# **Lingaging** Mathematics, Volume II: Grade 4

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## Engaging Mathematics, Volume II: Grade 4

# **Teacher Edition**

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

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### What is Engaging Mathematics, Volume II: Grade 4?

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An instructional resource featuring over 90 Texas Essential Knowledge and Skills (TEKS)based, classroom-ready mathematics activities that each take approximately 10 to 15 minutes to complete.

A TEKS-based resource that addresses all Grade 4 mathematics TEKS and provides—

- Rigorous problem-solving tasks
- Manipulative-based tasks
- Vocabulary development tasks
- Sorting and classifying tasks



A resource that supports high-quality, research-based instruction by providing activities that can be used for various purposes, including—

- Engaging warm-ups and opening tasks that draw students into relevant and challenging mathematics
- Instructional support for all students, from at-risk to gifted and talented, to help learners articulate, refine, and retain important mathematical concepts, processes, and skills
- Short-cycle, formative assessments that provide immediate and ongoing feedback to guide instruction for the teacher and learning for the student
- Supplemental tasks to support intervention strategies

A resource that incorporates the mathematics process standards by promoting—

- Reasoning, generalizing, and problem-solving mathematical and real-world contexts
- Modeling, using tools, and connecting representations
- Analysis
- Communication



in

### What is found in an Engaging Mathematics TEKS-based activity?



## Texas Essential Knowledge and Skills (TEKS) Alignment Chart

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4(2)(G)



#### **Activity Objective**

 ${\rm I}$  can relate decimals to fractions that name tenths and hundredths.

#### Materials

• Fraction and Decimal: Agree or Disagree

I can explain my understanding of fractions and decimals.

#### **Answer Key**

With which student do you agree? *Joe* 

Explain why you agree with this student, and why you disagree with the other student.

I agree with Joe because 1.	2 <del></del> and 12	2 represent	twelve and	two-tenths.	I disagree wi	ţh
c / / / / / / / /			1 111 -			

Sam because 12.02 represents twelve and two-hundredths.

#### **Debriefing Questions**

- How did you determine which student was correct?
- What does the 12 represent in the fraction and the decimal notation?
- How might a place-value chart help you determine the correct decimal notation?
- What is the purpose of a zero when using decimal notation?

#### Listen For . . .

- Connections between whole number and decimal place value.
- Understanding of equivalent fraction and decimal notations for tenths and hundredths.

#### Communicating about Mathematics

Students may respond by talking to a partner and draw a picture in the space provided.

Possible sentence frame: My model/picture justifies my answer because \_\_\_\_\_.

#### Listen/Look For . . .

Connections among the model,  $\frac{2}{10}$ , 0.02, and 0.2.

## Fraction and Decimal: Agree or Disagree

Mr. Thomas wanted to buy a piece of lumber that was  $12\frac{2}{10}$  meters. The salesperson gave Mr. Thomas a piece of lumber that was 12.02 meters. Did the salesperson give Mr. Thomas the correct length?



With which student do you agree?

Explain why you agree with this student, and why you disagree with the other student.







#### **Activity Objective**

I can determine the product of a number and 10 using properties of operations and understandings of place value.

I can explain mathematical ideas related to multiplication.

#### **Answer Key**

Possible answers.

Aubrey is correct. She used an understanding of properties of operations to justify her thinking.

Blaine is also correct. He used an explanation that was based on his understanding of place value.

#### **Debriefing Questions**

- Explain in your own words how to multiply any number by 10.
- What pattern do you notice when you multiply any number by 10? By 100?
- How would the process change if you multiplied a number by 100 instead of 10?

#### Listen For . . .

- Understandings of the value of each digit based on its place-value position.
- Understanding that the value of each digit should be multiplied by 10 or 100 to determine the product.
- Understanding of expanded form and its use with properties of operations.

#### Communicating about Mathematics

Students may respond by talking to a partner and recording a written response in the space provided.

Possible sentence frame: \_\_\_\_\_'s explanation made the most sense to me mathematically because \_\_\_\_\_.

#### Listen/Look For . . .

Understanding of properties of operations and place value.

### Materials

• Multiplying by 10: Who Is Correct?

## Multiplying by 10: Who Is Correct?

Aubrey and Blaine both solved the problem below. They both determined the answer to be \$5,460. However, they provided different explanations.

A local pizza place sold large pizzas for \$10 during the month of October. A total of 546 large pizzas was sold during October. What was the total cost of these large pizzas?

Aubrey's Explanation	Blaine's Explanation
To solve the problem I needed to multiply 546 by 10, which means that each value from the expanded form is being multiplied by 10, so $10 \times 546 = 10 \times (500 + 40 + 6)$ $(10 \times 500) + (10 \times 40) + (10 \times 6)$ 5,000 + 400 + 60 5,460	To solve the problem I needed to multiply 546 by 10. When I multiplied by 10, I knew the product needed to be 10 times larger than the value of each digit; 500, 40, and 6. This means the product is the sum of 5,000 + 400 + 60.

- Is Aubrey correct? Justify your answer.
- Is Blaine correct? Justify your answer.





## Unknown Angle Measures, Activity 2

4(7)(E)



#### **Activity Objective**

I can determine the measure of an unknown angle.

I can explain the process used to determine the measure of an unknown angle.

#### Answer Key

Paula is correct.

#### **Debriefing Questions**

- What do you know about adjacent angles? How did this help you determine who was correct?
- What is another method that you can use to solve this problem? How does it relate to the method used by Paula?

#### Listen For . . .

- Appropriate use of vocabulary such as adjacent angles, degrees, ray, and vertex.
- Appropriate use of angle notation such as m to indicate the angle measure and  $\angle$  for angle.
- Connections between the sum of the measures of two non-overlapping adjacent angles and the measure of the angle formed by these two adjacent angles.

#### Materials

 Adjacent Angles: Who Is Correct?

#### Communicating about Mathematics

Students may respond by talking to a partner and recording a written response in the space provided.

Possible sentence frame: To determine who was correct, I

#### Listen/Look For . . .

Understanding that when given the sum of the measures of two nonoverlapping adjacent angles and the measure of one of the adjacent angles, the unknown angle measure can be determined.

## **Adjacent Angles: Who Is Correct?**

Nancy and Paula were asked to solve the following problem:

Angle BAD has a measure of 72°. Determine the measure of angle BAC.



Nancy and Paula each solved the problem and came up with different answers. Their work is shown below.

Nancy's Work	Paula's Work
$x = \text{measure of angle } BAC$ $72^{\circ} + 26^{\circ} = x$ $72^{\circ} + 26^{\circ} = 98^{\circ}$	$m \angle BAC = x$ $26^{\circ} + x = 72^{\circ}$ $26^{\circ} + 46^{\circ} = 72^{\circ}$
So, $\angle BAC$ measures 98°.	So, $\angle BAC$ measures 46°.
Is Nancy correct? Justify your answer.	Is Paula correct? Justify your answer.

\_\_\_\_\_

#### **Communicating about Mathematics**

Describe the process you used to determine who was correct.

	;;