



**Sample Item Teacher Guide**  
**Mathematics**  
**Grades 6–7**



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# About this Guide

This MSAA Sample Item Teacher Guide can help teachers use the newly released sample items as a formative assessment tool, allowing teachers to understand what students may be able to know and do based on the sample items, and how teachers can respond to this information through instruction. The MSAA newly released sample items are intended to be used for several different purposes, as outlined in the TAM, including to allow students to practice and become familiar with the testing platform and to ensure students are familiar with the item types and accessibility tools. These guides provide directions for using the sample items in an additional way: as an instructional tool.

## Guide Terminology

The MSAA Sample Item Teacher Guide for each grade band and content area include the following:

- **Sample Item Blueprint Table.** A high-level overview of the items in each set that shows the standard and learning targets the items align to, item type, and item position.
- **Item Information.** Information about item alignment, including learning targets, instructional strategies, and scaffolds and supports.
- **Student Item Thumbnail Image.** Item thumbnails are intended to help teachers easily identify the specific items in the guide as they administer the sample items through the online platform utilizing the Directions for Test Administration (DTA).

Item types in the sample item sets include the following:

- **Selected Response**
  - Multiple choice—Students select one answer from two or three possible choices
- **Constructed Response**
  - Constructed response—Students respond to a question by developing an answer rather than selecting an answer from answer options
- **Writing Prompt: ELA**
  - Open-response writing prompt—Students produce a permanent product in response to a prompt; for 2020–2021 released sample items, these will be found in grade 6 only.

## MSAA Sample Item Platform

To access MSAA's Sample Items, go to [www.msaaassessment.org/tap/sample-items](http://www.msaaassessment.org/tap/sample-items).

## Introduction to Formative Assessment

It is important to remember that formative assessment is not a test. It is a process, a practice that is part of instruction. In effective formative instruction, teachers use a variety of methods to determine what students understand and can do and adjust instruction accordingly.

## Formative Assessment Data

Students and teachers are the primary users of formative assessment data. These data have the greatest effect on learning and instruction because feedback for both student and teacher occurs over a very short or nearly instantaneous time period. This allows for adjustments in instruction, reteaching, and additional practice with learning targets to occur.

## How Best to Use the Mathematics Item Sets

The content in this section explains each component of the item sets and how they can best be incorporated into the classroom.

### Mathematics Blueprint Table

The math blueprint table/overview should be used to help select the sample item(s) that will provide the best evidence of student learning. The learning targets differentiate between the type of evidence each item will provide. The item type informs the type of interaction that the student will have to perform to respond to the item.

To obtain evidence of understanding for each grade-level standard, teachers can do the following:

- Access the sample items for the students' grade level.
- Use items individually as the learning targets are covered in class.
- Use the items in small groups to address a series of learning targets that focus on one standard.
- Use the entire sample item set to measure students' understanding of learning targets before, during, or after instruction.
- Review sample item sets from lower grades to build understanding of prerequisite skills for a given standard.
- Review sample item sets from higher grades to know how standard and item information build from the target grade.
- Use the sample items as models to create additional items to assess the standards.

### Next Steps for Formative Mathematics Item Data

After obtaining data that serve as evidence of student understanding, educators should evaluate and interpret the data to identify gaps in student understanding.

Once gaps in understanding are identified, students need appropriate feedback.

After feedback is provided to students, educators should consider documenting the instructional modifications and supplementations provided to the students. Whether a student is undergoing relearning or learning a new concept, plans can be made, documented, and implemented on how best to scaffold that learning. Teachers can use the learning targets to help guide which specific modifications, supplementations, and scaffolding will best support the student.

# **Mathematics Grade 6**

## Grade 6 Sample Item Blueprint

Domain	Standard (Core Content Connectors)	Learning Targets	Item Type*	Item Position
Expressions and Equations	<b>6.NO.2a6</b> Solve problems or word problems using up to three-digit numbers and any of the four operations	<ul style="list-style-type: none"> <li>Recognize the intended outcome of a word problem without an operation.</li> <li>Combine (+) or decompose (–) with concrete objects; use counting to get the answers.</li> <li>Combine (×) or decompose (÷) with concrete objects; use counting to get the answers.</li> <li>Match the action of combining with vocabulary (e.g., in all; altogether) or the action of decomposing with vocabulary (e.g., have left; take away, difference) in a word problem.</li> <li>Match the action of combining with vocabulary (e.g., in all; altogether) or the action of decomposing with vocabulary (e.g., have left; take away) in a word problem. Understand that division is sharing or grouping numbers into equal parts, and multiplication is the result of making some number of copies of the original.</li> <li>Draw or use a representation of the word problem.</li> <li>Understand symbols +, –, ÷, =, and ×.</li> <li>Identifying purpose to find either a total (sum for addition or product for multiplication), remaining amount (difference for subtraction), or one component (number of sets or number within each set-dividend or divisor for division), depending on the words in the problem.</li> <li>Translate wording into numeric equation.</li> </ul>	MC	1
Geometry	<b>6.GM.1d1</b> Find the area of quadrilaterals	<ul style="list-style-type: none"> <li>Use square tiles to cover a rectangle.</li> <li>Count the number of tiles to determine the area.</li> <li>Use formula to find area.</li> <li>Understand the following concepts and vocabulary: base, height, area, quadrilateral.</li> </ul>	MC	2

\*MC = multiple-choice  
CR = constructed response

Domain	Standard (Core Content Connectors)	Learning Targets	Item Type*	Item Position
Statistics and Probability	<b>6.DPS.1d3</b> Select statement that matches mean, mode, median, and spread of data for 1 measure of central tendency for a given data set.	<ul style="list-style-type: none"> <li>Identify the lowest to highest value in a data set given a number line and matching symbols.</li> <li>Arrange data from lowest to highest.</li> <li>Identify the median.</li> <li>Identify the representation (plastic snap cubes, wiki sticks) of the mode.</li> <li>Use concrete materials to produce the mean (leveled plastic snap cubes).</li> <li>Identify the mode and the spread of the data using a line drawing of the distribution.</li> <li>Calculate the mean using pre-slugged template of data points.</li> <li>Understand the following concepts and vocabulary: mean, mode, and spread of data.</li> </ul>	MC	3
Ratio and Proportion	<b>6.ME.2a2</b> Solve one-step real world measurement problems involving unit rates with ratios of whole numbers when given the unit rate (3 inches of snow falls per hour, how much in 6 hours)	<ul style="list-style-type: none"> <li>Multiply using concrete objects.</li> <li>Divide using concrete objects.</li> <li>Use a ratio to solve a measurement conversion problem.</li> <li>Multiply whole numbers.</li> <li>Divide whole numbers.</li> <li>Use a pictorial representation of a ratio to solve problem.</li> </ul>	MC	4
The Number System	<b>6.NO.1d4</b> Select the appropriate meaning of a negative number in a real world situation	<ul style="list-style-type: none"> <li>Describe negative numbers as numbers less than zero.</li> <li>Understand less/same/more in context (e.g., temperature, ground level).</li> <li>Select pictorial representations of less than 0 in a real-world context.</li> </ul>	CR	5

\*MC = multiple-choice  
CR = constructed response

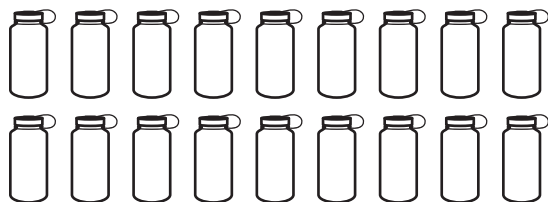


## Sample Item 1

Alignment	Core Content Connector (CCC): 6.NO.2a6 Solve problems or word problems using up to three digit numbers and any of the four operations.	
Learning Targets	Instructional Strategies	Scaffolds and Supports
<p>I can recognize the intended outcome of a word problem without an operation.</p> <p>I can combine (+) or decompose (–) with concrete objects; use counting to get the answers.</p> <p>I can combine (×) or decompose (÷) with concrete objects; use counting to get the answers.</p> <p>I can match the action of combining with vocabulary or the action of decomposing with vocabulary in a word problem.</p> <p>I can match the action of combining with vocabulary or the action of decomposing with vocabulary in a word problem.</p> <p>I understand that division is sharing or grouping numbers into equal parts and multiplication is the result of making some number of copies of the original.</p> <p>I can draw or use a representation of the word problem.</p> <p>I understand symbols +, –, ÷, =, and ×.</p> <p>I can identify a purpose to find a total (sum for addition or product for multiplication), remaining amount (difference for subtraction), or one component (number of sets or number within each set-dividend or divisor for division), depending on the words in the problem.</p> <p>I can translate wording into numeric equation.</p>	<ul style="list-style-type: none"> <li>• Task analysis for each type of problem</li> <li>• Use counting strategies.</li> <li>• Use number patterns (e.g., skip counting).</li> <li>• Modeling problem solving, identifying key words</li> <li>• Explicit teaching of borrowing and regrouping</li> <li>• Explicit teaching of carrying to the next place value</li> <li>• Explicit teaching of steps of multiplication, division, or long division (i.e., divide, multiply, subtract, drop down the next digit)</li> </ul>	<ul style="list-style-type: none"> <li>• Operation template to fill in the steps of the word problem  <math>(\quad \times \quad = \quad;</math>  <math>(\quad + \quad = \quad;</math>            a horizontal structure with boxes for carrying/regrouping)</li> <li>• Calculator</li> <li>• Interactive whiteboards or other technology to manipulate representations</li> <li>• Manipulatives or picture representations with symbols included</li> <li>• Highlighted text that provides important information/vocabulary</li> </ul>

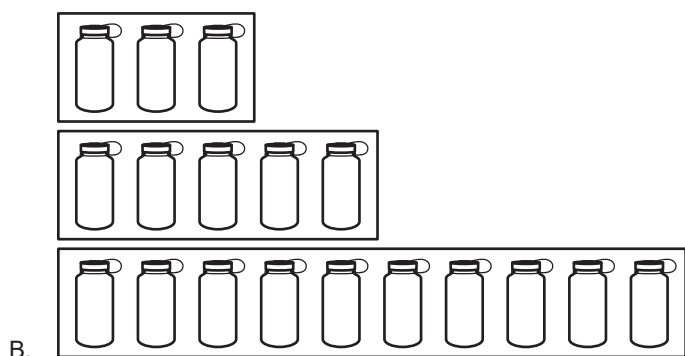
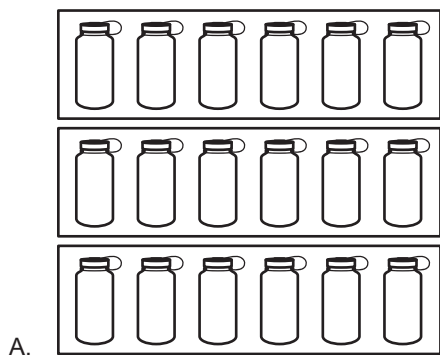
## Item 1

Mrs. Whitaker had 18 water bottles.



Mrs. Whitaker divided the water bottles into 3 equal groups.

Which picture shows the water bottles divided into 3 equal groups?



## Sample Item 2

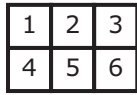
Alignment	Core Content Connector (CCC): 6.GM.1d1 Find the area of quadrilaterals.	
Learning Targets	Instructional Strategies	Scaffolds and Supports
<p>I can use square tiles to cover a rectangle.</p> <p>I can count the number of tiles to determine the area.</p> <p>I can use a formula to find area.</p> <p>I understand the following concepts and vocabulary: base, height, area, and quadrilateral.</p>	<ul style="list-style-type: none"> <li>• Explicit instruction on using formula to find area</li> <li>• Task analysis: Measure the length, put number in formula, measure height, put number in formula, use calculator to compute area</li> </ul>	<ul style="list-style-type: none"> <li>• Calculator</li> <li>• Template with formula</li> <li>• Ruler</li> <li>• Labeled figure (with numbers)</li> <li>• Grid or dot paper</li> <li>• iPad/iTouch Geo Board apps</li> <li>• 1x1 squares</li> <li>• Tiling with unit squares of the appropriate unit fraction side lengths:</li> </ul> <div data-bbox="1133 905 1349 953" data-label="Image"> </div> <ul style="list-style-type: none"> <li>• Geo Board</li> </ul> <div data-bbox="1133 1041 1349 1262" data-label="Image"> </div>

## Item 2

The area of a rectangle is the space inside the rectangle. This rectangle has been divided into unit squares.



You can count the number of unit squares inside a rectangle to find its area.



There are 6 unit squares inside the rectangle, so the area is 6 square units. This is a different rectangle that has been divided into unit squares.



What is the area of this rectangle in square units?

- A. 3 square units
- B. 10 square units

### Sample Item 3

Alignment	Core Content Connector (CCC): 6.DPS.1d3 Select statement that matches mean, mode, median, and spread of data for 1 measure of central tendency for a given data set.	
Learning Targets	Instructional Strategies	Scaffolds and Supports
<p>I can identify the lowest to highest value in a data set given a number line and matching symbols.</p> <p>I can arrange data from lowest to highest.</p> <p>I can identify the median.</p> <p>I can identify the representation of the mode.</p> <p>I can use concrete materials to produce the mean.</p> <p>I can identify the mode and the spread of the data using a line drawing of the distribution.</p> <p>I can calculate the mean using pre-slugged template of data points.</p> <p>I understand the following concepts and vocabulary: mean, mode, and spread of data.</p>	<ul style="list-style-type: none"> <li>• Task analysis using template (e.g., steps to find the mean)</li> <li>• Task analysis for the spread of the data</li> <li>• Explicit teaching of the definitions of mean, mode, and spread of data</li> <li>• Leveling the bars to find the mean (e.g., Given 6 groups of various numbers of cubes, students level the bars into 6 equal groups. The number within each group is the mean.)</li> </ul>	<ul style="list-style-type: none"> <li>• Calculator</li> <li>• Graphic organizer for mode</li> <li>• Raised line around the distribution of the data (e.g., wiki sticks)</li> <li>• Template for finding mean</li> <li>• Pre-slugged template</li> <li>• Interactive whiteboard</li> <li>• Computer software</li> <li>• Self-monitoring task analysis for student independence</li> </ul>

### Item 3

The mean is the average of a set of data.

This list shows the number of cups of water 5 students drank.

4, 5, 6, 7, 8

To find the mean, first add together the numbers.

$$4 + 5 + 6 + 7 + 8 = 30$$

The total number of cups of water these students drank was 30.

The last step to find the mean is to divide the total number of cups of water by the number of students.

$$30 \div 5 = 6$$

The mean number of cups of water students drank was 6.

This is a different list that shows the number of cups of juice 7 students drank.

1, 1, 1, 2, 2, 3, 4

The total number of cups of juice these students drank was 14.

The last step to find the mean is to divide the total number of cups of juice by the number of students.

Which equation shows the last step to find the mean number of cups of juice students drank?

A.  $14 \div 2 = 7$

B.  $14 \div 7 = 2$

C.  $14 + 7 = 21$

## Sample Item 4

Alignment	Core Content Connector (CCC): 6.ME.2a2 Solve real world measurement problems involving unit rates with ratios of whole numbers when given the unit rate (3 inches of snow falls per hour, how much in 6 hours).	
Learning Targets	Instructional Strategies	Scaffolds and Supports
<p>I can multiply using concrete objects.</p> <p>I can divide using concrete objects.</p> <p>I can use a ratio to solve a measurement conversion problem.</p> <p>I can multiply whole numbers.</p> <p>I can divide whole numbers.</p> <p>I can use a pictorial representation of a ratio to solve problem.</p>	<ul style="list-style-type: none"> <li>• Task analysis for problem solving (formula)</li> <li>• Provide a calendar. The teacher says there are seven days in one week and counts out each day (1–7) and points to the calendar. Say, “Show me one week.” Say, “There are seven days in one week for a ratio of 7:1 (days:week). So, how many days are in three weeks?”</li> <li>• Rates such as miles per hour, ounces per gallon, and students per bus should be reinforced. Using ratio tables develops the concept of proportion. Compare equivalent ratios; present real-life problems involving measurement units that need to be converted; represent measurement conversions with models such as ratio tables, T-charts, or double number line diagrams.</li> </ul>	<ul style="list-style-type: none"> <li>• Premade function table</li> <li>• Conversion chart</li> <li>• Calendar</li> <li>• Calculator</li> <li>• Counters and graphic representation of ratios</li> </ul>

#### Item 4

Lee painted 4 equal-sized walls in 12 hours.

$$4 : 12$$

Lee painted each wall at the same rate.

How long did it take Lee to paint 1 wall?

- A. 3 hours
- B. 4 hours
- C. 8 hours

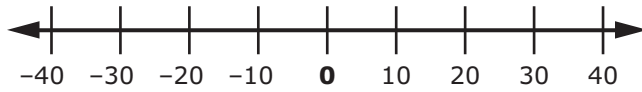


## Sample Item 5

Alignment	Core Content Connector (CCC): 6.NO.1d4 Select the appropriate meaning of a negative number in a real world situation.	
Learning Targets	Instructional Strategies	Scaffolds and Supports
<p>I can describe negative numbers as numbers less than zero.</p> <p>I understand less/same/more in context of temperature, ground level, sea level.</p> <p>I can select pictorial representations of less than 0 in a real-world context.</p>	<ul style="list-style-type: none"> <li>• Teach using real-world context: Use a poster and paint a tree with roots, a thermometer, or a boat on the ocean, with water and fish below. Use stories to talk about above and below ground/water level or freezing and the meaning of a negative value. Then introduce a number line and teach, beginning with zero. Numbers increase in value to the right and decrease in value to the left, becoming negative when to the left of zero.               <ul style="list-style-type: none"> <li>– Other real-world activities: credit and debit examples, temperature, calories, supply/demand</li> </ul> </li> <li>• Model the thinking within context (e.g., tug of war—could do it physically or on computer with number line, temperature, above/below sea level).</li> </ul>	<ul style="list-style-type: none"> <li>• Visual template with vertical or horizontal number lines on the picture (e.g., Build a pool. Dig a 6-foot hole: Ground level would be 0, bottom of hole -6.)</li> <li>• Interactive whiteboards or other technology to manipulate representations</li> </ul>

### Item 5

This number line shows positive and negative numbers.



The numbers to the right of 0 are positive.

The numbers to the left of 0 are negative.

The students in a class played a game. For incorrect answers, they lost points. Martin's final score was less than 0 points in the game.

Use the small object to show a point on the number line that could represent Martin's final score.

- A. The student provided the correct answer.
- B. The student did not provide the correct answer.

# **Mathematics Grade 7**

## Grade 7 Sample Item Blueprint

Domain	Standard (Core Content Connectors)	Learning Targets	Item Type*	Item Position
<b>Ratio and Proportion</b>	<b>7.NO.2f2</b> Determine if two quantities are in a proportional relationship using a table of equivalent ratios or points graphed on a coordinate plane. Analyze provided information (e.g., a graph or table) to describe the relationship between two quantities.	<ul style="list-style-type: none"> <li>Recognize the meaning of the placement of numbers in a proportion for a given situation.</li> <li>Represent the proportion of a subgroup of objects (e.g., red hats) to the total number of objects (red and green hats).</li> <li>Use a table with visuals or objects to represent proportions to determine whether two numbers (e.g., 10:1) are the same proportional relationship as previous numbers (e.g., 2:1, 4:2).</li> <li>Understand the following vocabulary: ratio (e.g., 2:1, 1:1), equivalent, coordinate plane.</li> </ul>	MC	1
<b>The Number System</b>	<b>7.NO.2i1</b> Solve multiplication problems with positive/negative numbers	<ul style="list-style-type: none"> <li>Divide an array of objects into groups to model the role of equal groups in a multiplication situation.</li> <li>Create an array of objects for the mathematical equation and match answer symbol (+ or -) following multiplication rules for an equation.</li> <li>Create pictorial array for the mathematical equation and match answer symbol (+ or -) following multiplication rules for an equation.</li> <li>Understand the following concepts, symbols, and vocabulary: positive number, negative number.</li> </ul>	MC	2
<b>Expressions and Equations</b>	<b>7.PRF.1g2</b> Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities	<ul style="list-style-type: none"> <li>Identify situation in which quantities are equal or unequal.</li> <li>Record/replace a variable in an equation with a fact from a story on a graphic organizer.</li> <li>Create a pictorial array of a simple equation to translate wording.</li> <li>Understand the following concepts, vocabulary, and symbols: +, −, ×, ÷, =, ≠, &lt;, &gt;, equation, equal, and inequality.</li> </ul>	MC	3

\*MC = multiple-choice

CR = constructed response

Domain	Standard (Core Content Connectors)	Learning Targets	Item Type*	Item Position
Geometry	<b>7.ME.2d1</b> Apply formula to measure area and circumference of circles	<ul style="list-style-type: none"> <li>Identify the radius and diameter of a circle.</li> <li>Multiply decimals and whole numbers.</li> <li>Recognize the meaning of terms used in formulas as labeled representations related to circles.</li> <li>Understand the following concepts and vocabulary: circumference, area, pi, and radius.</li> </ul>	MC	4
Statistics and Probability	<b>7.DPS.1k1</b> Analyze graphs to determine or select appropriate comparative inferences about two samples or populations	<ul style="list-style-type: none"> <li>Understand basic information from simple graphs (e.g., interpret a bar graph using the understanding that the taller column on a graph has a higher frequency, the shorter column on a graph has a lower frequency).</li> <li>Identify a representation of two bar graphs (one category apiece) as having greater or less frequency of members/ events related to a single variable (e.g., compare number of boys in soccer to girls in two graphs).</li> <li>Make a comparison between two graphs.</li> <li>Identify a pictorial representation of two bar graphs (one category apiece) as having greater or less frequency of members/events related to a single variable (e.g., compare number of boys in soccer to girls in two graphs).</li> <li>Understand the concept, symbols, and vocabulary for: more, less, higher, and lower.</li> </ul>	CR	5

\*MC = multiple-choice  
CR = constructed response

## Sample Item 1

Alignment	<b>Core Content Connector (CCC): 7.NO.2f2</b> Determine if two quantities are in a proportional relationship using a table of equivalent ratios or points graphed on a coordinate plane. Analyze provided information (e.g., a graph or table) to describe the relationship between two quantities.	
Learning Targets	Instructional Strategies	Scaffolds and Supports
<p>I can recognize the meaning of the placement of numbers in a proportion for a given situation.</p> <p>I can represent the proportion of a subgroup of objects to the total number of objects.</p> <p>I can use a table with visuals or objects to represent proportions to determine whether two numbers (e.g., 10:1) are the same proportional relationship as previous numbers (e.g., 2:1, 4:2).</p> <p>I know the following vocabulary: ratio, equivalent, and coordinate plane.</p>	<ul style="list-style-type: none"> <li>• Use counters or objects to demonstrate a proportion.</li> <li>• Generate a graph of values that are proportional.</li> <li>• Teach skill using a variety of context (e.g., measurement, prices, pizza slices per person).</li> </ul>	<ul style="list-style-type: none"> <li>• Calculator</li> <li>• Assistive technology</li> <li>• Interactive whiteboard</li> <li>• Computer software</li> <li>• Real-world/meaningful context</li> </ul>

### Item 1

This tally chart shows the number of coins Charlie had in his pocket.

**Coins in  
Charlie's Pocket**

Coin	Number of coins
Nickel	
Penny	<del>    </del>

Which coin did Charlie have more of?

- A. nickel
- B. penny

## Sample Item 2

Alignment	Core Content Connector (CCC): 7.NO.2i1 Solve multiplication problems with positive/negative numbers.	
Learning Targets	Instructional Strategies	Scaffolds and Supports
<p>I can create an array of objects into groups to model the role of equal groups in a multiplication situation.</p> <p>I can create an array of objects for the mathematical equation and match answer symbol (+ or -) following multiplication rules for an equation.</p> <p>I can create pictorial array for the mathematical equation and match answer symbol (+ or -) following multiplication rules for an equation.</p> <p>I understand the following concepts, symbols, and vocabulary: positive number and negative number.</p>	<ul style="list-style-type: none"> <li>• Explicit rules for multiplying positive and negative numbers (e.g., signs are same, product is positive; signs are different, product is negative)</li> <li>• Explicit instruction on multiplication</li> <li>• Task analysis (e.g., steps to solve multiplication problem and then add steps to review signs, apply rule, and select answer)</li> </ul>	<ul style="list-style-type: none"> <li>• Number line</li> <li>• Calculator</li> <li>• Cheat sheet of rules</li> <li>• Graphic organizer</li> <li>• Assistive technology</li> <li>• Manipulatives</li> <li>• Interactive whiteboard technology</li> </ul>



## Item 2

When a negative number is multiplied by a negative number, the answer is always a positive number.

$$(-) \times (-) = (+)$$

This is a multiplication problem.

$$(-3) \times (-7) = (\underline{\quad})$$

Start by multiplying 3 by 7 to solve this problem. The answer is 21. Then look at the symbols before the numbers 3 and 7. The answer is positive since both numbers have negative symbols.

$$(-3) \times (-7) = (+21)$$

This is a different multiplication problem.

$$(-9) \times (-4) = (\underline{\quad})$$

What does  $(-9) \times (-4)$  equal?

- A. **-36**
- B. **-13**
- C. **+36**

## Sample Item 3

Alignment	Core Content Connector (CCC): 7.PRF.1g2 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.	
Learning Targets	Instructional Strategies	Scaffolds and Supports
<p>I can identify situations in which quantities are equal or unequal.</p> <p>I can record/replace a variable in an equation with a fact from a story on a graphic organizer.</p> <p>I can create a pictorial array of a simple equation to translate wording.</p> <p>I understand the following concepts, vocabulary, and symbols: +, −, ×, ÷, =, ≠, &lt;, &gt;, equation, equal, and inequality.</p>	<ul style="list-style-type: none"> <li>• Explicitly teach equality vs. inequality.</li> <li>• Explicitly teach strategies for determining the operation required to solve a single step real-world problem.</li> <li>• Task analysis               <ul style="list-style-type: none"> <li>– Read a story problem that is personally relevant to the student.</li> <li>– Identify what question is being asked (define <b>x</b>).</li> <li>– Identify the facts and the operation (+, −, ×, ÷) in the story.</li> <li>– Provide graphic organizer or template to organize the facts and write.</li> <li>– Write an equation to solve for <b>x</b>.</li> <li>– Add, subtract, multiply, or divide the number/value to both sides of the equation.</li> <li>– Solve the equation for <b>x</b>.</li> <li>– Show the answer as <b>x</b> = ____.</li> </ul> </li> <li>• Explicit teaching of how to identify what question is being asked (e.g., what <b>x</b> represents in the story problem).</li> <li>• Provide an equation for which the student will determine a story problem.</li> <li>• Create a personally relevant story; provide graphic organizers as a means for organizing students' work; task analytic instruction to break down skills and chain them in order to isolate each step in solving the math task.</li> <li>• Adding and subtracting strategies</li> <li>• Multiplying and dividing strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Counters</li> <li>• Number lines</li> <li>• Multiplication tables</li> <li>• Calculator</li> <li>• Interactive whiteboard</li> </ul>

### Item 3

A variable is a letter or symbol that stands for an unknown quantity.

Andy had 45 books. He had 30 novels. The rest of the books were comic books.

This equation can be used to figure out how many comic books Andy had.

$$30 = 45 - c$$

The variable **c** in this equation stands for the number of comic books Andy had.

How many comic books did Andy have?

- A. 15 comic books
- B. 30 comic books
- C. 75 comic books

## Sample Item 4

Alignment	Core Content Connector (CCC): 7.ME.2d1 Apply formula to measure area and circumference of circles.	
Learning Targets	Instructional Strategies	Scaffolds and Supports
<p>I can identify the radius and diameter of a circle.</p> <p>I can multiply decimals and whole numbers.</p> <p>I can recognize the meaning of terms used in formulas as labeled representations related to circles.</p> <p>I understand the following concepts and vocabulary: circumference, area, pi, and radius.</p>	<ul style="list-style-type: none"> <li>• Task analysis with formula</li> <li>• Say, "Here is a circle. Here is the circumference." Trace the circumference with your finger. Direct the student, "Show me circumference."</li> <li>• Use picture cards and number sentences with formulas.</li> </ul>	<ul style="list-style-type: none"> <li>• Calculator</li> <li>• Graphic of circle</li> <li>• Tiles to place inside of circle to represent area</li> <li>• Interactive whiteboard or other software</li> <li>• Rolling counter, string, or yarn to measure circumference</li> <li>• Assistive technology</li> <li>• Real-world materials</li> </ul>

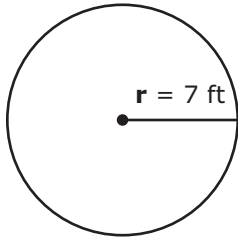
**Item 4**

This is the formula for finding the area of a circle.

$$\text{Area} = \pi \times r \times r$$

The variable  $r$  in this formula stands for the radius.

This circle has a radius of 7 feet.



What is the area of this circle in square feet?

- A.  $7\pi$  square feet
- B.  $14\pi$  square feet
- C.  $49\pi$  square feet

## Sample Item 5

Alignment	Core Content Connector (CCC): 7.DPS.1k1 Analyze graphs to determine or select appropriate comparative inferences about two samples or populations.	
Learning Targets	Instructional Strategies	Scaffolds and Supports
<p>I understand basic information from simple graphs.</p> <p>I can identify a representation of two bar graphs as having greater or less frequency of members/events related to a single variable.</p> <p>I can make a comparison between two graphs.</p> <p>I can identify a pictorial representation of two bar graphs (one category apiece) as having greater or less frequency of members/events related to a single variable.</p> <p>I understand the concept, symbols, and vocabulary for: more, less, higher, and lower.</p>	<ul style="list-style-type: none"> <li>• Task analysis to analyze graph (e.g., look at 1st graph, identify the column of interest, mark, look at 2nd graph).</li> <li>• Identify the column of interest, mark, and determine the facts that the graph shows).</li> <li>• Group discussion forum, with teacher model, to create arguments based on graphs</li> <li>• Include discussions that model the analysis of two graphs and encourage student to provide evidence for the inference (e.g., note minimum and maximum values [range], use measures of central tendency, and note any key points and relationships in the graph or data set).</li> </ul>	<ul style="list-style-type: none"> <li>• Raised line around the distribution of the data (e.g., wiki sticks)</li> <li>• Assistive technology/voice output devices</li> <li>• Interactive whiteboard</li> <li>• Highlighters</li> <li>• Graphs that can be manipulated to make comparisons</li> <li>• Self-monitoring task analysis for student independence</li> <li>• Templates with sentence starters</li> </ul>

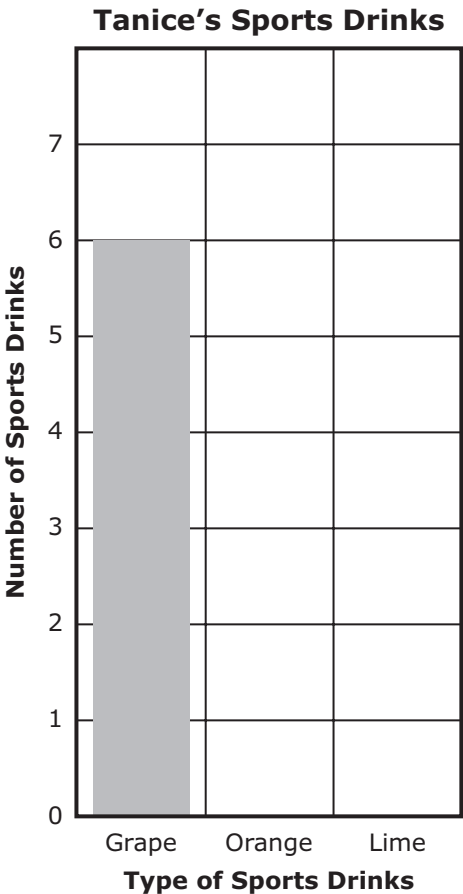
**Item 5**

This data table shows the numbers of different types of sports drinks in Tanice’s refrigerator.

**Tanice’s Sports Drinks**

Type of sports drink	Number of sports drinks
Grape	6
Orange	2
Lime	5

This incomplete bar graph can be used to show the same information as the data table.



The data table and bar graph show that Tanice had 6 grape sports drinks.

The data table shows that Tanice had 2 orange sports drinks.

Two tiles need to be moved into the column labeled “Orange” in the bar graph.

Now use the tiles to show how many lime sports drinks Tanice had. You may not need all of the tiles.

- A. The student provided the correct answer.
- B. The student did not provide the correct answer.

