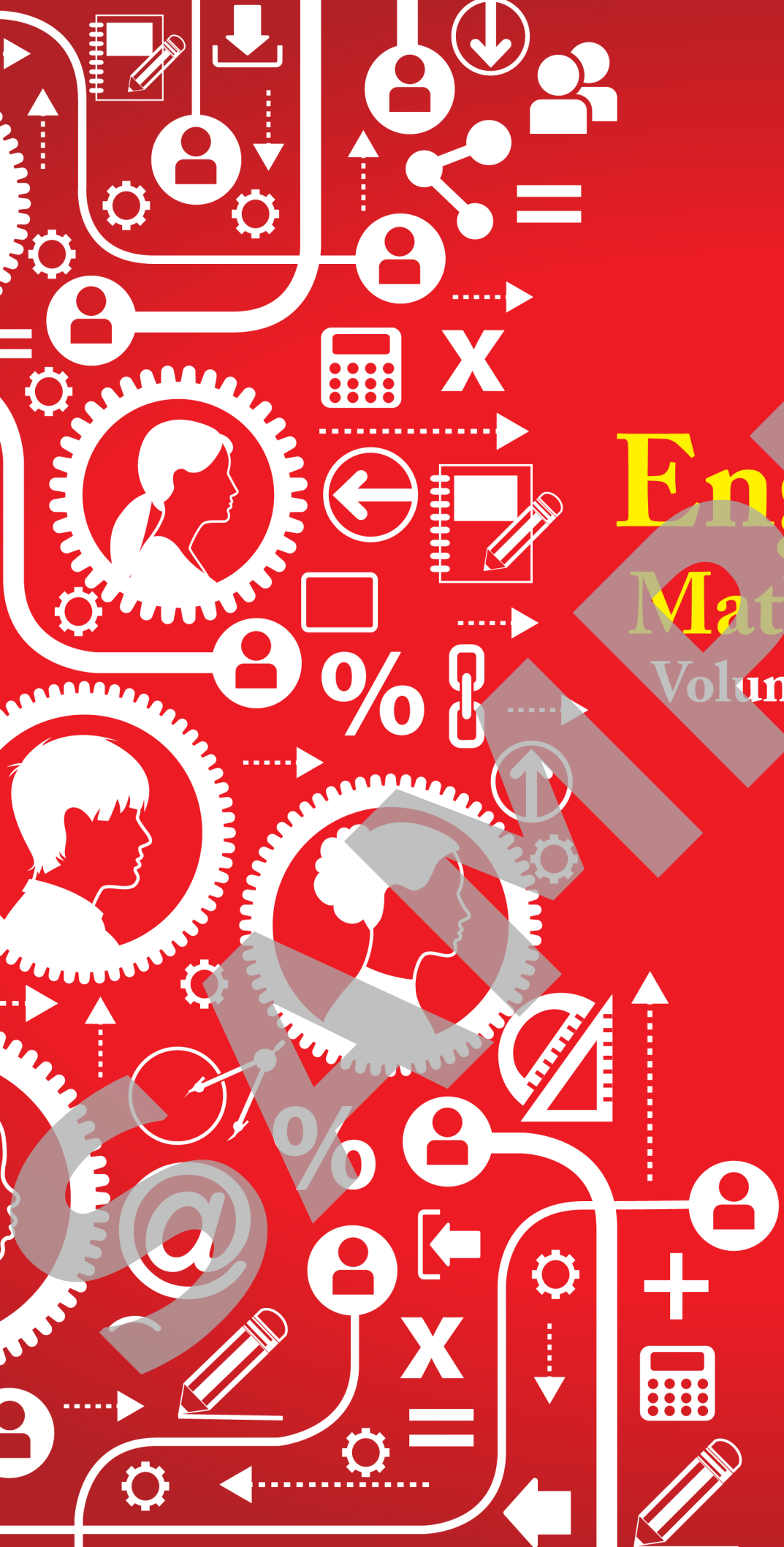

Engaging Mathematics, Volume II: Grade 6

region4®

Engaging Mathematics, Volume II: Grade 6

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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Table of Contents

What is *Engaging Mathematics, Volume II: Grade 6*?

1 An instructional resource featuring over 100 Texas Essential Knowledge and Skills (TEKS)-based, classroom-ready mathematics activities that each take approximately 10 to 15 minutes to complete.

2 A TEKS-based resource that addresses all Grade 6 mathematics TEKS and provides—

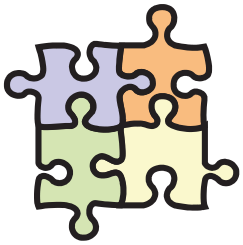
- Rigorous problem-solving tasks
- Manipulative-based tasks
- Vocabulary development tasks
- Sorting and classifying tasks

3 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

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

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

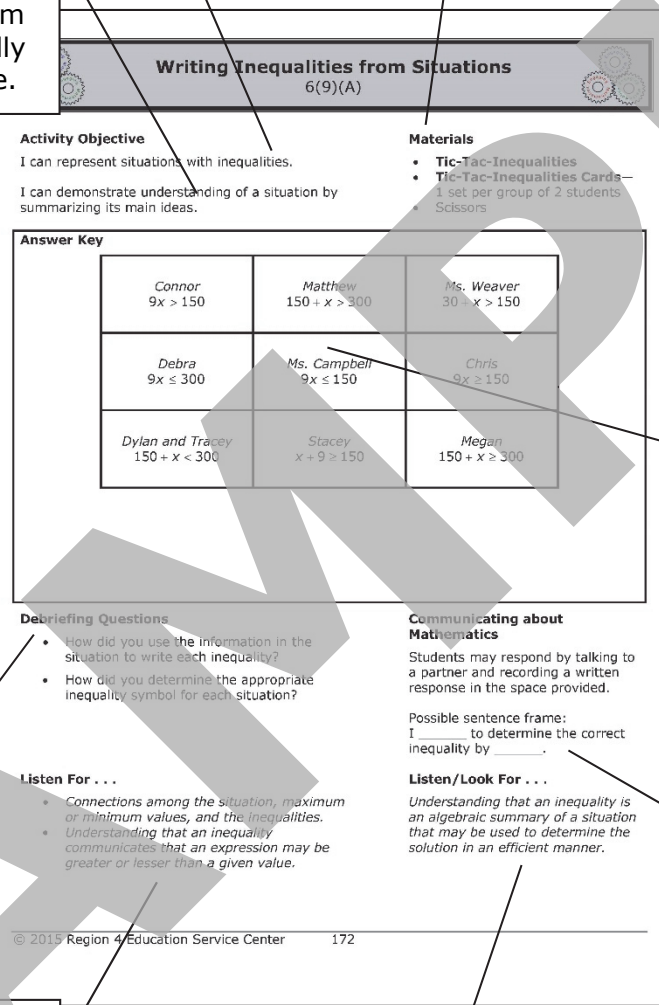


What is found in an Engaging Mathematics TEKS-based activity?

TEKS have been phrased in student friendly language so that students may gauge their learning.

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

ELPS have been included in the form of a student friendly language objective.



Writing Inequalities from Situations
6(9)(A)

Activity Objective

I can represent situations with inequalities.

I can demonstrate understanding of a situation by summarizing its main ideas.

Materials

- Tic-Tac-Inequalities
- Tic-Tac-Inequalities Cards—1 set per group of 2 students
- Scissors

Answer Key

Connor $9x > 150$	*Matthew* $150 + x > 300$	*Ms. Weaver* $30 + x > 150$
Debra $9x \leq 300$	*Ms. Campbell* $9x \leq 150$	*Chris* $9x \geq 150$
Dylan and Tracey $150 + x < 300$	*Stacey* $x + 9 \geq 150$	*Megan* $150 + x \geq 300$

Debriefing Questions

- How did you use the information in the situation to write each inequality?
- How did you determine the appropriate inequality symbol for each situation?

Communicating about Mathematics

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

Possible sentence frame:
I _____ to determine the correct inequality by _____.

Listen For . . .

- *Connections among the situation, maximum or minimum values, and the inequalities.*
- *Understanding that an inequality communicates that an expression may be greater or lesser than a given value.*

Listen/Look For . . .

Understanding that an inequality is an algebraic summary of a situation that may be used to determine the solution in an efficient manner.

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Answer key is included for each activity.

Debriefing questions are included to assist the teacher with facilitating a post-activity student discussion.

Each activity includes an opportunity for students to articulate and summarize their own learning.
A sentence frame is provided for students who may need language support.

Key learning outcomes from the debriefing discussion are summarized here.

Key learning outcomes from the Communicating about Mathematics section are included here.

Texas Essential Knowledge and Skills (TEKS) Alignment Chart

Number and operations

Proportionality

Proportionality

Expressions, equations, and relationships

Expressions, equations, and relationships

Expressions, equations, and relationships

Measurement and data

Personal financial literacy

Solving Problems using Fractions, Decimals, or Percents 6(4)(G)

Activity Objective

I can generate equivalent fractions, decimals, and percents to solve problems.

I can explain the equivalent forms of rational numbers used in solving a problem.

Materials

- **Numbers in Stories**

Answer Key

	I used _____ to solve this problem.	Solution
1.	*Possible answer.* *Fractions*	$\frac{1}{2}+\left(\frac{1}{4}+\frac{3}{4}\right)=1\frac{1}{2}$ *Purrty ate* $1\frac{1}{2}$ *cans of food yesterday.*
2.	*Possible answer.* *Decimals*	$49.99 \times 0.2 = 9.998$ $49.99 - 10.00 = 39.99$ $49.99 + 39.99 = \$89.98$ *Ellie paid $89.98 for the two pairs of shoes.*
3.	*Possible answer.* *Decimals*	$2.2 + 2.6 + 1.4 + 3.7 = 9.9$ *Cassie ran 9.9 miles on these four days.*

Debriefing Questions

- How did you decide if you would use fractions, decimals, or percents to solve each problem?

Communicating about Mathematics

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

Possible sentence frame:
For problem _____, I chose to use _____ because _____.

Listen For . . .

- *Understanding that situations involving part-to-whole comparisons might use percent values that may be converted to fraction or decimal representations to solve a problem.*
- *Understanding that when values may be easily compared or rewritten with common denominators, fractions may be the more efficient option.*
- *Understanding that when working with non-compatible numbers, decimals may be the more efficient option.*

Listen/Look For . . .

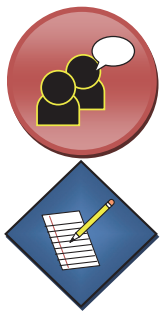
Understanding of equivalent forms of rational numbers and converting the values in a problem situation to one form to make computation more efficient.

Student Name: _____ Date: _____

Numbers in Stories

	Problem	I used _____ to solve this problem.	Solution
1.	Austin wants to know how many cans of cat food Purrty, his kitten, is eating each day. Yesterday, Purrty ate 0.5 of a can in the morning, 25% of a can in the afternoon, and another $\frac{3}{4}$ of a can in the evening. How many cans of food did Purrty eat yesterday?	Fractions Decimals Percents	
2.	Ellie bought two pairs of shoes during a BOGO (Buy One, Get One) sale. She received a 20% discount on the second pair of shoes. The regular price of each pair of shoes was $49.99. How much did Ellie pay for the two pairs of shoes, excluding tax?	Fractions Decimals Percents	
3.	Cassie ran 2.2 miles on Monday, $2\frac{3}{5}$ miles on Tuesday, 1.4 miles on Wednesday, and $3\frac{7}{10}$ miles on Thursday. How many miles did she run altogether on these four days?	Fractions Decimals Percents	

Communicating about Mathematics
Choose one of the problems. Explain why you chose to use equivalent fractions, decimals, or percents to answer the question.



_____
_____
_____
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_____
_____

Independent and Dependent Quantities, Activity 2

6(6)(A)

Activity Objective

I can identify independent and dependent quantities by determining relationships between two quantities.

I can explain what it means for one quantity to depend on another quantity.

Materials

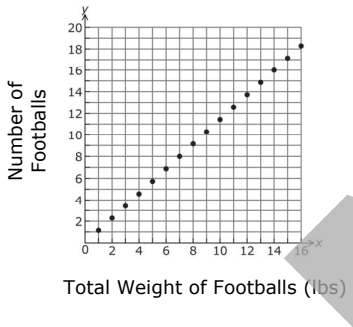
- **It All Depends**

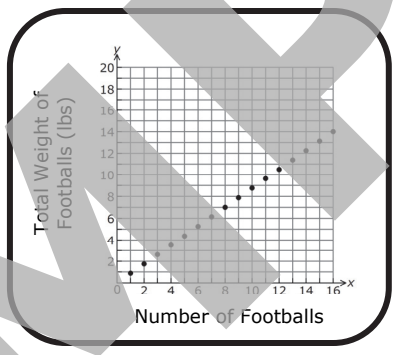
Answer Key

Amount of Money Earned	$14.50	$36.25	$58.00	$72.50
Number of Hours Worked	2	5	8	10

Number of Hours Worked	2	5	8	10
Amount of Money Earned	$14.50	$36.25	$58.00	$72.50

- The independent quantity is the *number of hours worked*.
- The dependent quantity is the *amount of money earned*.
- The *amount of money earned* depends on the *number of hours worked*.





- The independent quantity is the *number of footballs*.
- The dependent quantity is the *total weight of footballs*.
- The *total weight of footballs* depends on the *number of footballs*.

Debriefing Questions

- How did you determine which quantities were dependent on the other quantity?
- Are there situations where the dependence might be reversed? Why?

Communicating about Mathematics

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

Possible sentence frame:
If one quantity depends on another quantity it means _____ .

Listen For . . .

- *Understanding that when the independent quantity changes it impacts the dependent quantity.*
- *Understanding that the dependent quantity depends on the independent quantity for its value.*

Listen/Look For . . .

Understanding that the dependent quantity will change in response to changes in the independent quantity.

Student Name: _____ Date: _____

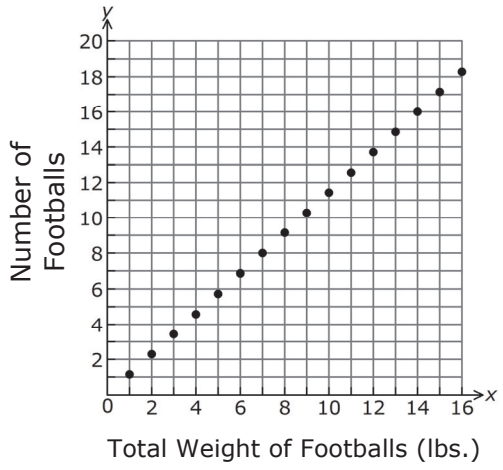
It All Depends

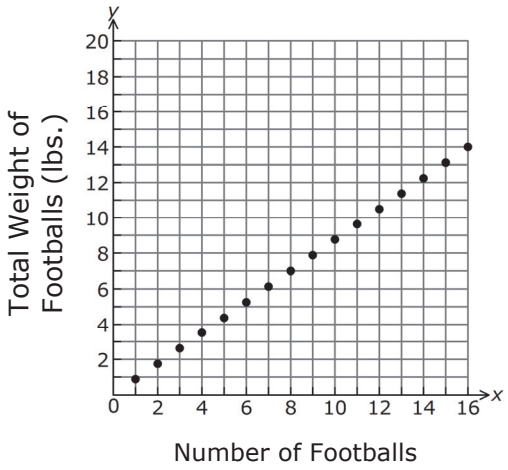
Determine the table and graph that correctly relates the two quantities. Circle your answer choice. Complete the statements below the table and graph.

Amount of Money Earned	$14.50	$36.25	$58.00	$72.50
Number of Hours Worked	2	5	8	10

Number of Hours Worked	2	5	8	10
Amount of Money Earned	$14.50	$36.25	$58.00	$72.50

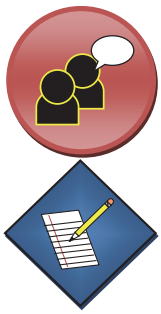
- The independent quantity is the _____.
- The dependent quantity is the _____.
- The _____ depends on the _____.





- The independent quantity is the _____.
- The dependent quantity is the _____.
- The _____ depends on the _____

Communicating about Mathematics
What does it mean for one quantity to depend on another quantity?



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