

learning focus:

- ✓ approximate the value of an irrational number and locate the value on a number line
- ✓ classify, compare, and order real numbers
- ✓ convert between standard and scientific notation

REAL NUMBER SYSTEM UNIT

10 DAY TEKS-ALIGNED UNIT



REAL NUMBER SYSTEM UNIT
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CLASSIFYING REAL NUMBERS

Name _____ Date _____ Pat _____

_____ went to summer camp. He met several campers whose names are listed below.

FRIENDS FROM CAMP

_____ is a _____.

_____ of the graphic organizer that Ryan's name could be _____.

_____ come in? Explain.

_____ relationship between types of real numbers. Use at least 3 examples of each.

EXAMPLES
_____ (numbers on _____)
_____ starting with _____

REAL NUMBER SYSTEM UNIT PACING GUIDE

DAY	TOPIC	RESOURCE
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DAY 2	Squares and Square Roots	Student Handout 2 Homework 2
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DAY 7	Comparing and Ordering Real Numbers	Student Handout 7 Homework 7
DAY 8	Scientific Notation	Review
DAY 9	Scientific Notation	Test
DAY 10	Review	Test

A MANEUVERING THE MIDDLE® RESOURCE

REAL NUMBER SYSTEM



a 10 day TEKS-aligned unit
TEKS: 8.2A, 8.2B, 8.2C, 8.2D

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

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REAL NUMBER SYSTEM



a 10 day TEKS-aligned unit
TEKS: 8.2A, 8.2B, 8.2C, 8.2D


student friendly + real-world application

scaffolded concepts

Unit: Real Number System
Student Handout 1

Name _____
Date _____ Pd _____

FRACTIONS AND DECIMALS



Jackson and Roy each checked out at the lumber store with a piece of plywood for an upcoming project. Jackson's plywood was $\frac{3}{8}$ inches thick while Roy's plywood was 0.7 inches thick. Who purchased the thicker piece of plywood, and how do you know?

Whether comparing, classifying, or ordering of numbers.

CONVERTING FRACTIONS TO DECIMALS

- To convert a fraction to a decimal, divide the numerator by the denominator.

TYPES OF DECIMALS

- A decimal that ends with a zero.
- A decimal with a repeating digit.

Convert each fraction into its equivalent decimal form.

1. $\frac{3}{8}$	2. _____
4. $\frac{4}{25}$	5. _____

CONVERTING DECIMALS TO FRACTIONS


- To convert a decimal to a fraction, put the decimal over 1 and multiply the numerator and denominator by _____ until there is no longer a decimal in the numerator. Then, _____ your fraction.

Convert each decimal into its equivalent fraction form.

7. 0.35	8. _____
10. $0.\overline{888}$	11. _____

Use your knowledge of converting fractions to decimals.

13. Amber has \$5.55 in her pocket. Express this amount as a fraction in simplest form.



15. Trish entered a problem on her calculator "0.1894528...". Would this decimal be a fraction?

Summarize today's lesson:

Unit: Real Number System
Homework 1

Name _____
Date _____ Pd _____

FRACTIONS AND DECIMALS

1. Which of the following fractions converts to a repeating decimal?
a. $\frac{7}{8}$
b. $\frac{3}{5}$
c. $\frac{5}{2}$
d. $\frac{2}{4}$

2. Which of the following fractions converts to a terminating decimal greater than one?
a. $\frac{4}{3}$
b. $\frac{7}{2}$
c. $\frac{1}{4}$
d. $\frac{13}{11}$

In 3-8, record the letter of the fraction card that is equivalent to the given decimal representation. Not all cards will be used.

A $\frac{8}{12}$	C $\frac{4}{3}$	E $\frac{4}{5}$	G $\frac{19}{25}$	I $\frac{2}{9}$	K $\frac{4}{9}$
B $\frac{5}{8}$	D $\frac{7}{50}$	F $\frac{5}{3}$	H $\frac{1}{3}$	J $\frac{1}{33}$	

3. 0.14 _____	4. $0.\overline{2}$ _____	5. 0.76 _____
6. 0.8 _____	7. 0.625 _____	8. $0.\overline{6}$ _____

9. Three students wrote equivalent fractions and decimals as shown. Circle the name of the student who made a mistake and rewrite their statement correctly.

SHAWNA $\frac{1}{33} = 0.0\overline{3}$	KEITH $0.04 = \frac{2}{5}$	SOREN $\frac{5}{6} = 0.8\overline{3}$
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error analysis

REAL NUMBER SYSTEM



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TEKS: 8.2A, 8.2B, 8.2C, 8.2D

streamline your planning process with unit overviews

REAL NUMBER SYSTEM OVERVIEW

READINESS STANDARDS

8.2D Order a set of real numbers arising from mathematical and real-world contexts.

SUPPORTING STANDARDS

8.2A Extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of real numbers.

8.2B Approximate the value of an irrational number, including π and square roots of numbers less than 225, and locate that rational number approximation on a number line.

8.2C Convert between standard decimal notation and scientific notation.

- ✓ key vocabulary
- ✓ vertical alignment

sample pacing calendar

- BIG IDEAS**
- All real numbers can be represented on a number line.
 - All real numbers are either rational or irrational.
 - Numbers can be represented in two forms.

REAL NUMBER SYSTEM UNIT PACING GUIDE

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Fractions and Decimals	Squares and Square Roots	Estimating Square Roots	Rational vs. Irrational Numbers	Classifying Real Numbers
Student Handout 1 Homework 1	Student Handout 2 Homework 2			
DAY 6	DAY 7			
Classifying and Estimating Real Numbers Quiz	Comparing and Ordering Real Numbers			
Quiz 1	Student Handout 6 Homework 6			

- ESSENTIAL QUESTIONS**
- When is it useful to order a set of real numbers?
 - How are sets of real numbers related?
 - How can the value of an irrational number be approximated?
 - Where do you see irrational numbers in the real world?
 - What are some advantages of using scientific notation?

REAL NUMBER SYSTEM UNIT OVERVIEW

TOPIC	TEACHING TIPS
Fractions and Decimals	• Begin the lesson with a discussion about when it is more helpful to use fractions vs. decimals in the real-world, and vice versa.
Squares and Square Roots	• Have students cut out squares from graph paper to look at the relationship between the area of a square and the side length of the square. This is also a good way to show students that only certain numbers are "perfect squares."
Rational vs. Irrational Numbers	• Display a list of rational and irrational values on the board before teaching the lesson and have students predict and record which numbers they think are irrational. Then, come back to the list at the conclusion of the lesson to compare their predictions with their learning.
Classifying Real Numbers	• Display a large image of a graphic organizer for the sets of real numbers on the board. Then, have students write a real number on a sticky note. They can then give their sticky note to a classmate to place in the correct section of the graphic organizer.
Comparing and Ordering Real Numbers	• Give students an index card with a value written on it (fraction, decimal, square root, integer, etc.) and have them order themselves in a line. This could be done within small groups or as an entire class.
Scientific Notation	• Display a very large or small value (ex. The distance from earth to the moon is 15,130,000,000 inches) and have students volunteer to try to read the value out loud. Then, discuss when scientific notation can be helpful.

teaching ideas

REAL NUMBER SYSTEM



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unit study guide + assessments

✓ quizzes

✓ editable unit test

Unit: Real Number System
Quiz 1

Name _____
Date _____ Pd _____

QUIZ: CLASSIFYING AND ESTIMATING REAL NUMBERS

Answers

1. _____
2. _____
3. _____
4. _____

Answer each question and show work when necessary.

- Which of the following represents a fraction that converts to a repeating decimal with a value less than one?
a. $\frac{1}{2}$ b. $\frac{4}{3}$ c. $\frac{9}{10}$
- Which of the following sets does not contain only real numbers?
a. $\{-5, 12, \pi, 30\}$ c. _____
b. $\{\sqrt{80}, 100, 6.56\}$ d. _____
- Raphael's neighborhood kiddie pool is a square. The perimeter of the pool is approximately 144 feet. What is the approximate side length of the pool? (Be sure to show your work.)
- Heather is putting together a square bulletin board. The area of the bulletin board is 196 cm². What is the side length of the bulletin board? (Be sure to show your work.)
- Estimate the value of $\sqrt{13}$. (Between what two whole numbers does it lie?)
- Which of the following correctly classifies the number $\sqrt{13}$?
a. Real, Irrational
b. Real, Rational, Integer

Unit: Real Number System
Review

Name _____
Date _____ Pd _____

REAL NUMBER SYSTEM 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 EVALUATE SQUARE ROOTS OF NUMBERS LESS THAN 225. 8.2B

1. Evaluate the following:

- $2\sqrt{49} =$ _____
- $-\sqrt{100} =$ _____
- $10 + \sqrt{169} =$ _____

2. Simplify the expression: $\sqrt{144}$

I CAN APPROXIMATE THE VALUE OF IRRATIONAL NUMBERS ON A NUMBER LINE.

4. Between which two whole numbers does $\sqrt{150}$ lie?

5. Estimate the value of $\sqrt{13}$. (Between what two whole numbers does it lie?)

I CAN LOCATE IRRATIONAL NUMBERS ON A NUMBER LINE.

7. Shiloh estimated $\sqrt{190}$ by placing it on the number line below. Explain how her estimate could be improved.

9. The point below best represents the value of $\sqrt{72}$. Explain how you know.

a. $\sqrt{80}$ b. $\sqrt{72}$ c. _____

EIGHTH GRADE CURRICULUM

REAL NUMBER SYSTEM

UNIT ONE: ANSWER KEY

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answer keys included