



Seventh Grade Math

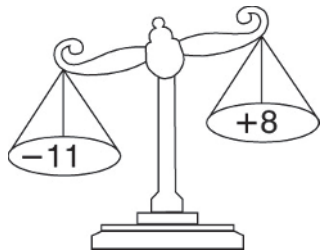
This packet includes four sections that cover the major content of 7th grade math. Each section includes four pages of notes and practice for each topic. For additional support, visit KCS TV on YouTube for instructional videos that accompany each section.

The following content is included in this packet:

	Topic			
	I. Probability	II. Integers & Rational Numbers	III. Ratios & Proportional Relationships	IV. Expressions, Equations, & Inequalities
Activity 1	Experimental Probability of Simple Events	Adding Rational Numbers	Unit Rates	One-Step Equations with Rational Coefficients
Activity 2	Making Predictions with Experimental Probability	Subtracting Rational Numbers	Constant Rates of Change	Solving Two-Step Equations
Activity 3	Theoretical Probability of Simple Events	Multiplying Integers	Percent Increase and Decrease	Writing and Solving One-Step Inequalities
Activity 4	Making Predictions with Theoretical Probability	Applying Integer Operations	Applications of Percent	Solving Two-Step Inequalities

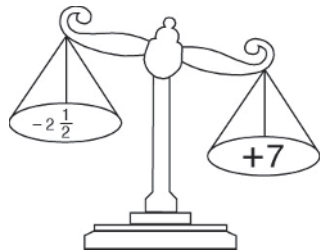
Section II
Activity 1 **Adding Rational Numbers**

This balance scale “weighs” positive and negative numbers. Negative numbers go on the left of the balance. Positive numbers go on the right.



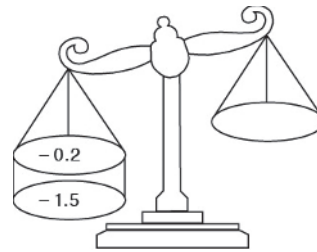
The scale will tip to the left side because the sum of -11 and $+8$ is negative.

$$-11 + 8 = -3$$



The scale will tip to the right side because the sum of $-2\frac{1}{2}$ and $+7$ is positive.

$$-2\frac{1}{2} + 7 = +4\frac{1}{2}$$



Both -0.2 and -1.5 go on the left side. The scale will tip to the left side because the sum of -0.2 and -1.5 is negative.

$$-0.2 + (-1.5) = -1.7$$

Find $3 + (-9)$.

Should you add or subtract?

Will the sum be positive or negative?

$$3 + (-9) = -6$$

$$|9| - |3|$$

the sign of the integer with the greatest absolute value

Find each sum.

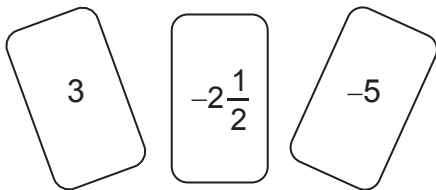
1. $-2 + 4 =$ _____ 2. $3 + (-8) =$ _____ 3. $-5 + (-2) =$ _____

4. $2.4 + (-1.8) =$ _____ 5. $1.1 + 3.6 =$ _____ 6. $-2.1 + (-3.9) =$ _____

7. $\frac{4}{5} + \left(-\frac{1}{5}\right) =$ _____ 8. $-1\frac{1}{3} + \left(-\frac{1}{3}\right) =$ _____ 9. $-\frac{7}{8} + \frac{3}{8} =$ _____

Section II
Activity 2 **Subtracting Rational Numbers**

The total value of the three cards shown is $-4\frac{1}{2}$.



What if you **take away** the $-2\frac{1}{2}$ card?

Cards 3 and -5 are left.
Their sum is -2.

$$\text{So, } -4\frac{1}{2} - \left(-2\frac{1}{2}\right) = -2.$$

What if you **take away** the -5 card?

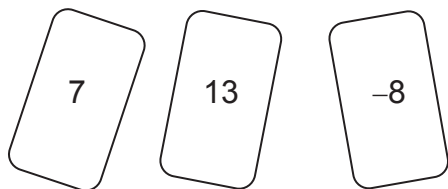
Cards 3 and $-2\frac{1}{2}$ are left.

Their sum is $\frac{1}{2}$.

$$\text{So, } -4\frac{1}{2} - (-5) = \frac{1}{2}$$

Answer each question.

1. The total value of the three cards shown is 12.



a. What is the value if you take away just the 7? _____

b. What is the value if you take away just the 13? _____

c. What is the value if you take away just the -8? _____

2. Subtract $-4 - (-2)$.

a. $-4 < -2$. So the answer will be a _____ number.

b. $|4| - |2| =$ _____

c. $-4 - (-2) =$ _____

Subtract.

3. $31 - (-9) =$ _____

4. $15 - 18 =$ _____

5. $-9 - 17 =$ _____

6. $2.6 - (-1.6) =$ _____

7. $4.5 - 2.5 =$ _____

8. $-2.0 - 1.25 =$ _____

9. $\frac{4}{5} - \left(-\frac{1}{5}\right) =$ _____

10. $-2\frac{1}{3} - \left(-\frac{1}{3}\right) =$ _____

11. $-\frac{7}{8} - \frac{3}{8} =$ _____

Section II
Activity 3

Multiplying Integers

You can use patterns to learn about multiplying integers.

$6(2) = 12$		
$6(1) = 6$		Each product is 6 less than the previous product.
$6(0) = 0$		The product of two positive integers is positive.
$6(-1) = -6$		The product of a positive integer and a negative integer is negative.
$6(-2) = -12$		

Here is another pattern.

$-6(2) = -12$		
$-6(1) = -6$		Each product is 6 more than the previous product.
$-6(0) = 0$		The product of a negative integer and a positive integer is negative.
$-6(-1) = 6$		The product of two negative integers is positive.
$-6(-2) = 12$		

Find each product.

1. $1(-2)$

Think: $1 \times 2 = 2$. A negative and a positive integer have a negative product.

2. $-6(-3)$

Think: $6 \times 3 = 18$. Two negative integers have a positive product.

3. $(5)(-1)$

4. $(-9)(-6)$

5. $11(4)$

Write a mathematical expression to represent each situation.

Then find the value of the expression to solve the problem.

6. You are playing a game. You start at 0. Then you score -8 points on each of 4 turns. What is your score after those 4 turns?

7. A mountaineer descends a mountain for 5 hours. On average, she climbs down 500 feet each hour. What is her change in elevation after 5 hours?

Section II
Activity 4**Applying Integer Operations**

To evaluate an expression, follow the order of operations.

1. Multiply and divide in order from left to right. $(-5)(6) + 3 + (-20) \div 4 + 12$
 $-30 + 3 + (-20) \div 4 + 12$

$$-30 + 3 + (-20) \div 4 + 12$$

$$-30 + 3 + (-5) + 12$$

2. Add and subtract in order from left to right. $-30 + 3 + (-5) + 12$
 $-27 + (-5) + 12$
 $-32 + 12 = -20$

Name the operation you would do first.

1. $-4 + (3)(-8) + 7$

2. $-3 + (-8) - 6$

3. $16 + 72 \div (-8) + 6(-2)$

4. $17 + 8 + (-16) - 34$

5. $-8 + 13 + (-24) + 6(-4)$

6. $12 \div (-3) + 7(-7)$

7. $(-5)6 + (-12) - 6(9)$

8. $14 - (-9) - 6 - 5$

Find the value of each expression.

9. $(-6) + 5(-2) + 15$

10. $(-8) + (-19) - 4$

11. $3 + 28 \div (-7) + 5(-6)$

12. $15 + 32 + (-8) - 6$

13. $(-5) + 22 + (-7) + 8(-9)$

14. $21 \div (-7) + 5(-9)$

Answer Key

II. Integers & Rational Numbers

Activity 1: Adding Rational Numbers

- | | |
|--------|--------------------|
| 1. 2 | 6. -6 |
| 2. -5 | 7. $\frac{3}{5}$ |
| 3. -7 | 8. $-1\frac{2}{3}$ |
| 4. 0.6 | 9. $-\frac{1}{2}$ |
| 5. 4.7 | |

Activity 2: Subtracting Rational Numbers

- a. 5 b. -1 c. 20
- a. negative b. 2 c. -2
- 40
- 3
- 26
- 4.2
- 2
- 3.25
- 1
- 2
- $-\frac{5}{4}$

Activity 3: Multiplying Integers

- 2
- 18
- 5
- 54
- 44
- $4(-8) = -32$; -32 points
- $5(-500) = -2,500$; -2,500 ft

Activity 4: Applying Integer Operations

- | | |
|-------------------|---------|
| 1. multiplication | 9. -1 |
| 2. addition | 10. -31 |
| 3. division | 11. -31 |
| 4. addition | 12. 33 |
| 5. multiplication | 13. -62 |
| 6. division | 14. -48 |
| 7. multiplication | |
| 8. subtraction | |