

# learning focus:

- ✓ use a number line to represent integers and absolute value
- ✓ compare and order decimals and fractions
- ✓ classify and order rational numbers from mathematical and real-world situations

## NUMERICAL REPRESENTATIONS UNIT

### 9 DAY TEKS-ALIGNED UNIT



#### NUMERICAL REPRESENTATIONS UNIT

Table of Contents

PAGE	TOPIC	RESOURCE
4	Sample Pacing Guide	
5-6	Ideas for Implementation & Helpful Hints	
7-16	Binder Covers, Dividers, and Spine Labels	Student Handout 1
17-18	Integers on the Number Line	Homework 1
19	Integers on the Number Line	Student Handout 2
21-22	Comparing and Ordering Decimals	Homework 2
23	Comparing and Ordering Decimals	Student Handout 3
25-26	Comparing and Ordering Fractions	Homework 3
27	Comparing and Ordering Fractions	Student Handout 4
29-30	Ordering Rational Numbers	Homework 4
31	Ordering Rational Numbers	Student Handout 5
33-34	Classifying Rational Numbers	Homework 5
35	Classifying Rational Numbers	Quiz 1
36	Classifying Rational Numbers	Student Handout 6

DAY 1	Integers on the Number Line
DAY 2	Integers on the Number Line
DAY 3	Integers on the Number Line
DAY 4	Integers on the Number Line
DAY 5	Integers on the Number Line
DAY 6	Integers on the Number Line
DAY 7	Integers on the Number Line
DAY 8	Integers on the Number Line
DAY 9	Integers on the Number Line
DAY 10	Integers on the Number Line
DAY 11	Integers on the Number Line
DAY 12	Integers on the Number Line
DAY 13	Integers on the Number Line
DAY 14	Integers on the Number Line
DAY 15	Integers on the Number Line
DAY 16	Integers on the Number Line
DAY 17	Integers on the Number Line
DAY 18	Integers on the Number Line
DAY 19	Integers on the Number Line
DAY 20	Integers on the Number Line
DAY 21	Integers on the Number Line
DAY 22	Integers on the Number Line
DAY 23	Integers on the Number Line
DAY 24	Integers on the Number Line
DAY 25	Integers on the Number Line
DAY 26	Integers on the Number Line
DAY 27	Integers on the Number Line
DAY 28	Integers on the Number Line
DAY 29	Integers on the Number Line
DAY 30	Integers on the Number Line
DAY 31	Integers on the Number Line
DAY 32	Integers on the Number Line
DAY 33	Integers on the Number Line
DAY 34	Integers on the Number Line
DAY 35	Integers on the Number Line
DAY 36	Integers on the Number Line
DAY 37	Integers on the Number Line
DAY 38	Integers on the Number Line
DAY 39	Integers on the Number Line
DAY 40	Integers on the Number Line
DAY 41	Integers on the Number Line
DAY 42	Integers on the Number Line
DAY 43	Integers on the Number Line
DAY 44	Integers on the Number Line
DAY 45	Integers on the Number Line
DAY 46	Integers on the Number Line
DAY 47	Integers on the Number Line
DAY 48	Integers on the Number Line
DAY 49	Integers on the Number Line
DAY 50	Integers on the Number Line
DAY 51	Integers on the Number Line
DAY 52	Integers on the Number Line
DAY 53	Integers on the Number Line
DAY 54	Integers on the Number Line
DAY 55	Integers on the Number Line
DAY 56	Integers on the Number Line
DAY 57	Integers on the Number Line
DAY 58	Integers on the Number Line
DAY 59	Integers on the Number Line
DAY 60	Integers on the Number Line
DAY 61	Integers on the Number Line
DAY 62	Integers on the Number Line
DAY 63	Integers on the Number Line
DAY 64	Integers on the Number Line
DAY 65	Integers on the Number Line
DAY 66	Integers on the Number Line
DAY 67	Integers on the Number Line
DAY 68	Integers on the Number Line
DAY 69	Integers on the Number Line
DAY 70	Integers on the Number Line
DAY 71	Integers on the Number Line
DAY 72	Integers on the Number Line
DAY 73	Integers on the Number Line
DAY 74	Integers on the Number Line
DAY 75	Integers on the Number Line
DAY 76	Integers on the Number Line
DAY 77	Integers on the Number Line
DAY 78	Integers on the Number Line
DAY 79	Integers on the Number Line
DAY 80	Integers on the Number Line
DAY 81	Integers on the Number Line
DAY 82	Integers on the Number Line
DAY 83	Integers on the Number Line
DAY 84	Integers on the Number Line
DAY 85	Integers on the Number Line
DAY 86	Integers on the Number Line
DAY 87	Integers on the Number Line
DAY 88	Integers on the Number Line
DAY 89	Integers on the Number Line
DAY 90	Integers on the Number Line
DAY 91	Integers on the Number Line
DAY 92	Integers on the Number Line
DAY 93	Integers on the Number Line
DAY 94	Integers on the Number Line
DAY 95	Integers on the Number Line
DAY 96	Integers on the Number Line
DAY 97	Integers on the Number Line
DAY 98	Integers on the Number Line
DAY 99	Integers on the Number Line
DAY 100	Integers on the Number Line

#### NUMERICAL REPRESENTATIONS PACING GUIDE

#### NUMBERS

phrases that indicate division. Circle

quotient"  $460 \times 12$

"into groups"  $4 \div 8$

$9 \overline{) 181}$

$$437 \div 19$$

# NUMERICAL REPRESENTATIONS



a 9 day TEKS-aligned unit

TEKS: 6.2A, 6.2B, 6.2C, 6.2D, 6.2E

**ready-to-go, scaffolded  
student materials**

## NUMERICAL REPRESENTATIONS UNIT

### Table of Contents

PAGE	TOPIC	RESOURCE
4	Sample Pacing Guide	
5-6	Ideas for Implementation & Helpful Hints	
7-16	Binder Covers, Dividers, and Spine Labels	
17-18	Integers on the Number Line	Student Handout 1
19	Integers on the Number Line	Homework 1
21-22	Comparing and Ordering Decimals	Student Handout 2
23	Comparing and Ordering Decimals	Homework 2
25-26	Comparing and Ordering Fractions	Student Handout 3
27	Comparing and Ordering Fractions	Homework 3
29-30	Ordering Rational Numbers	Student Handout 4
31	Ordering Rational Numbers	Homework 4
33-34	Classifying Rational Numbers	Student Handout 5
35	Classifying Rational Numbers	Homework 5
37-38	Ordering Rational Numbers Quiz	Quiz 1
39-40	Absolute Value	Student Handout 6
41	Absolute Value	Homework 6
43-46	Numerical Representations Study Guide	Study Guide
47-48	Numerical Representations Unit Test	Test

©Maneuvering the Middle LLC, 2017

# NUMERICAL REPRESENTATIONS



a 9 day TEKS-aligned unit

TEKS: 6.2A, 6.2B, 6.2C, 6.2D, 6.2E

student friendly + real-world  
application

use of grade level  
modeling

Unit: Numerical Representations  
Student Handout 1

Name \_\_\_\_\_  
Date \_\_\_\_\_ Pd \_\_\_\_\_

### INTEGERS ON THE NUMBER LINE

**INTEGERS**

- The set of whole numbers and their \_\_\_\_\_ are called integers.
- Examples: \_\_\_\_\_

**THE NUMBER LINE**

- Integers can be located to the \_\_\_\_\_
- located to the \_\_\_\_\_

Use the open number line below to determine your plotted points.

A: -8      B: 5

a. Which point in the set above has the \_\_\_\_\_

b. Which point in the set above has the \_\_\_\_\_

Use your understanding of integers to answer the following questions.

1. Georgie is asked to plot the number -3 on the number line below. Where should Georgie plot the number?

Brainstorm real-world terms and phrases for negative integers.

**NEGATIVE**

\_\_\_\_\_

Write the symbol and an example for each of the following:

GREATER THAN	LESS THAN	EQUAL TO
_____	_____	_____

Use your understanding of comparing integers to answer questions 3-4.

3. Use the symbols  $<$ ,  $>$ , or  $=$  to make each statement true for questions 3-5.

a. -19 \_\_\_\_\_ 20  
b. 8 \_\_\_\_\_ -8  
c. 0 \_\_\_\_\_ -7  
d. -13 \_\_\_\_\_ -12

4. Three students compared integers.

5. Several clues are given to describe a number. Determine which point the clue is describing. Write multiple ways to correctly solve some of the clues.

Point A is less than -15  
Point B is positive negative

Use your understanding of comparing integers to answer the following questions.

6. Beatrice places four different points on a number line. What value best represents B?

Summarize today's lesson.

error  
analysis

Unit: Numerical Representations  
Homework 1

Name \_\_\_\_\_  
Date \_\_\_\_\_ Pd \_\_\_\_\_

### INTEGERS ON THE NUMBER LINE

Use your understanding of locating, comparing, and ordering integers to answer the questions.

1. Place the following points on the number line below.

A. an integer 3 to the left of 0  
B. six more than -1  
C. neither positive nor negative  
D. six less than 9  
E. any negative integer less than -5  
F. the most positive integer on the number line  
G. any positive integer greater than 6  
H. the most negative integer on the number line

2. Mrs. French asks students to correctly order various sets of integers from least to greatest. Determine which students completed the task correctly and find the mistakes made by the incorrect students.

JOELLE	EDMA	HUGH
-6, -8, -14, 21, 32	28, 14, 12, 4, -2, -1	13, -19, 25, -33
DAMON	EPONY	HOLLY
-2, -7, -11, -16	-19, -11, -7, -3, -1	-9, -4, -2, 14, 21

3. Corey is playing a game in which he selects all of the numbers that are less than -5 but greater than -20. Shade the values that Corey should choose.

-9	7	-5
6	-3	-11
-15	18	0

4. What integer is missing from the number line below?

5. Which of the following is true about the values below? Circle all that apply.

-4      2      -1

A. All of the values are integers  
B. All of the values are between -3 and 2  
C. All of the values are greater than -2

# NUMERICAL REPRESENTATIONS



a 9 day TEKS-aligned unit

TEKS: 6.2A, 6.2B, 6.2C, 6.2D, 6.2E

streamline your planning  
process with unit overviews



key vocabulary



vertical alignment



sample  
pacing  
calendar

## NUMERICAL REPRESENTATIONS OVERVIEW



### READINESS STANDARDS

**6.2D** Order a set of rational numbers arising from mathematical and real-world contexts.

### SUPPORTING STANDARDS

**6.2A** Classify whole numbers, integers, and rational numbers using a visual representation, such as a Venn diagram, to describe relationships between sets of numbers.

**6.2B** Identify a number, its opposite, and its absolute value.

**6.2C** Locate, compare, and order integers and rational numbers using a number line.

**6.2E** Extend representations for division to include fraction notation such as  $a/b$  represents the same number as  $a \div b$  where  $b \neq 0$ .

### PIC IDEAS

- All numbers are organized
- A set of numbers exists

### ESSENTIAL QUESTIONS

- How are numbers organized?
- What is the relationship between numbers?
- What pattern do you notice?
- What is the relationship between numbers?

## NUMERICAL REPRESENTATIONS PACING GUIDE



DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Integers on the Number Line	Comparing and Ordering Decimals	Comparing and Ordering Fractions	Ordering Rational Numbers	Classifying Rational Numbers
Student Handout 1 Homework 1	Student Handout 2 Homework 2			
DAY 6	DAY 7			
Ordering Rational Numbers Quiz	Absolute Value			
Quiz 1	Student Handout 6 Homework 6			

## NUMERICAL REPRESENTATIONS OVERVIEW



TOPIC	TEACHING TIPS
Integers on the Number Line	<ul style="list-style-type: none"> <li>Consider introducing both a horizontal and a vertical number line. Seeing the vertical number line (which is more intuitive to how we count) next to a horizontal vertical line may help students to make connections and provides another visual model.</li> <li>Consider having students build a number line as a class or in small groups. You can do this with a line of string or yarn and by folding cardstock in half. The fold of the cardstock will rest on the number line. Begin with zero and then discuss where different numbers belong. This concept can continue throughout the unit by including additional number representations.</li> </ul>
Ordering Decimals and Percents	<ul style="list-style-type: none"> <li>Use masking tape (or chalk if outdoors) to mark off a number line on the floor from -10 to 10. Assign five students a number and have them order themselves without talking, allowing the class to help. Repeat and make the numbers increasingly more difficult.</li> </ul>
Ordering Rational Numbers	<ul style="list-style-type: none"> <li>Use the number line from the day before, repeat with a slightly different variation. Use three different colored papers or markers for: fractions, decimals, and percents. Teach students to order like forms of numbers by passing out the cards, then asking students to order themselves on the number line.</li> </ul>
Absolute Value	<ul style="list-style-type: none"> <li>At the beginning of class, play a game of Simon Says. In this math twist, ask students to do the opposite of what you say. Then, give them a number and ask for the opposite of the number. Ask students to keep that in mind as you continue to learn about absolute value. By the end, students should be able to differentiate between the opposite of a number and its absolute value.</li> </ul>
Classifying Rational Numbers	<ul style="list-style-type: none"> <li>Begin class by asking students to classify themselves based on characteristics. For example: has siblings, plays an instrument, plays a sport, eye color. Give students a minute to group up based on characteristics. Then, ask students to share the characteristics of the group. Question students as to whether or not other students from outside the group could also be included.</li> </ul>

teaching  
ideas





# NUMERICAL REPRESENTATIONS

a 9 day TEKS-aligned unit

TEKS: 6.2A, 6.2B, 6.2C, 6.2D, 6.2E

## unit study guide + assessments

✓ quizzes

✓ editable unit test

Unit: Numerical Representations  
Quiz 1

Name \_\_\_\_\_  
Date \_\_\_\_\_ Pd \_\_\_\_\_

### QUIZ: ORDERING RATIONAL NUMBERS

Use the table below to answer questions 1-4.

CHILD	HEIGHT (INCHES)
1.	
2.	
3.	
4.	

1. Who is the tallest?

2. Which child is shorter than Ellis?

3. Which children are taller than 35.5 in?

4. Order the children from shortest to tallest.

Answer the questions below. Be sure to show your work.

5. Andrew is working to place the following numbers on a number line. Explain whether or not he is correct.

-9   -17   1/25

6. Over the year, the water level of various lakes changed. The following table shows the changes in the water level of two lakes during the summer.

Which list represents the numbers in order from least to greatest?

A.  $7\%$ ,  $\frac{1}{12}$ ,  $18\%$ ,  $\frac{1}{25}$

B.  $\frac{1}{25}$ ,  $18\%$ ,  $7\%$ ,  $\frac{1}{12}$

C.  $\frac{1}{25}$ ,  $7\%$ ,  $18\%$ ,  $\frac{1}{12}$

D.  $7\%$ ,  $\frac{1}{12}$ ,  $\frac{1}{25}$ ,  $18\%$

Unit: Numerical Representations  
Review

Name \_\_\_\_\_  
Date \_\_\_\_\_ Pd \_\_\_\_\_

### NUMERICAL REPRESENTATIONS UNIT STUDY GUIDE

Solve each of the problems below. These represent the types of questions on your test. Be sure to ask questions if you need more help with a topic.

**I CAN UNDERSTAND THAT FRACTIONS REPRESENT DIVISION. 6.2E**

Match the following fractions with their appropriate division notation. Then, find the solution.

1.  $\frac{4}{5}$

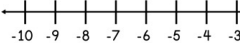
2.  $\frac{8}{20}$

A.  $4 \div 5$    B.  $4 \div 8$

**I CAN IDENTIFY A NUMBER, ITS OPPOSITE, AND ITS ABSOLUTE VALUE.**

5. Place the following points on the number line.

A: the opposite of 7  
C: the absolute value of -3



6. Isabel draws a mystery number for the class. Read the clues below and identify the number.

a. -8   b. 11   c. 15   d. -21

I. The number is negative.  
II. The number is greater than -10.

7.  $|-7.6|$

8.  $|-12|$

## SIXTH GRADE CURRICULUM

# NUMERICAL REPRESENTATIONS

UNIT ONE: ANSWER KEYS

answer keys  
included

©MANEUVERING THE MIDDLE, 2017