

Closing the Distance: Grade 8 Mathematics

Teacher Edition

Reproducible Activity Masters and Student Pages

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Region 4 Education Service Center supports student achievement by providing educational products and services that focus on excellence, service, and children.

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1

A resource that serves as an intervention for students who are close to success on the State of Texas Assessments of Academic Readiness (STAAR®)

2

A resource that integrates related TEKS to provide a review of mathematics concepts and skills, paired with opportunities for rigorous mathematical discourse

3

A resource of classroom-ready 5E activities that keeps students engaged in a positive, productive manner through strategies, including modeling, card sorts, matching, cooperative learning, and analysis of student work

4

A resource that provides an opportunity for students to track their progress with an analysis of strengths and areas to improve within each lesson

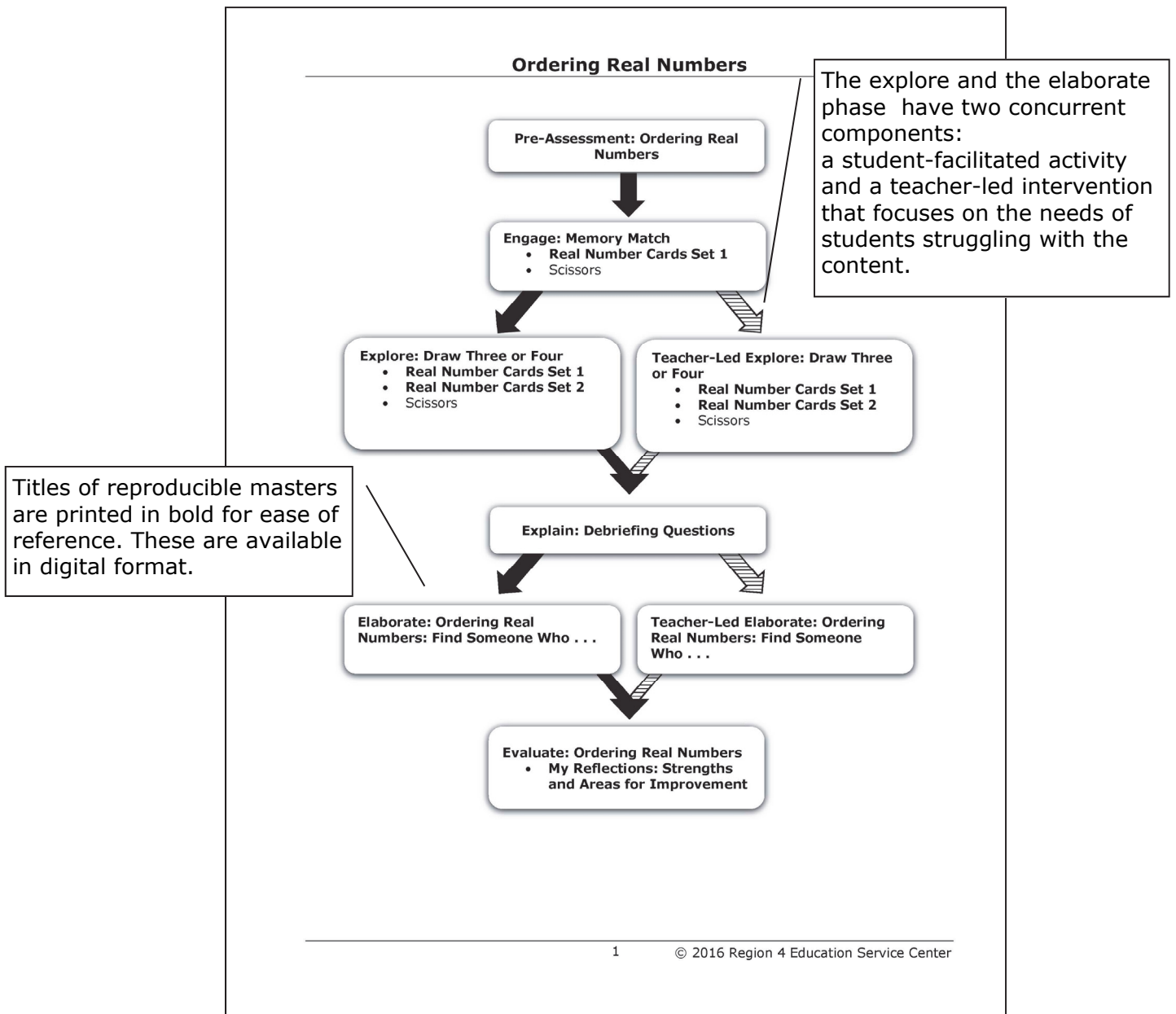
5

A resource that includes a pre-assessment to provide teachers and students quick and timely information on student readiness for the activities in the lesson and identifies students that may benefit from a small-group intervention setting

6

A resource that includes teacher-led interventions for students who may struggle with specific content

What is in a lesson found in *Closing the Distance*?



What is in a lesson found in *Closing the Distance*?

Each lesson supports multiple student expectations with a focus on the STAAR® readiness standards. Student expectations are listed at the beginning of each lesson.

Materials for each phase are summarized on one page for ease in preparation.

Ordering Real Numbers

Phase	Activity Title	TEKS	Additional Materials	Instructional Grouping
Pre-Assessment	Pre-Assessment: Ordering Real Numbers	8(2)(B) 8(2)(D)		Individual
Engage	Memory Match	8(2)(B)	<ul style="list-style-type: none"> Real Number Cards Set 1 (1 set per group) Scissors 	Groups of 2
Explore Explain	Draw Three or Four	8(2)(B) 8(2)(D)	<ul style="list-style-type: none"> Real Number Cards Set 1 (1 set per group) Real Number Cards Set 2 (1 set per group) Scissors 	Groups of 2 Whole Group
Elaborate	Ordering Real Numbers: Find Someone Who . . .	8(2)(D)		Whole Group
Evaluate	Evaluate: Ordering Real Numbers	8(2)(B) 8(2)(D)	<ul style="list-style-type: none"> My Reflections: Strengths and Areas to Improve 	Individual

Grouping strategies for each phase are summarized to assist in the arrangement of the classroom.

Bold items are reproducible masters.

Italicized items require advanced preparation.

Students should have continuous access to the graphing technology and STAAR® Reference Materials that will be made available for the assessment.

Pre-Assessment: Ordering Real Numbers

The purpose of this activity is to formatively assess students' understanding of how to approximate the value of an irrational number, locate rational numbers on a number line, and order a set of real numbers.

The identified activities are recommended for small-group, teacher-led interventions for students who may struggle with the specific content in **Pre-Assessment: Ordering Real Numbers**.

Content	Teacher-Led Intervention
Approximating irrational numbers	Memory Match
Locating rational numbers on a number line	Draw Three or Four
Ordering a set of real number	Ordering Real Numbers: Find Someone Who . . .

A focused pre-assessment is provided for each lesson. Tier I intervention activities are identified for use with students who may struggle with the identified content.

enter 2

What is in a lesson found in *Closing the Distance*?

Key ideas and concepts to listen for as students complete each phase are listed.

Key vocabulary terms are identified for each phase.

Complete directions are included on each student page. Additional directions are provided for teacher-facilitated aspects of an activity.

Additional materials may be needed to complement the student pages.

Ordering Real Numbers



Engage: Memory Match

The purpose of this activity is to assess background knowledge related to approximating the value of real numbers, including pi and square roots of numbers less than 225.

Additional Directions
None

Additional Materials

- **Real Number Cards Set 1**
- Scissors

Listen For . . .

- Use of estimation or a calculator to determine an approximate value of an irrational number.
- Understanding of fraction and decimal relationships.
- Understanding of equivalent forms of rational numbers.

Vocabulary

- Irrational number
- Pi
- Rational number
- Real number
- Square root



Explore: Draw Three or Four

The purpose of this activity is to reinforce students' understanding of ordering real numbers and locating rational numbers on a number line.

Additional Directions

Note: A calculator may be used as a self-checking tool when partners compare their answers.

1. Distribute **Real Number Cards Set 2** to each group of students.
2. Prompt student to combine and shuffle **Real Number Cards Set 1** and **Real Number Cards Set 2**, placing the cards face down on the desk when shuffling is complete.
3. Prompt student to use both **Real Number Cards Set 1** and **Real Number Cards Set 2** to complete **Draw Three or Four**.

Additional Materials

- **Real Number Cards Set 1**
- **Real Number Cards Set 2**
- Scissors

Listen For . . .

- Use of estimation or a calculator to determine an approximate value of an irrational number.
- Understanding of fraction and decimal relationships.
- Understanding of equivalent forms of rational numbers.
- Connections between reading a number line and ordering numbers.

Vocabulary

- Benchmark values
- Greatest to least
- Least to greatest

What is in a lesson found in *Closing the Distance*?

Ordering Real Numbers



Explain: Debriefing Questions

The purpose of this activity is to highlight key understandings and skills applied in the Explore phase of this lesson.

- How can you determine which benchmark values, such as halves or fourths, may be helpful when creating a number line for ordering real numbers?
- How can you compare two numbers that are written in two different forms, such as a multiples of pi and a fraction or a square root and a decimal?



Elaborate: Ordering Real Numbers: Find Someone Who . . .

The purpose of this activity is to reinforce students' understanding of ordering real numbers.

Additional Directions

None

Additional Materials

None

Listen For . . .

- *Use of benchmarks to compare and order real numbers.*
- *Use of estimation or a calculator to compare and order real numbers.*
- *Understanding of real numbers and how they are ordered.*

Vocabulary

- *Benchmark values*
- *Greatest to least*
- *Least to greatest*



Evaluate: Ordering Real Numbers

The purpose of this activity is to assess students' understanding of how to approximate values for real numbers, locate real numbers on a number line, and order a set of real numbers.

Question	TEKS	Correct Answer
1	8(2)(D)	C
2	8(2)(D)	C
3	8(2)(D)	D
4	8(2)(D)	B

The explain phase includes debriefing questions to guide class discussion for key understandings and skills found in the activities.

Each selected-response item is labeled with the content student expectation.

What is in a lesson found in *Closing the Distance*?

Ordering Real Numbers

Small-group intervention suggestions are provided for the Explore and the Elaborate phases.

Small-Group Intervention Suggestions

Teacher-Led Explore: Draw Three or Four

Vocabulary
Benchmarks, greatest to least, least to greatest

Additional Materials

- **Real Number Cards Set 1**
- **Real Number Cards Set 2**

Small-Group Directions

Note: Model the use of the calculator to approximate square roots and fractions in decimal form.

Step 1

A) Draw three cards. Use a think-aloud process and the following questions to guide students in placing the numbers on the number line.

- How can you determine what tick mark values to add to the number line?
- What benchmark values may help place the numbers on these cards?
- How can you use an approximate value to help you locate a number on the number line?

B) Draw three new cards for Draw II. Guide students as needed to locate these values on the number line.

Step 2

A) Draw four new cards for Draw III. Use a think-aloud process and the following questions to guide students in determining the greatest value and the least value in the set.

- What do you know about comparing positive and negative numbers?
- How can you use estimation to determine the greatest value? the least value?
- How can you use a number line to determine which value is greatest or least?

B) Draw three new cards for Draw IV. Guide students as needed to determine the greatest value and the least value in this set.

Step 3

A) Draw four new cards for Draw V. Use a think-aloud process and the following questions to guide students in ordering the numbers in the set.

- Which number should you consider first when ordering? Why?
- How can you use estimation to determine if one value is greater than another?

Listen For. . .

- *Use of estimation or a calculator to determine the approximate value of an irrational number.*
- *Understanding of fraction and decimal relationships.*
- *Understanding of equivalent forms of rational numbers.*
- *Connections between reading a number line and ordering numbers.*

Each intervention provides instructions on how to make the mathematics more explicit for students struggling with the content within the lesson.

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What is in a lesson found in *Closing the Distance*?

Each lesson provides an opportunity for student reflection as the student self-assesses strengths for each phase of the lesson. Following this self-assessment, students are prompted to note what they are most proud of and to set a goal to improve understanding.

Name: _____ Date: _____

My Reflections: Strengths and Areas for Improvement

Place a plus sign for each statement you feel is a strength after completing each lesson activity.

Lesson Activity	I can accurately perform all computations needed for this activity.	I can approximate the value of irrational numbers.	I can locate rational number approximations on a number line.	I can order a set of real numbers.
Memory Match				
Draw Three or Four				
Ordering Real Numbers: Find Someone Who . . .				
Evaluate: Ordering Real Numbers				

I am most proud . . .

To Improve my understanding, I . . .

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