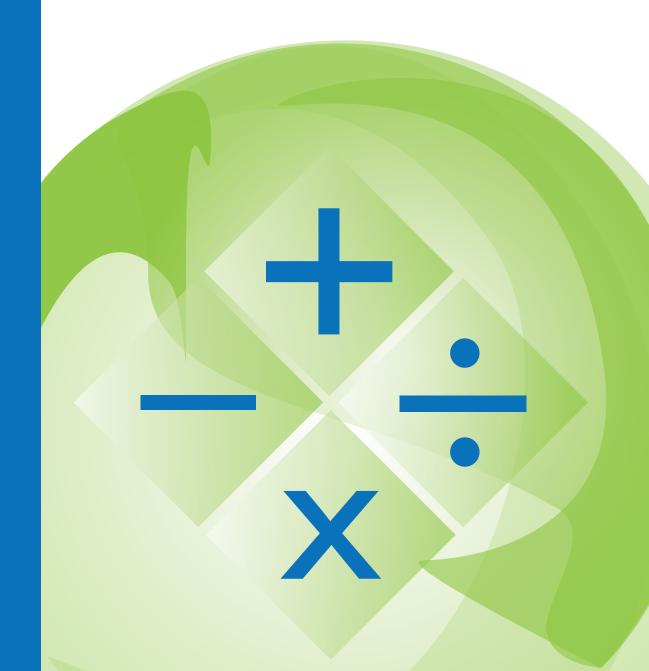


Mathematics Item Sampler Grade 3



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OVERVIEW

This document contains samples of test items similar to those on the Wisconsin Forward Mathematics Exam. Each sample test item has been through a rigorous review process by DRC, Wisconsin Educators, and a third party, to ensure alignment with the Wisconsin Academic Standards. These items will not be used on the state assessment and may, therefore, be used in Wisconsin for professional development and student practice. The items in this document illustrate a sample of the content and types of items that students will encounter on the Forward Exam. A Summary Data table in the Appendix section identifies the alignment (standard measured), answer key, depth of knowledge, and annotations for each item.

CONNECTION TO THE STANDARDS

Wisconsin Academic Standards for Mathematics are available on the <u>DPI webpage</u>. Test items require students to prove their knowledge and abilities as stated in the standards.

HOW DO I USE THIS BOOK?

Professional Development

Sample items are useful as educators engage in conversations about what students are expected to know and be able to do to demonstrate proficiency on the state assessments relative to the Wisconsin Academic Standards. Sample items can inform discussions about state and local standards, curriculum, instruction, and assessment.

Improving Instruction

Teachers may use sample items in classroom activities that help students understand how to

- review key vocabulary;
- solve problems;
- determine which answer choices are correct, which are incorrect, and why;
- approach long and/or multistep tasks;
- use good test-taking strategies.

Student Practice

Students may perform better and with less anxiety if they are familiar with the format of the test and with the types of items they will be required to answer. The Forward Exam is an online assessment; students will benefit from the use of the <u>Online Tools Training</u> in order to work within the system interface to answer items as they will appear on the assessment, as well as utilize the tools available to them in the online system.

Note: A student's score on the practice test cannot be converted to a scale score, used to predict performance on the Forward Exam, or used to make inferences about the student's learning.

Test Preparation

While using the Item Sampler for test preparation, care should be taken that this is done in a balanced manner and one that helps to enhance student knowledge of subject matter as well as test performance. Please note that test preparation is only useful to the extent that it is also teaching content area knowledge and skills. Therefore, the use of this resource for test preparation is of limited value to students due to the narrow opportunity for content learning. It is very important to ensure that teachers are teaching to the curriculum and not to the test, as teaching to the test narrows the focus of instruction to only that content covered by the test.

DEPTH OF KNOWLEDGE

Hess' Cognitive Rigor Matrix & Curricular Examples: Applying Webb's Depth-of-Knowledge Levels to Bloom's Cognitive Process Dimensions — M-Sci

Revised Bloom's	Webb's DOK Level 1	ised Bloom's Webh's DOK Level 1 Webh's DOK Level 2 Webh's DOK Level 3 Webb's DOK Level 4	Webb's DOK Level 3	Webb's DOK Level 4
Taxonomy	Recall & Reproduction	Skills & Concepts	Strategic Thinking/ Reasoning	Extended Thinking
Remember Retrieve knowledge from long-term memory, recognize, recall, locate, identify	Recall, observe, & recognize facts, principles, properties Recall identify conversions among representations or numbers (e.g., customary and metric measures)			
Understand	 Evaluate an expression 	 Specify and explain relationships 	 Use concepts to solve <u>non-routine</u> 	 Relate mathematical or
Construct meaning, clarify,		(e.g., non-examples/examples;		scientific concepts to other
paraphrase, represent,	Solve a one-step problem	cause-ellect) Make and record observations	using supporting evidence	or other concepts
translate, illustrate, give examples classify categorize				Develop generalizations of the
summarize, generalize, infer a	words, pictures or symbols		 Explain thinking when more than one 	results obtained and the
logical conclusion (such as	Read, write, compare decimals			strategies used (from
from examples given), predict, compare/contrast match like	iii scienuiic notauori	Use models /diagrams to represent	concepts	investigation of readings) and apply them to new problem
ideas, explain, construct		or explain mathematical concepts Make and explain estimates		situations
Apply	 Follow simple procedures 	 Select a procedure according to 	 Design investigation for a specific 	 Select or devise approach
Carry out or use a procedure		criteria and perform it		among many alternatives to
in a given situation; carry out	o calculate, filleasure, apply a rule		Conduct a designed investigation	
(apply to a familiar task), or	(e.g., louridirig) Apply algorithm or formula (e.g.,	Retrieve information from a table.	Ose concepts to solve non-routine problems	specifies a problem, identifies
task	area, perimeter)		 Use & show reasoning, planning, 	solution paths, solves the
	 Solve linear equations 	problem requiring multiple steps	and evidence	problem, and reports results
		 Translate between tables, graphs, 	Translate between problem &	
	vithin and between customary	words, and symbolic hotations (e.g., graph data from a table)	symbolic notation when not a direct translation	
	and metric measures	 Construct models given criteria 		
Analyze	 Retrieve information from a table 	Categorize, classify materials, data,	 Compare information within or 	Analyze multiple sources of
Break into constituent parts,	or graph to answer a question	figures based on characteristics	across data sets or texts	
determine how parts relate,	information is contained in	Compare/ contrast figures or data	data citing evidence	themes
dillerentiate between relevant-irrelevant			Generalize a pattern	Gather, analyze, and evaluate
distinguish, focus, select.	table, graph, T-chart, diagram)	organize & display data		information
organize, outline, find	 Identify a pattern/trend 	 Interpret data from a simple graph Extend a pattem 	 Analyze similarities/differences between procedures or solutions 	
Evaluate			Cite evidence and develop a logical	o Gather, analyze, & evaluate
Make judgments based on			argument for concepts or solutions	
criteria, check, detect			Describe, compare, and contrast solution methods	conclusions Apply indepstanding in a poyel
judge, critique			Verify reasonableness of results	
Create	Brainstorm ideas, concepts, or	Generate conjectures or hypotheses	Synthesize information within one	Synthesize information across
Reorganize elements into	perspectives related to a topic	knowledge and experience	o Formulate an original problem given a	Design a mathematical model
generate hypothesize		-		to inform and solve a practical
design, plan, construct,			 Develop a scientific/mathematical model for a complex situation 	or abstract situation
ploduce				

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ITEM TYPES

The Wisconsin Forward Exam has multiple types of test items. However, because this item sampler is in a format that can be printed, the majority of its items are multiple-choice. In the Forward Exam, there will be a more diverse array of item types, including the ones described below.

Selected-Response (SR) Items

Selected-Response (SR) items are an efficient method for measuring a broad range of content, and can be used to assess a variety of skills. Three types of SR items are used on the online assessments: Multiple-Choice (MC), Enhanced Selected-Response (ESR), and Evidence-Based Selected-Response (EBSR). In all cases, SR items require that a student determines the correct answer(s) to the item posed from a provided list. While it is still possible for a student to perform some work directly related to determining the correct answer, the student is not required to generate the content of the answer when responding to a Selected-Response item. An exception to this requirement is Mathematics Short-Response/Gridded-Response items where students will be required to enter a short alphanumeric response.

Multiple-Choice (MC) Items

Multiple-Choice (MC) items on Wisconsin's assessments have four answer choices, including three distractors and one correct answer. Distractors for Mathematics represent common misconceptions, incorrect logic, incorrect application of an algorithm, computational errors, etc. Distractors for English Language Arts (ELA) are written to represent a common misinterpretation, predisposition, unsound reasoning, casual reading, etc. A correct response to an MC item is worth one raw point. The process skills, directives, and action statements within an MC item also specifically align with the Wisconsin Academic Standards. Multiple-Choice items are present in all grades and are used with all content areas.

Multiple-Choice items can be further defined by being linked to, or independent from, a stimulus source. Items that operate independent of a stimulus are also known as "stand-alone MC." Stand-alone items may still have tables, graphs, or other information used in support of the stem. English Language Arts uses a mixture of MC items linked to a stimulus passage and some that are stand-alone. For Mathematics, all MC items are considered stand-alone.

Enhanced Selected-Response (ESR) Items

The Enhanced Selected-Response (ESR) items are multi-part autoscored items that may consist of varying combinations of Multiple-Choice, Multiple-Response, Gridded-Response, Completion or Short-Answer, and Technology-Enhanced items that explore in greater depth and cognitive complexity the knowledge, skills, and abilities specified by the standards of each content area. Typically, this item type has a common focus and explores authentic problem-solving skills. An example of a Statistics and Probability Mathematics ESR item would utilize a data-table stimulus with Part A using a Technology-Enhanced (TE) graphing tool to create a bar graph of the data presented and Part B asking students to calculate the mean of the data using a Short-Response item.

Two-Part Evidence-Based Selected-Response (EBSR) Items

The Evidence-Based Selected-Response (EBSR) items have two parts and are designed to elicit a response based on what a student has read from a stimulus passage. EBSR items may be linked to a stimulus passage or to a stimulus passage set. There are several variations of two-part EBSR items, but all two-part EBSR items have an Accuracy piece and an Evidence piece.

The Accuracy piece of the item is Part A. Part A of a typical EBSR item will be similar to a standard MC test item. A student analyzes a passage and chooses a single, best (correct) answer from four answer choices. Part B of a typical EBSR item will elicit evidence from the stimulus passage and will require that the student selects one or more correct answers based on the response the student provided to Part A. Part B is also different from Part A in that it may have five or six answer options rather than just four answer options typical of an MC item and more than one option may be correct.

Technology-Enhanced (TE) Items

Technology-Enhanced (TE) item types share the same functional structure as traditional paper and pencil test items; however, the expansive features and functions of a computer-based medium allow for the incorporation of technical enhancements into traditional elements of a test item, such as the item stem, the stimulus (if any), the response area, or a combination of all three. TE items are used in the content areas of ELA, Mathematics, and Science.

Item types such as drag-and-drop, hot spot, and in-line selection of multiple answers from drop-down menus broaden item presentation with engaging, interactive open-ended items.

A wide variety of TE item types will be present on the Wisconsin Forward Exam, including, but not limited to:

- Clock Input, where a student is able to add an hour hand and a minute hand to the clock;
- Angle Draw Input, where given a base line, the student can represent an angle;
- Short Input, where there are many types of short inputs that can be used (The number of characters is usually limited to a relatively small number in order to facilitate auto-scoring. The types of characters allowed can also be limited to text only, numbers only, or a mix. An equation editor can be utilized to assist the student in creating something as basic as a fraction or something more complex. The available symbols and templates in the equation builder can be customized for a testing program. Certain Short Input items can also be used in a paper-based test (PBT) as a Gridded-Response item.);
- Bar Graph Input, where students can produce bar graphs with prepopulated titles, labels, and scales, or the system can allow the student to populate them (The number of bars and the color of the bars is predetermined by the system. A reset feature is available that allows the student to start over from the original configuration.);
- Number Line Input, where students can create a graph that might involve plotting points only or points and lines (Both solid and open "dots" are available as well as line segments and rays. Number line graphs can have prepopulated titles, labels, and scales or can allow the student to populate them.);
- Coordinate Graph Input, which allows for the graphing and labeling of points and lines (Regions, determined by plotted lines, can be shaded. Solid and open "dots" as well as solid and dashed lines are available to the student. Coordinate graphs can have prepopulated titles, labels, and scales or can allow the student to populate them.);
- Line Plot Input, which is used as another way to graphically represent data (The basic structure is provided for the student. Certain labeling on the line plot can be done by the student. A reset feature is available that allows the student to start over from the original configuration.);
- **List Input**, a combination of the short input described earlier that allows the student to add input boxes (For example, it can be used for describing the steps in a process without revealing to the student the number of steps needed. The added input boxes can be rearranged and/or deleted.);
- **Drag-and-Drop Input**, a wide variety of ways are available to utilize a drag-and-drop input (The main difference between it and a drag-and-paste is that each dragable entity can be used only once with a drag-and-drop input. A reset feature is available that allows the student to start over from the original configuration.);

- **Drag-and-Paste Input**, a wide variety of ways are available to utilize drag-and-paste input (The main difference between it and a drag-and-drop is that each dragable entity can be used more than once with a drag-and-paste input. A reset feature is available that allows the student to start over from the original configuration.);
- **Drop-Down List Input**, allows for the creation of a situation where a great deal of information about a student's grasp of a concept can be determined with a single item (Students can be asked to choose from three function types, four number of real zero responses, and two inverse function responses. For one function alone, this provides 24 possible answer combinations. With the three functions, a considerable amount of information can be gained, making this almost an open-ended item type.);
- **Pictograph using Drag-and-Paste**, actually another example of drag-and-paste, but is worth mentioning on its own as it is a type of graphing often used at lower grade levels;
- Circle Graph, a graph that allows the student to create and label the "wedges" that represent the data (Circle graphs can have a prepopulated title or can allow the student to populate it. The color of the "wedges" is predetermined by the system.);
- **Matching**, allows for the use of text or graphics as the matching objects (The student clicks on one object and then clicks on a second object to connect them.);
- Highlighting Text, allows for designated text to be highlighted in a word, phrase, sentence, or paragraph; and the
- **Graphic Modification Hot Spot**, allows for one image to replace another image when a hot spot is clicked.

Text-Dependent Analysis (TDA) Items

The English Language Arts (ELA) section of the Forward Exam presents students with a Text-Dependent Analysis (TDA) item. A TDA is a text-based analysis based on a single passage or a multiple passage set that each student has read during the assessment. The passage or passage set will consist of either literary or informational text. In order to successfully answer a TDA, students must analyze and use information from the passage(s) to plan a comprehensive, holistic response. Students will then write their response including supporting evidence from the passage(s). Students will have up to 5,000 characters to formulate their response. Students' responses are scored using a rubric that takes into account both the composition and the conventions of the student's writing.

The TDA portion of the Forward Exam requires students to read the text and then respond in writing in one of two ways:

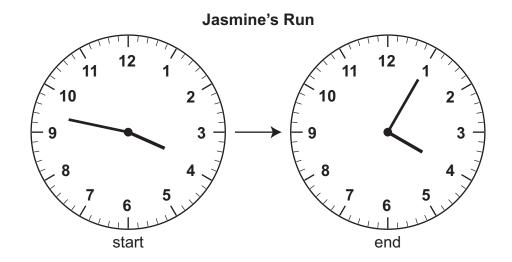
- identifying and explaining a theme or central idea, using textual evidence to support the claim about what that theme or central idea is, or
- analyzing the development of an event, character, central ideas, or theme, using textual evidence to support the explanation and analysis.

TDA Item Samplers are available at https://dpi.wi.gov/assessment/forward/sample-items.

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Answer the items below.

1. Jasmine went for a run after school. The clocks show the time she started and ended her run.



How long did Jasmine run?

- A. 18 minutes
- B. 42 minutes
- C. 78 minutes
- D. 102 minutes

2. Andy needs to find the value of n in the division equation shown.

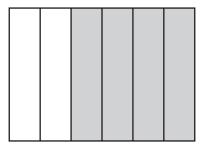
$$n \div 9 = 3$$

Determine whether Andy could use each of the multiplication equations in the table to find the value of *n*.

	Yes	No
$n \times 3 = 9$		
$3 \times 9 = n$		
$n \times 9 = 3$		
$9 \times 3 = n$		

3. What is 604 – 286?

4. A figure is shown.



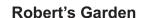
Which fraction represents the shaded area of the figure?

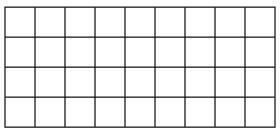
- A. $\frac{2}{6}$
- B. $\frac{2}{4}$
- C. $\frac{4}{6}$
- D. $\frac{4}{2}$

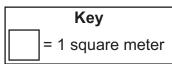
5. Three shapes are shown in the table. Determine whether each shape is a rhombus, a rectangle, and/or a quadrilateral. Be sure to select **all** of the names that describe each shape.

Rhombus	Rectangle	Quadrilateral

6. A diagram of Robert's garden is shown.



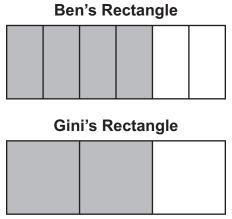




What is the area, in square meters, of Robert's garden?

- A. 13
- B. 26
- C. 36
- D. 40
- 7. There are 48 students signed up for swimming lessons. The teacher splits the students into 8 equal groups. Which expression could the teacher use to find the number of students in each group?
 - A. 48 + 8
 - B. 48 8
 - C. 48×8
 - D. 48 ÷ 8

8. Ben and Gini each drew a rectangle on the sidewalk with chalk. Each person's rectangle is the same size. Ben colored in $\frac{4}{6}$ of his rectangle. Gini colored in the same amount of her rectangle, as shown.



What fraction equivalent to $\frac{4}{6}$ represents the shaded part of Gini's whole rectangle?

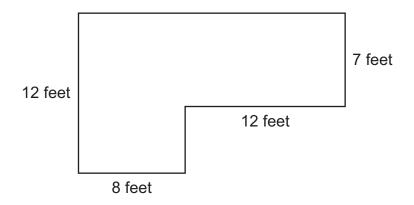




Answer the items below.

1. Tom is putting a fence around his garden. A diagram of Tom's garden is shown.

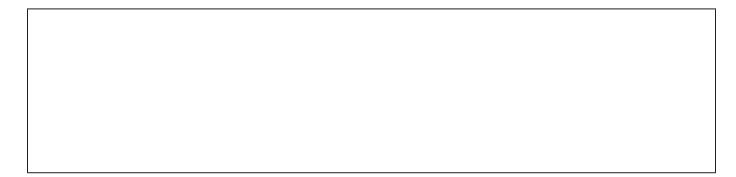
Tom's Garden



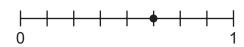
How many feet of fencing does Tom need for his garden?

- A. 39
- B. 44
- C. 59
- D. 64

2. There are 6 bookshelves in Miss Miller's classroom. Each bookshelf has 60 books on it. How many books are on the bookshelves in Miss Miller's classroom?



3. A number line is shown.



Which fraction represents the point on the number line?

- A. $\frac{3}{7}$
- B. $\frac{3}{8}$
- C. $\frac{5}{7}$
- D. $\frac{5}{8}$

4. Determine whether each figure is a quadrilateral or is not a quadrilateral.

Quadrilateral	Not a Quadrilateral

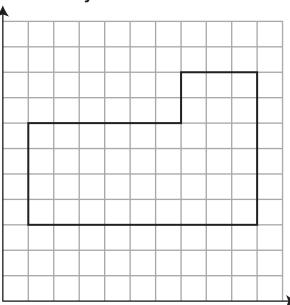
- 5. Clara brings 5 boxes of cupcakes to school. Each box contains the same number of cupcakes. There are 3 cupcakes remaining after Clara shares 27 cupcakes with her classmates. How many cupcakes were in each of the boxes Clara brought to school?
 - A. 6
 - B. 8
 - C. 15
 - D. 30
- **6.** There are 185 books on a bookshelf. Rounded to the nearest ten, how many books are on the bookshelf?
 - A. 100
 - B. 180
 - C. 190
 - D. 200

7. Henry draws the shape of his classroom floor on a grid. He divides the shape into 2 rectangles. He then writes the expression shown to find the area of the shape, in square units.

$$(4 \times 6) + (6 \times 3)$$

Draw a line on the grid to divide the shape into Henry's 2 rectangles.







SUMMARY DATA

4.445						
Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations		
Session ²	1					
1	3.MD.1	А	2	The question asks the student to tell an interval of time.		
				A. Correct. The student adds 18 minutes from the start time to the end time.		
				B. Incorrect. The student subtracts 5 from 47.		
				C. Incorrect. The student adds an extra hour.		
				D. Incorrect. The student adds an extra hour and subtracts 5 from 47.		
2	3.OA.6	See Annotations	2	The question asks the student to rewrite a division equation as a multiplication equation.		
				To receive full credit, the student must choose No, Yes, No, Yes.		
3	3.NBT.2	Exemplar:	1	The question asks the student to find the difference between two numbers.		
		318		To receive full credit, the student must enter 318 or an equivalent value.		
4	3.NF.1	С	1	The question asks the student to use a model to show a fraction.		
				A. Incorrect. The student chooses a fraction that shows the unshaded area.		
				B. Incorrect. The student estimates the shaded area.		
				C. Correct. The student chooses a fraction that shows the 4 shaded parts out of the 6 total parts.		
				D. Incorrect. The student compares the shaded parts to the parts not shaded.		

Sample	Alignment	Answer	Depth of	Annotations
Number	, and the second	Key	Knowledge	
5	3.G.1	See Annotations	2	The question asks the student to match shapes.
				To receive full credit, the student must choose Rhombus and Quadrilateral for the first shape; Rhombus, Rectangle, and Quadrilateral for the second shape; and Rectangle and Quadrilateral for the third shape.
6	3.MD.6	С	1	The question asks the student to find the area of a rectangle.
				A. Incorrect. The student adds the length and width.
				B. Incorrect. The student finds the perimeter of the rectangle.
				C. Correct. The student adds the unit cubes inside the rectangle.
				D. Incorrect. The student finds the area by using a 4 by 10 rectangle.
7	3.OA.2	D	2	The question asks the student to write an expression to find the number of groups.
				A. Incorrect. The student adds the two numbers.
				B. Incorrect. The student subtracts the two numbers.
				C. Incorrect. The student multiplies the two numbers.
				D. Correct. The student divides the two numbers.
8	3.NF.3a	Exemplar: $\frac{2}{3}$	1	The question asks the student to find an equivalent fraction using models.
				To receive full credit, the student must enter $\frac{2}{3}$.

Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations
Session 2	2			
1	3.MD.8	D	2	The question asks the student to find the perimeter of a garden.
				A. Incorrect. The student adds the measurements in the diagram.
				B. Incorrect. The student adds the measurements in the diagram and the missing side length of 5 feet.
				C. Incorrect. The student adds the measurements in the diagram and the missing side length of 20 feet.
				D. Correct. The student adds the measurements in the diagram and the missing side lengths of 20 feet and 5 feet.
2	3.NBT.3	Exemplar:	2	The question asks the student to find the total number of books given the number of books in each group.
				To receive full credit, the student must enter 360 or an equivalent value.

Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations
3	3.NF.2b	D	1	The question asks the student to show the location of a fraction on a number line.
				A. Incorrect. The student counts the number of tick marks from 1 as the numerator and the number of tick marks between 0 and 1 as the denominator.
				B. Incorrect. The student counts the number of tick marks from 1 as the numerator.
				C. Incorrect. The student counts the number of tick marks between 0 and 1 for the denominator.
				D. Correct. The student counts the number of tick marks after 0 as the numerator, and the total number of tick marks after 0 and to 1 as the denominator.
4	3.G.1	See Annotations	2	The question asks the student to classify shapes as a quadrilateral or not a quadrilateral.
				To receive full credit, the student must choose Quadrilateral, Quadrilateral, Not a Quadrilateral, Quadrilateral, Not a Quadrilateral, and Quadrilateral.
5	3.OA.8	A	2	The question asks the student to solve a word problem. A. Correct. The student adds 27 plus 3 and divides the sum by 5. B. Incorrect. The student adds 5 and 3.
				C. Incorrect. The student multiplies 5 and 3.D. Incorrect. The student adds 27 and 3.

Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations
6	3.NBT.1	С	1	The question asks the student to round a number to the nearest ten. A. Incorrect. The student rounds down to
				the nearest hundred.
				B. Incorrect. The student rounds down to the nearest ten.
				C. Correct. The student rounds up to the nearest ten.
				D. Incorrect. The student rounds up to the nearest hundred.
7	3.MD.7d	See Annotations	2	The question asks the student to make rectangles from a given shape.
				To receive full credit, the student must draw a line inside the floor diagram to make a 4×6 rectangle and a 6×3 rectangle.

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Mathematics Item Sampler Grade 3

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