Engaging Mathematics,

Volume I: Grade 7

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Engaging Mathematics, Volume I: Grade 7

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 I: Grade 7*?

1 An instructional resource featuring 76 Texas Essential Knowledge and Skills (TEKS)-based, classroom-ready mathematics activities that each take approximately 10 to 15 minutes to complete. We took the best activities of the original series, refreshing and revising them, and then added new activities where needed to create a complement for *Engaging Mathematics, Volume II*.

2 A TEKS-based resource that addresses the majority of the grade 7 mathematics TEKS. *Engaging Mathematics, Volume I* complements *Engaging Mathematics, Volume II.* Both volumes provide—

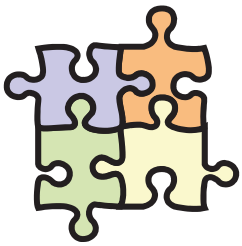
- Rigorous problem-solving tasks;
- Manipulative-based tasks;
- Vocabulary development tasks; and
- Sorting and classifying tasks.

3 A resource that supports high-quality, research-based practices 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 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; and
- Supplemental tasks to support intervention strategies.

4 A resource that incorporates the mathematical process standards by promoting—

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



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

Each activity addresses a specific student expectation that is reflected in the content objective.

Common classroom materials are used for ease of preparation. Materials are listed 1-per-student unless otherwise noted. Page titles for student handouts are represented with bold font.

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

Facilitation questions are provided for teacher use when supporting student thinking and discourse.

Application Problems Involving Rational Numbers, Activity 4
7(3)(B)

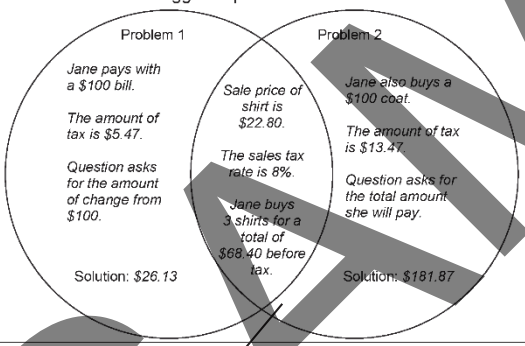
Activity Objective
The student will solve application problems involving rational numbers.

Materials
- **Brigg's Department Store**

Facilitation Questions
- **What does the overlapping section of the two circles represent?**
  The overlapping section represents in common information between the two word problems.
- **How can you determine the sale price of a shirt?**
  Possible answer: I can determine $\frac{1}{5}$ of $28.50 and subtract that value from $28.50. I can determine $\frac{4}{5}$ of $28.50.
- **Will the amount of sales tax for the two situations be the same? Why?**
  No, because the total amount of the purchase is different for each situation. In Problem 2, Jane also buys a coat.
- **How can you determine the amount of sales tax?**
  I can multiply the total cost of the items without tax by 0.08.

Answers
Possible answers:

Brigg's Department Store



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An answer key is included for each activity.

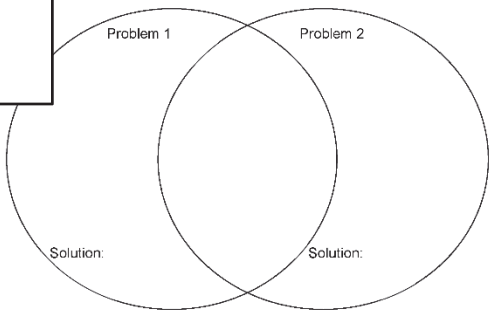
Date: _____

Brigg's Department Store

d contrast the two word problems using the Venn diagram.
question.

Problem 1	Problem 2
epartment Store, shirts that y priced at $28.50 are on sale regular price. The sales tax Jane buys 3 shirts and pays bill. How much change does ?	At Brigg's Department Store, the sale price for shirts is 80% of the regular price of $28.50. The sales tax rate is 8%. Jane buys a coat for $100 and 3 shirts. What is the total cost of these items?

Brigg's Department Store



Communicating about Mathematics
Describe the context clues in each word problem that you used to make decisions about how to answer each question.

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Each activity includes an opportunity for students to articulate and summarize aspects of their learning.

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# Application Problems Involving Rational Numbers, Activity 2
7(3)(B)

Activity Objective
The student will solve an application problem involving rational numbers.

Materials
- **Fill in the Blanks**

Facilitation Questions
- **What type of numbers is reasonable for a value labeled "$____ bill?" Why?**
  The only number that can go in the blank is 20 because 20 is the only number in the Number Bank that is a denomination of a bill.
- **What type of numbers is reasonable for a value labeled "_____ boxes of vanilla wafers?" Why?**
  Only whole numbers can go in the blank because it is not possible to purchase a fractional part of an unopened box of vanilla wafers.
- **Of the remaining numbers, which seems the most reasonable for the price of a pound of bananas?**

  Forty-eight cents per pound seems to be a reasonable cost for bananas. $2\frac{1}{2}$ cents seems too low, and $7.98 per pound seems too high.

Answers
Jenna bought $2\frac{1}{2}$ pounds of bananas that were priced at *48* cents per pound. She also bought *4* boxes of vanilla wafers that were priced at $*1.89* per box. At the register, she handed the clerk a $*20* bill. How much change did she receive?
She received $11.24.

SAMPLE

Student Name: _____ Date: _____

Fill in the Blanks

Create a reasonable situation by filling in the blanks with numbers from the Number Bank. After the situation is complete, determine the answer to the question.

Number Bank				
48	20	4	$2\frac{1}{2}$	1.89

Jenna bought _____ pounds of bananas that were priced at _____cents per pound. She also bought _____ boxes of vanilla wafers that were priced at $_____ per box. At the register, she handed the clerk a $_____ bill. How much change did she receive?

Communicating about Mathematics
Is there only one way to fill in the blanks to create a reasonable situation? Why or why not?

_____
_____
_____
_____
_____

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# Sample Space, Activity 1
7(6)(A)

Activity Objective
The student will represent the sample space of a compound event.

Materials
- **Customizing Cars**
- **Customizing Cars Cards**
- Scissors

Facilitation Questions
- **How can you organize the information to make sure you do not miss an option?**
  Possible answer: I can start with pairing Rim Option 1 with the Light Tint and combine them with each paint detail. Then, I can pair Rim Option 1 with the Dark Tint and combine them with each paint detail and continue to make an organized list.
- **What is another way to organize your information?**
  Possible answer: A tree diagram might help me map out all of the options.

Answer

Rim Option 1, Light Tint, Dragon Paint
Rim Option 1, Light Tint, Flame Paint
Rim Option 1, Light Tint, Lightning Bolt Paint
Rim Option 1, Dark Tint, Dragon Paint
Rim Option 1, Dark Tint, Flame Paint
Rim Option 1, Dark Tint, Lightning Bolt Paint

Rim Option 2, Light Tint, Dragon Paint
Rim Option 2, Light Tint, Flame Paint
Rim Option 2, Light Tint, Lightning Bolt Paint
Rim Option 2, Dark Tint, Dragon Paint
Rim Option 2, Dark Tint, Flame Paint
Rim Option 2, Dark Tint, Lightning Bolt Paint

SAMPLE

Student Name: _____ Date: _____

Customizing Cars

Mike's Car Shop offers a car customization packages that includes rims, window tint, and paint detail. The options are described on the **Customizing Cars Cards**. Mike is going to randomly choose a customization package to discount this month. What are all the possible outcomes of Mike choosing rims, window tint, and paint detail?

Communicating about Mathematics

How do you know that you listed all of the possible outcomes? How many customization packages did you find?

_____

_____

_____

_____

_____

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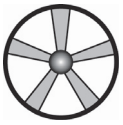
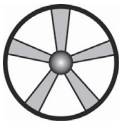
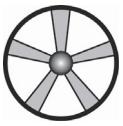
Customizing Cars Cards

Cut along the bold dashed lines. Three sets of cards are provided.

Rim Option 1	Rim Option 2 	Light Window Tint	Dark Window Tint
Dragon Detail	Flame Detail	Lightning Bolt Detail	

Rim Option 1	Rim Option 2 	Light Window Tint	Dark Window Tint
Dragon Detail	Flame Detail	Lightning Bolt Detail	

Rim Option 1	Rim Option 2 	Light Window Tint	Dark Window Tint
Dragon Detail	Flame Detail	Lightning Bolt Detail	