\_

**Integer Division – Round 1****Directions:** Determine the quotient of the integers, and write it in the column to the right.

1.	$4 \div 1$	
2.	$4 \div (-1)$	
3.	$-4 \div (-1)$	
4.	$-4 \div 1$	
5.	$6 \div 2$	
6.	$-6 \div (-2)$	
7.	$-6 \div 2$	
8.	$6 \div -2$	
9.	$8 \div (-4)$	
10.	$-8 \div (-4)$	
11.	$-8 \div 4$	
12.	$8 \div 4$	
13.	$9 \div (-3)$	
14.	$-9 \div 3$	
15.	$-10 \div 5$	
16.	$10 \div (-2)$	
17.	$-10 \div (-2)$	
18.	$-10 \div (-5)$	
19.	$-14 \div 7$	
20.	$14 \div (-2)$	
21.	$-14 \div (-2)$	
22.	$-14 \div (-7)$	

23.	$-16 \div (-4)$	
24.	$16 \div (-2)$	
25.	$-16 \div 4$	
26.	$-20 \div 4$	
27.	$-20 \div (-4)$	
28.	$-28 \div 4$	
29.	$28 \div (-7)$	
30.	$-28 \div (-7)$	
31.	$-40 \div (-5)$	
32.	$56 \div (-7)$	
33.	$96 \div (-3)$	
34.	$-121 \div (-11)$	
35.	$169 \div (-13)$	
36.	$-175 \div 25$	
37.	$1 \div 4$	
38.	$-1 \div 4$	
39.	$-1 \div (-4)$	
40.	$-3 \div (-4)$	
41.	$-5 \div 20$	
42.	$6 \div (-18)$	
43.	$-24 \div 48$	
44.	$-16 \div 64$	

Number Correct: \_\_\_\_\_

Improvement: \_\_\_\_\_

**Integer Division – Round 2****Directions:** Determine the quotient of the integers, and write it in the column to the right.

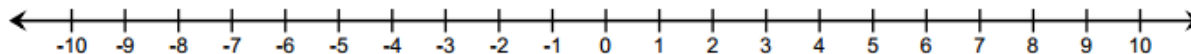
1.	$5 \div 1$	
2.	$5 \div (-1)$	
3.	$-5 \div (-1)$	
4.	$-5 \div 1$	
5.	$6 \div 3$	
6.	$-6 \div (-3)$	
7.	$-6 \div 3$	
8.	$6 \div -3$	
9.	$8 \div (-2)$	
10.	$-8 \div (-2)$	
11.	$-8 \div 2$	
12.	$8 \div 2$	
13.	$-9 \div (-3)$	
14.	$9 \div 3$	
15.	$-12 \div 6$	
16.	$12 \div (-2)$	
17.	$-12 \div (-2)$	
18.	$-12 \div (-6)$	
19.	$-16 \div 8$	
20.	$16 \div (-2)$	
21.	$-16 \div (-2)$	
22.	$-16 \div (-8)$	

23.	$-18 \div (-9)$	
24.	$18 \div (-2)$	
25.	$-18 \div 9$	
26.	$-24 \div 4$	
27.	$-24 \div (-4)$	
28.	$-24 \div 6$	
29.	$30 \div (-6)$	
30.	$-30 \div (-5)$	
31.	$-48 \div (-6)$	
32.	$64 \div (-4)$	
33.	$105 \div (-7)$	
34.	$-144 \div (-12)$	
35.	$196 \div (-14)$	
36.	$-225 \div 25$	
37.	$2 \div 4$	
38.	$-2 \div 4$	
39.	$-2 \div (-4)$	
40.	$-4 \div (-8)$	
41.	$-5 \div 40$	
42.	$6 \div (-42)$	
43.	$-25 \div 75$	
44.	$-18 \div 108$	

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Diamond used a number line to add. She started counting at 10, and then she counted until she was on the number  $-4$  on the number line.
- a. If Diamond is modeling addition, what number did she add to 10? Use the number line below to model your answer.



- b. Write a real-world story problem that would fit this situation.

- c. Use absolute value to express the distance between 10 and  $-4$ .

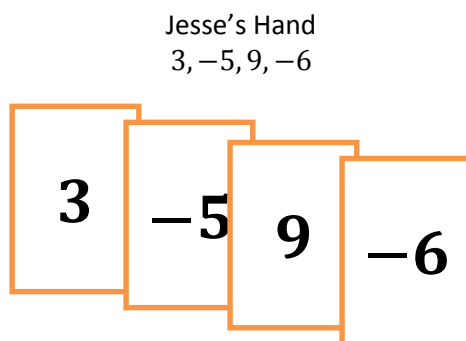
2. What value of  $a$  will make the equation a true statement? Explain how you arrived at your solution.

$$\left(-\frac{3}{4} + \frac{4}{3}\right) + a = 0$$

3. Every month, Ms. Thomas pays her car loan through automatic payments (withdrawals) from her savings account. She pays the same amount on her car loan each month. At the end of the year, her savings account balance changed by  $-\$2,931$  from payments made on her car loan.
- a. What is the change in Ms. Thomas' savings account balance each month due to her car payment?

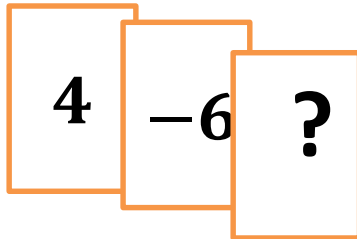
- b. Describe the total change to Ms. Thomas' savings account balance after making six monthly payments on her car loan. Model your answer using a number sentence.

4. Jesse and Miya are playing the integer card game. The cards in Jesse's hand are shown below:



- a. What is the total score of Jesse's hand? Support your answer by showing your work.
- b. Jesse picks up two more cards, but they do not affect his overall point total. State the value of each of the two cards, and tell why they do not affect his overall point total.

- c. Complete Jesse's new hand to make this total score equal zero. What must be the value of the "?" card? Explain how you arrived at your answer.



5. Michael's father bought him a 16-foot board to cut into shelves for his bedroom. Michael plans to cut the board into 11 equal size lengths for his shelves.
- a. The saw blade that Michael will use to cut the board will change the length of the board by  $-0.125$  inches for each cut. How will this affect the total length of the board?



b. After making his cuts, what will the exact length of each shelf be?

6. Bryan and Jeanette were playing the Integer Card Game like the one you played in class. They were practicing adding and subtracting integers. Jeanette had a score of  $-10$ . Bryan took away one of Jeanette's cards. He showed it to her. It was a  $-8$ . Jeanette recalculated her score to be  $-2$ , but Bryan disagreed. He said that her score should be  $-18$  instead. Read their conversation and answer the question below.

*"No Jeanette, removing a negative card means the same thing as subtracting a positive. So negative 10 minus negative eight is negative eighteen."*

*"It does not! Removing a negative card is the same as adding the same positive card. My score will go up. Negative 10 minus negative 8 is negative 2."*

Based on their disagreement, who, if anyone, is right? Explain.

7. The table below shows the temperature changes Monday morning in Bedford, New York over a 4-hour period after a cold front came through.

- a. If the beginning temperature was  $-13^{\circ}\text{F}$  at 5:00 a.m., what was the temperature at 9:00 a.m.?

Change in Temperature	
5:00 a.m. – 6:00 a.m.	$-3^{\circ}\text{F}$
6:00 a.m. – 7:00 a.m.	$-2^{\circ}\text{F}$
7:00 a.m. – 8:00 a.m.	$-6^{\circ}\text{F}$
8:00 a.m. – 9:00 a.m.	$7^{\circ}\text{F}$

- b. The same cold front hit Hartford, Connecticut the next morning. The temperature dropped by  $7^{\circ}\text{F}$  each hour from 5:00 a.m. – 9:00 a.m. What was the beginning temperature at 5:00 a.m. if the temperature at 9:00 a.m. was  $-10^{\circ}\text{F}$ ?

- c. In answering part (b), Josiah and Kate used different methods. Josiah said his method involved multiplication, while Kate said she did not use multiplication. Both students arrived at the correct answer. How is this possible? Explain.

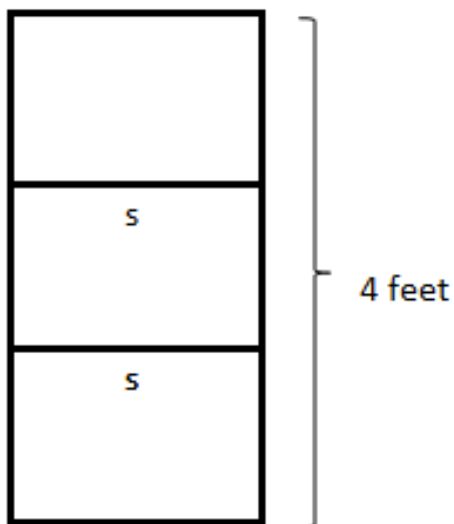
Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 17: Comparing Tape Diagram Solutions to Algebraic Solutions

### Exit Ticket

1. Eric's father works two part-time jobs, one in the morning and one in the afternoon, and works a total of 40 hours each 5-day workweek. If his schedule is the same each day, and he works 3 hours each morning, how many hours does Eric's father work each afternoon?
2. Henry is making a bookcase and has a total of 16 ft. of lumber. The left and right sides of the bookcase are each 4 ft. high. The top, bottom, and two shelves are all the same length, labeled  $S$ . How long is each shelf?



Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 18: Writing, Evaluating, and Finding Equivalent Expressions with Rational Numbers

### Exit Ticket

Bradley and Louie are roommates at college. At the beginning of the semester, they each paid a security deposit of  $A$  dollars. When they move out, their landlord will deduct from this deposit any expenses ( $B$ ) for excessive wear and tear and refund the remaining amount. Bradley and Louie will share the expenses equally.

- Write an expression that describes the amount each roommate will receive from the landlord when the lease expires.
- Evaluate the expression using the following information: Each roommate paid a \$125 deposit, and the landlord deducted \$50 total for damages.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 19: Writing, Evaluating, and Finding Equivalent Expressions with Rational Numbers

### Exit Ticket

Write three equivalent expressions that can be used to find the final price of an item costing  $g$  dollars that is on sale for 15% off and charged 7% sales tax.

1. Using all of the expressions, determine the final price for an item that costs \$75. If necessary, round to the nearest penny.
2. If each expression yields the same final sale price, is there anything to be gained by using one over the other?
3. Describe the benefits, special characteristics, and properties of each expression.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 20: Investments—Performing Operations with Rational Numbers

### Exit Ticket

- Using the incomplete register below, work forward and backward to determine the beginning and ending balances after the series of transactions listed.

DATE	DESCRIPTION OF TRANSACTION	PAYMENT	DEPOSIT	BALANCE
	Beginning Balance	---	---	
1/31/12	Paycheck		350.55	
2/1/12	Gillian's Chocolate Factory (Candy)	32.40		685.26
2/4/12	Main Street Jeweler's	425.30		
2/14/12	Saratoga Steakhouse	125.31		

- Write an expression to represent the balance after the paycheck was deposited on 1/31/12. Let  $x$  represent the beginning balance.
- Write a numerical expression to represent the balance after the transaction for Main Street Jeweler's was made.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 21: If-Then Moves with Integer Number Cards

### Exit Ticket

Compare the two expressions: Expression 1:  $6 + 7 + -5$ Expression 2:  $-5 + 10 + 3$ 

1. Are the two expressions equivalent? How do you know?
2. Subtract  $-5$  from each expression. Write the new numerical expression, and write a conclusion as an if-then statement.
3. Add 4 to each expression. Write the new numerical expression, and write a conclusion as an if-then statement.
4. Divide each expression by  $-2$ . Write the new numerical expression, and write a conclusion as an if-then statement.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 22: Solving Equations Using Algebra

### Exit Ticket

Susan and Bonnie are shopping for school clothes. Susan has \$50 and a coupon for a \$10 discount at a clothing store where each shirt costs \$12.

Susan thinks that she can buy three shirts, but Bonnie says that Susan can buy five shirts. The equations they used to model the problem are listed below. Solve each equation algebraically, justify your steps, and determine who is correct and why.

Susan's Equation

$$12n + 10 = 50$$

Bonnie's Equation

$$12n - 10 = 50$$



Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 23: Solving Equations Using Algebra

### Exit Ticket

Andrew's math teacher entered the seventh-grade students in a math competition. There was an enrollment fee of \$30 and also an \$11 charge for each packet of 10 tests. The total cost was \$151. How many tests were purchased?

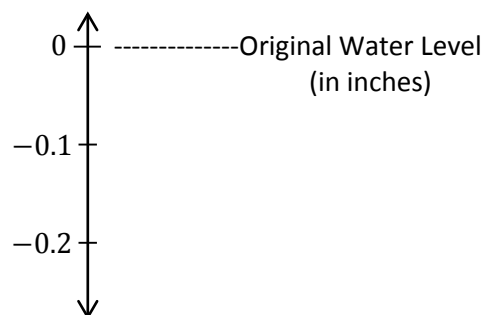
Set up an equation to model this situation, solve it using if-then statements, and justify the reasons for each step in your solution.

Name \_\_\_\_\_

Date \_\_\_\_\_

1. The water level in Ricky Lake changes at an average of  $-\frac{7}{16}$  inch every 3 years.

- a. Based on the rate above, how much will the water level change after one year? Show your calculations and model your answer on the vertical number line, using 0 as the original water level.



- b. How much would the water level change over a 7-year period?

- c. When written in decimal form, is your answer to part (b) a repeating decimal or a terminating decimal? Justify your answer using long division.

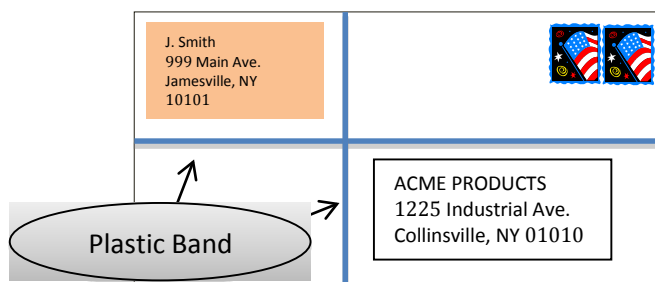
2. Kay's mother taught her how to make handmade ornaments to sell at a craft fair. Kay rented a table at the fair for \$30 and set up her work station. Each ornament that she makes costs approximately \$2.50 for materials. She sells each ornament for \$6.00.
- a. If  $x$  represents the quantity of ornaments sold at the craft fair, which of the following expressions would represent Kay's profit? (Circle *all* choices that apply.)
- A.  $-30 + 6x - 2.50x$
- B.  $6x - 30 - 2.50x$
- C.  $6x - 30$
- D.  $4.50x - 30$
- E.  $3.50x - 30$
- b. Kay does not want to lose money on her business. Her mother told her she needs to sell enough ornaments to at least cover her expenses (costs for materials and table rental). Kay figures that if she sells 8 ornaments, she covers her expenses and does not lose any money. Do you agree? Explain and show work to support your answer.
- c. Kay feels that if she earns a profit of \$40.00 at this craft fair, her business will be successful enough to attend other craft fairs. How many ornaments does she have to sell to earn a \$40.00 profit? Write and solve an equation; then explain how the steps and operations used in your algebraic solution compare to an arithmetic solution.

3. Travis received a letter from his bank saying that his checking account balance fell below zero. His account transaction log is shown below.

CHECK NO.	DATE	DESCRIPTION OF TRANSACTION	PAYMENT	DEPOSIT	BALANCE	
---	10/17	Beginning Balance	---	---	\$367.50	
1125	10/18	CBC Audio (Headphones)	\$62.00		−62.00	
					\$305.50	Line 1
1126	10/22	NY Sport (Basketball Shoes)	\$87.00		−87.00	
					\$218.50	Line 2
Debit	10/25	Gary's Country Market	\$38.50		−38.50	
					\$180.00	Line 3
1127	10/25	Iggy's Skate Shop (Skateboard)	\$188.00		−188.00	
					\$8.00	Line 4
	10/25	Cash Deposit (Birthday Money)		\$20.00	+20.00	
					\$28.00	Line 5
Debit	10/30	McDonuts	\$5.95		−5.95	
					\$22.05	Line 6

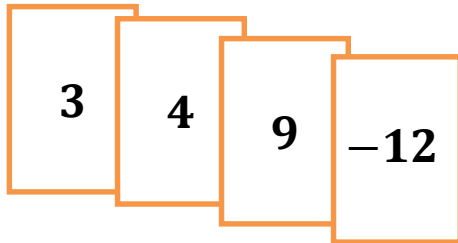
- a. On which line did Travis make a mathematical error? Explain Travis' mistake.
- b. The bank charged Travis a \$20 fee because his balance dropped below \$0. He knows that he currently has an outstanding charge for \$7.85 that he has not recorded yet. How much money will Travis have to deposit into his account so that the outstanding charge does not create another bank fee? Explain.

4. The length of a rectangular envelope is  $2\frac{1}{2}$  times its width. A plastic band surrounds the front and back of the envelope to secure it as shown in the picture. The plastic band is  $39\frac{3}{8}$  inches long. Find the length and width of the envelope.

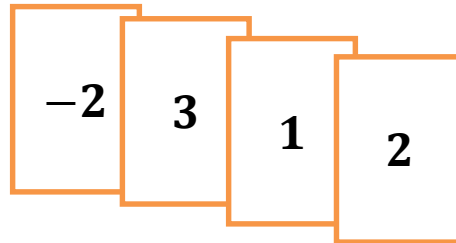


5. Juan and Mary are playing the integer card game. The cards in their hands are shown below:

Juan's Hand  
3, 4, 9, -12



Mary's Hand  
-2, 3, 1, 2



- a. What are the scores in each of their hands?

Juan's score:

Mary's score:

- b. Lydia says that if Juan and Mary both take away their 3s, Juan's score will be higher than Mary's. Marcus argues and says that Juan and Mary's scores will be equal. Are either of them right? Explain.

- c. Juan picks up another set of cards that is exactly like each card in his hand. Which of the following would make Mary's score equal to Juan's? Place a check mark ✓ by all that apply.

\_\_\_\_\_ Double every card in her hand

\_\_\_\_\_ Take away her 3 and 1

\_\_\_\_\_ Pick up a 4

\_\_\_\_\_ Take away her 2 and -2

\_\_\_\_\_ Pick up a 7 and -3

\_\_\_\_\_ Pick up one of each of Juan's cards

Explain why your selections will make Juan's and Mary's scores equal.