

Virginia

Standards of Learning Guided Practice Suggestions

**2023 Mathematics Standards of Learning
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***January 2026 updates noted in the guide.**

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Introduction to TestNav 8: MULTIPLE-CHOICE/TEI Document

The *Introduction to TestNav 8: Multiple-Choice/Technology-Enhanced Item Tests* document serves as an introduction to the online navigation, tools, accessibility features, and overall functionality and appearance of TestNav 8. It is highly recommended that teachers (or other adults) read the *Introduction to TestNav 8: MC/TEI* document prior to reading this guide, the *Guided Practice Suggestions* for the Mathematics practice item sets. These documents may be found on the [SOL Practice Items \(All Subjects\) webpage](#).

Reading the *Introduction to TestNav 8: MC/TEI* document will give teachers an understanding of the features of TestNav 8 prior to working with students. In part, the document provides information on:

- opening the practice item sets within the required TestNav 8 Application,
- navigating through the practice item sets,
- answering technology-enhanced items (TEI) and multiple-choice items,
- using the online tools, and
- using the accessibility features available in TestNav 8.

Use the *Introduction to TestNav 8: Multiple-Choice/Technology-Enhanced Item Tests* document in conjunction with the information found in this guide.

Guided Practice Suggestions

This guide provides specific information for each question in the mathematics practice items. Along with the item information, there are guided practice suggestions in the Functionality Description column of the table. This column contains information for teachers and other adults as they guide students through the practice items. For instance, guided practice suggestions can state, “Make sure students know how to select draggers and place them in the empty boxes using the mouse, keypad, or touchscreen.” Following the suggestions in the table will ensure that students are exposed to all the different tools within TestNav 8, the different functionality features of TEI, and the common messages that may appear as students complete TEI.

Online Tools, Features, Icons, and Descriptions of Function

Tools Located on the Tool Bar

- **Pointer** 

Use to select an answer on screen as well as to place the cursor in an answer box, plot points, select one or more answers, and drag information from one location to another.

- **Answer Eliminator**



Use to eliminate (cross off) answer options. This tool functions with multiple-choice questions and certain TEIs.

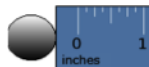
- **Pencil**



- Students may use the pencil tool to underline text, make notes, draw a diagram, etc.
- When the pencil tool is selected on the tool bar, the pencil palette will appear on the right side of the screen.
- Students can undo, redo, and delete pencil marks using the pencil palette on the right side of the screen.
- Students must deselect or “turn off” the pencil tool in the pencil palette and select the pointer tool from the tool bar to answer the test item.
- Please note pencil marks will not adjust proportionally when using zoom in/out. Students should zoom in/out on the test item prior to marking on the test item.
- The pencil marks will remain on the test question when a student advances to the next test question.
- Please note: If the contrast setting (background) is selected as white on black, the pencil tool writes in white. Art (e.g., a graph, picture, image of angles, coordinate grid) within an item will retain a white background; therefore, white pencil markings on art may be challenging for students to see when the white on black contrast is selected. **(Update January 2026)**

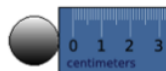


- **Inch Ruler**



Use to measure an object on the screen. The end points of the tool allow the tool to be rotated.

- **Centimeter Ruler**



Use to measure an object on the screen. The end points of the tool allow the tool to be rotated.

- **Protractor** 

Use to measure an angle. The end points of the tool allow the tool to be rotated.

- **Straightedge** 

Use to create a straight line. To stretch or shrink the line, click and drag one of the end points.

- **Desmos Calculator** 

Use for mathematical calculations and graphical representations.

- Grades 4 and 5 - Desmos Virginia Four-Function calculator for calculator active items
- Grades 6-8 - Desmos Virginia Scientific calculator for calculator active items
- End-of-Course (EOC) mathematics - Desmos Virginia Graphing calculator
- *For additional information on [Desmos](#), please refer to the [Desmos Online Calculator webpage](#) on the VDOE website and the [Desmos](#) website.*

The tools listed above may not be used in conjunction with another tool.

Tools Not Located on the Tool Bar

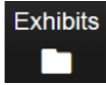
- **Highlighter** 

Use to highlight text.

To access the highlighter, select the text and the highlighter options will appear. Choose a color and the selected text will be highlighted. To remove the highlight, select the highlighted text and choose the red slash. The colors will vary depending on the background chosen. Default colors are pink and blue.

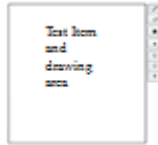
Students cannot highlight art, pictures, images, or text when presented as art. There is no limit to the number of highlights a student can make within the test.

- **Exhibit Window**



Use to view exhibits such as Formula Sheets and z-tables.

Exhibits are located on the right-hand side of the screen.



- **Drawing Interaction Tool**

Use to interact with an item. This tool is a boxed area around part of an item that exists on certain mathematics and science questions. The tools are located to the right of the drawing interaction area. To use the drawing interaction tool, the students must deselect or “turn off” the pencil tool. Both the pencil tool and the drawing interaction tool may be used on the test item but not at the same time.

The individual tools in the drawing interaction window are:

- **Pencil or straight line**



Use to make marks, notations, straight lines, or dots on or around artwork or graphs inside the drawing interaction area.

The arrow in the bottom right corner expands the tool to allow for free draw or a straight line. A dot may be placed using the mouse, keypad, or touch screen. Select free draw and use the mouse or keypad to click and release to place a point. If using a touch screen, use a finger to place a point.

- **Compass**



Use to create a construction.

The solid black dot, which is the compass point, is used to move the compass to a desired location. Use the middle gray circle to lengthen or shorten the drawing radius. The dashed circle indicates the length of the drawing radius. The length of the drawing radius will not change unless the middle gray circle is selected. The small open circle on the arrow is the compass pencil. This will be used to draw the arcs. To move the compass after beginning a construction, use the compass point, not the middle gray circle.

- **Eraser**




Use to erase selected lines, markings, or writing.

- Color Selector 

Use to make markings black or green. The arrow in the bottom right corner expands the tool to allow a color selection.

- Mark Thickness 

Use to select the thickness of the markings. The arrow in the bottom right corner expands the tool to allow a size selection.

- Undo or Redo 

Use to remove the most recent markings.

- Clear All 

Use to eliminate all markings at the same time.

- User Dropdown Menu 

- **Change the background and foreground color (Update January 2026)**

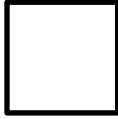
Use to select background and colors. The list of background and foreground colors is shown in the screen shot below. The color of art will not change when the contrast setting is changed. Please note: If the background color is selected as white on black, the pencil tool color turns white. Due to the color of the art not changing, the white pencil markings will not be seen on the white background of the art.



Note: Black on White is the Default setting.

- **Enable Magnifier**

Use to magnify an area. When selected, a square box appears on the screen that can be moved anywhere to magnify the text/art within the box. This tool needs to be selected for each test item as needed. To remove the tool from the screen, select *Disable Magnifier* in the user dropdown menu. The way it will appear on the screen is shown below.



- **Show Line Reader Mask**

Use to “mask” part of an item. When selected, a mask will appear on the screen that may be placed over text or test items. The line reader mask has a window, which shows only one line of text. The mask and the window can be resized by clicking and dragging on the three lines located in the bottom right-hand corner of the inner and outer boxes of the tool. This tool needs to be selected for each test item as needed. To remove the tool from the screen, select *Hide Line Reader Mask* in the user dropdown menu. A screenshot of the line reader mask is shown.



- **Enable Answer Masking**

Use to mask answer options. By selecting this tool, a mask will appear over all multiple-choice answer options. (This feature is not available on TEI questions, including Multiple Select and Match Table Grid). To uncover an answer choice, select the gray box with the image of an eye. Once this tool is enabled, the answer masks will be present on all multiple-choice questions. To remove the tool from the screen, select *Disable Answer Masking* in the user dropdown menu. A screenshot of answer masking enabled is shown.



- **Zoom-In and Zoom-Out Feature**
Use to enlarge or shrink text or images on the screen. Selecting “+” increases the zoom. Selecting “-” decreases the zoom. Other methods can activate Zoom depending on the device (keyboard shortcuts, pinch to zoom, etc.). Once zoom is set, this setting applies to all test items until it is changed.
- **Sign out of TestNav**
Use to exit the test. Selecting this will bring up the Exit Test screen. The Exit Test screen permits the student to Exit the Test, or to Cancel the selection and return to the test.

Tool to Answer an Item

TestNav tools cannot be used to indicate answers to online test items. The Pointer  must be used to:

1. select a multiple-choice answer;
2. place the cursor in a box to type an answer;
3. plot points on a line, graph, or graphic;
4. select one or more answers; or
5. drag answers from one location to another.

If the student uses a tool other than the Pointer to indicate an answer, the Review dropdown will show that question as *Not Answered*. (This review dropdown is not available on the Computer Adaptive Test.) If a student feels the question was answered, instruct the student to go back to the test item to make sure the Pointer was used to indicate the answer.

A Help menu for the TestNav tools is not available.

Additional Tools

- **Glossary Definition Feature**
A Glossary Definition Feature is used to define uncommon words in some test questions on Science or Mathematics tests. A dotted underline indicates this feature has been applied to a certain word. When hovering over the word, a message will appear: This

word has a Pop-up Glossary. Select the dotted underline word and the Pop-up Glossary provides a definition. (Note: Currently there are no mathematics Practice Items that include this functionality.) See the Grade 5 Science Practice Items for this example of the Glossary Definition Feature:



Audio Tools

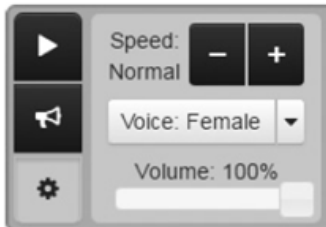
Students who are assigned an “audio” test for the 2023 *Mathematics Standards of Learning* will see the audio tools for the text-to-speech reader on the right side of the screen.



The Play button reads the item from the beginning. Each word within the text is highlighted in blue as it is read. While the audio is playing, the arrow becomes a square Stop button. Selecting it stops the reader.

The Toggle Click-to-Hear Tool allows students to select where, within the item, the audio will begin.

The Settings Wheel allows students to adjust the audio settings. Selecting the Settings Wheel will generate the Audio Settings tool.



Students may change the speed of the audio by selecting the minus to slow it down or the plus to speed it up.

The voice has a default gender and may not be changed.

Students may change the volume of the audio by dragging the volume slider right or left to increase or decrease the volume.

Grade 3 Mathematics

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
1	TEI Fill in the Blank 3.NS.1a	705,003 or 705003	<p><i>All grade 3 math test questions will have the “No Calculator” icon.</i></p> <p><i>The pencil tool has been added to the tool bar.</i></p> <ul style="list-style-type: none"> • Students may use the pencil tool to underline text, make notes, or draw a diagram, etc. • When the pencil tool is selected on the tool bar, the pencil palette will appear on the right side of the screen. • Students can undo, redo, and delete pencil marks using the pencil palette on the right side of the screen. • Students must deselect or “turn off” the pencil tool in the pencil palette and select the pointer tool from the tool bar to answer the test item. • Both the pencil tool and the drawing interaction tool may be used on the test item but not at the same time. To use the drawing interaction tool, the students must deselect or “turn off” the pencil tool. • Please note pencil marks will not adjust proportionally when using zoom in/out. Students should zoom in/out on the test item prior to marking on the test item.

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “<i>You cannot use that character.</i>” This message will remain on the screen for approximately three seconds.</p> <p>Tell students that the answer does not need to be as long as the response box, and a blank space can never be entered into a response box.</p> <p>Tell students when answers have four or more digits, a comma may or may not be used. If a comma is used, it must be in the correct location within the number. This question will be considered “Answered” once a number or symbol has been placed in the box.</p>
2	TEI Drag and Drop 3.NS.1b	<p>Top to bottom:</p> <ul style="list-style-type: none"> • ten thousands • hundreds 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			change an answer, the dragger must be moved back to the original location. This question will be considered “Answered” when each box contains an answer.
3	TEI Multiple Select 3.NS.1c	<p>These and only these two answers.</p> <p>Top to bottom:</p> <ul style="list-style-type: none"> • 4 thousands, 3 hundreds, 8 tens, 15 ones • 4 thousands, 3 hundreds, 9 tens, 5 ones 	<p>This question specifies the number of answers a student must select. Have students select the boxes next to the two answers they want to select. Then have them try to select a third box. If a student tries to select more than the number of answers indicated, a message stating, “<i>You must remove an answer before you can choose a new one.</i>” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when two answers have been selected.</p>
4	Multiple Choice 3.NS.2a	B: 8,285	None
5	TEI Drag and Drop 3.NS.2b	<p>Left to right:</p> <ul style="list-style-type: none"> • 1,573 • 1,375 • 1,357 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location This question will be considered “Answered” when each box contains an answer.
6	TEI Hot Spot 3.NS.3a	Exactly 22 boxes should be shaded. All variations of 22 boxes will score correct.	To answer this question, students must click on a square below the question. Once they select a square, the square will be shaded orange. Students should continue to select squares until they finish answering the question. Tell students that when there are an unspecified number of answers, the question will be considered “Answered” when one answer (or part) has been selected (or shaded). This is so no clue or hint is given as to how many answers are correct (or should be shaded). This question has a drawing interaction box. Have students select and practice the various tools.
7	TEI Hot Spot 3.NS.3a	These and only these two answers. left to right: <ul style="list-style-type: none"> • First model • Third model 	This question specifies the number of answers a student must select. To answer this question, the student must select two answer in the gray box. A bold blue box will outline the selected answer choices to indicate a student has chosen that response as an answer. If a student tries to

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>select more than one answer, a message stating, “You must remove an answer before you can choose a new one.” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Have students try to select an additional answer so that they can see this message appear. This question will be considered “Answered” when two answers have been selected.</p>
8	TEI Fraction Model 3.NS.3a	The figure should be divided into 8 parts and any 7 parts should be shaded.	Follow the directions to complete this model. The question will be considered “Answered” once the number of parts in the model has been changed. This is so no clue or hint is given as to how parts should be shaded.
9	Multiple Choice 3.NS.3b	B: Set B	None
	Math Question Set	No Answer	<p>Sometimes students will see a set of questions about one model, graph, or equation. When a question set is provided, the first screen will always be the given information. It will not contain a question. The directions tell students to read the information and answer the questions that follow. Once students have read the information, they should click the right arrow to continue to the first question. Note that this given information will appear with each question in</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>the set. Students may visit previous test questions in a math question set.</p> <p>Note: The pencil tool marks will remain on the given information when a student advances to the next test question.</p>
10	TEI Equation Editor 3.NS.3a	$\frac{6}{8}$	<p>To answer this question, students must type a response in the box. The directions tell students to use numbers and a fraction bar to enter their answer. Students will select the fraction structure box located below the numbers. Students will fill in the boxes with the numbers to represent their answer. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “<i>Invalid Key Entry.</i>”</p> <p>This question will be considered “Answered” once a number or symbol has been placed in the box.</p>
11	TEI Multiple Select 3.NS.3e	<p>These and only these two answers.</p> <p>Top to bottom:</p> <ul style="list-style-type: none"> • closer to 1 than to 0 • greater than $\frac{1}{2}$ 	<p>This question specifies the number of answers a student must select. Have students select the boxes next to the two answers they want to select. Then have students try to select a third box. If a student tries to select more than the number of answers indicated, a message stating, “<i>You must remove an answer before you can choose a new one.</i>” appears in the top right corner of the screen. This message will remain for</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>approximately three seconds unless the “x” is selected to close the message.</p> <p>Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when two answers have been selected.</p>
12	Multiple Choice 3.NS.3f	C: $\frac{6}{10}$	None
			<p>This screen announces the end of the math question set. In a computer adaptive test (CAT), students may go back to previously answered questions within a math question set. Once students proceed beyond this transition screen in a CAT, they will not be able to return to questions within the math question set.</p>
13	TEI Drag and Drop 3.NS.3d	<p>Any combination that results in 5 shaded blocks</p> <p>Students can drag:</p> <p>5 models of $\frac{1}{3}$ or 1 model of $\frac{2}{3}$ and 3 models of $\frac{1}{3}$ or 2 models of $\frac{2}{3}$ and 1 model of $\frac{1}{3}$ or 1 model of $\frac{3}{3}$ and 1 model of $\frac{2}{3}$ or 1 model of $\frac{3}{3}$ and 2 models of $\frac{1}{3}$.</p>	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. Have students try to place one dragger “over” another dragger. The student will notice the new dragger will drop to the last position. If a student wishes to change an answer, the dragger must be moved back to the original location.</p> <p>Also point out that all models may be used more than once, but there is a limit to the number of times a model may be used.</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>This question will be considered “Answered” when one dragger has been placed in the box.</p> <p>This question has a drawing interaction box. Have students select and practice the various tools.</p>
14	TEI In Line Choice 3.NS.4b	Top to bottom: <ul style="list-style-type: none"> • dimes • quarter 	<p>To see the choices select the down arrow next to “Choose. . .” This test question has two in-line choice items for students to select. The question will appear “Answered” when both in-line choices have been selected.</p> <p>This question has a drawing interaction box. Have students select and practice the various tools.</p>
15	TEI Drag and Drop 3.NS.4d	<p>The units of money in the response box must be equal to \$1.12.</p> <p>Examples of correct responses include: 1 dollar bill, 1 dime, and 2 pennies OR 4 quarters, 2 nickels, and 2 pennies</p>	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. Have students try to place one dragger “over” another dragger. The student will notice the new dragger will drop to the last position. If a student wishes to change an answer, the dragger must be moved back to the original location.</p> <p>Let students know that there are several combinations of units of money that may be used to equal \$1.12 and any of these combinations would be scored as correct.</p> <p>Also point out that all units of money except the \$5 bill may</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			be used more than once, but there is a limit to the number of times a dragger may be used. This question will be considered “Answered” when one dragger has been placed in the box.
16	Multiple Choice 3.CE.1b	B: 300 miles	None
17	Multiple Choice 3.CE.1b	C: 300 because $250 + 200 = 450$ and $750 - 450 = 300$	None
18	Multiple Choice 3.CE.1e	D: 108	None
19	TEI Equation Editor 3.CE.1e	$354 - 138 = 216$ or an equivalent equation that uses these numbers	To answer this question, students must type a response in the box. Encourage students to try removing their response and then entering a different expression so they can practice using different operation symbols. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>Invalid Key Entry.</i> ” This question will be considered “Answered” once a number or symbol has been placed in the box.
20	Multiple Choice 3.CE.2a	B: $40 \div 5$	This question has a drawing interaction box. Have students select and practice the various tools.
21	Multiple Choice 3.CE.2a	D: 3×2	This question has a drawing interaction box. Have students select and practice the various tools.
22	Multiple Choice 3.CE.2a	B: 4×5	This question has an Interactive Model. Select the button to play the model.

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			There is no sound with this question.
23	TEI Drag and Drop 3.CE.2b	Left to right: <ul style="list-style-type: none"> • x • 9 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area.</p> <p>Have students try to place an operation symbol into the box on the right. They will not be able to do this. Sometimes a restriction is placed on where a dragger can be placed to limit errors. The operation symbols can only be used in the box on the left.</p> <p>Have students select the number 9. As they move this number, only the box on the right shades blue, indicating this is the only box that will accept this dragger.</p> <p>This question will be considered "Answered" when each box contains an answer.</p>
24	Multiple Choice 3.CE.2g	C: $5 \times 6 = 25 + 5$	None
25	Multiple Choice 3.MG.1b	A: $2\frac{1}{2}$ inches	<p>There are two ruler tools on the top of the screen.</p> <p>Have students select the appropriate ruler for this question, the inch ruler.</p>
26	Multiple Choice 3.MG.2a	C: 4 square feet	This question has a drawing interaction box. Have students select and practice the various tools.

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
27	Multiple Choice 3.MG.2b	B: 18 centimeters	Make sure students select the ruler on the right for this question, the centimeter ruler.
28	Multiple Choice 3.MG.2b	B: 12 feet	This question has a drawing interaction box. Have students select and practice the various tools.
29	Multiple Choice 3.MG.3a	D: 8:20	This question has a drawing interaction box. Have students select and practice the various tools.
30	Multiple Choice 3.MG.3c	D: 5:20 P.M.	None
31	Multiple Choice 3.MG.3c	A: 3 hours	None
32	TEI Match Table Grid 3.MG.4e	These and only these answers selected in each row: <ul style="list-style-type: none"> • Row 1: Triangle – Fewer Than 5 Sides • Row 2: Octagon – More Than 5 Sides • Row 3: Hexagon – More Than 5 Sides • Row 4: Pentagon – Exactly 5 Sides • Row 5: Quadrilateral – Fewer Than 5 Sides 	To answer this question, a student will select a response in each row. To change a response and remove an answer, select another column in that row. Once there is a response in each row, this question will be considered "answered."
33	Multiple Choice 3.MG.4g	D: Triangle, quadrilateral, triangle	This question has a drawing interaction box. Have students select and practice the various tools.
34	TEI Multiple Select 3.PFA.1a	These and only these two answers. Top to bottom: <ul style="list-style-type: none"> • 12, 17, 22, 27, 32 • 15, 20, 25, 30, 35 	This question specifies the number of answers a student must select. Have students select the boxes next to the two answers they want to select. Then have students try to select a third box. If a student tries to select more than the number of answers indicated, a message stating, "You must remove an answer"

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p><i>before you can choose a new one.</i>” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message.</p> <p>Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when two answers have been selected.</p>
35	TEI Fill in the Blank 3.PFA.1d	Left to right: 65, 55, 45	<p>To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “<i>You cannot use that character.</i>” This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box, and a blank space can never be entered into a response box. This question will be considered “Answered” once a number has been placed in each box.</p>
36	Multiple Choice 3.PS.1b	D: Create a tally chart to show what game the students would like to play during indoor recess.	None
37	Multiple Choice 3.PS.1c	B: Set B	<p>This question has a drawing interaction box. Have students select and practice the various tools.</p> <p>(Text-to-speech will read each word but not highlight each</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			word. The box containing words will be outlined but not highlighted.)
38	TEI Bar Graph 3.PS.1d	Left to right: <ul style="list-style-type: none"> • Nancy = 5; the bar is between 4 and 6. • Bryan = 3; the bar is between 2 and 4. • Kristen = 8; the bar is at 8. • Ricardo = 9; the bar is between 8 and 10. 	To answer this question, students must select a bar and drag it to the correct height. If a student wants to change the height, they may select the bar and drag it to a different height. Once one bar has been moved, the question will appear as “Answered” even if all the bars are returned to the original heights.
39	TEI Drag and Drop 3.PS.1d	Left to right: <ul style="list-style-type: none"> • Olivia • Max • Jacob • Tori 	Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered “Answered” when each box contains an answer. This question has a drawing interaction box. Have students select and practice the various tools.

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
40	TEI Bar Graph 3.PS.1d	Left to right: <ul style="list-style-type: none"> • M = 3; the bar is between 2 and 4. • N = 9; the bar is between 8 and 10. • P = 2; the bar is at 2. • Q = 4; the bar is at 4. • R = 10; the bar is at 10. 	To answer this question, students must select a bar and drag it to the correct height. If a student wants to change the height, they may select the bar and drag it to a different height. Once one bar has been moved, the question will appear as “Answered” even if all the bars are returned to the original heights.

Grade 4 Mathematics

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
1	Multiple Choice 4.NS.3de	B: Set B	<p><i>The pencil tool has been added to the tool bar.</i></p> <ul style="list-style-type: none"> • Students may use the pencil tool to underline text, make notes, or draw a diagram, etc. • When the pencil tool is selected on the tool bar, the pencil palette will appear on the right side of the screen. • Students can undo, redo, and delete pencil marks using the pencil palette on the right side of the screen. • Students must deselect or “turn off” the pencil tool in the pencil palette and select the pointer tool from the tool bar to answer the test item. • Both the pencil tool and the drawing interaction tool may be used on the test item but not at the same time. To use the drawing interaction tool, the students must deselect or “turn off” the pencil tool. • Please note pencil marks will not adjust proportionally when using zoom in/out. Students should zoom in/out on the test item prior to marking on the test item.

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>Notice the “No Calculator” symbol in the top right corner of the screen. This symbol will appear when the calculator is not active on the test question. If the Desmos Virginia calculator appears on the toolbar, it is an allowable tool for the test question. If the Desmos Virginia calculator does not appear on the toolbar, a calculator may not be used to answer the question.</p> <p>This question has a drawing interaction box. Have students select and practice the various tools.</p>
2	Multiple Choice 4.NS.3e	D: Model 3 and Model 4	None
3	TEI Multiple Select 4.NS.3f	<p>These and only these two answers.</p> <p>Top to bottom:</p> <ul style="list-style-type: none"> • $\frac{1}{6} + \frac{3}{6} + \frac{4}{6}$ • $\frac{6}{6} + \frac{2}{6}$ 	<p>This question specifies the number of answers a student must select. Have students select the boxes next to the two answers they want to select. Then have students try to select a third box. If a student tries to select more than the number of answers indicated, a message stating, “<i>You must remove an answer before you can choose a new one.</i>” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message.</p> <p>Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered”</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			when two answers have been selected.
4	Multiple Choice 4.NS.3g	A: $4 \div 8 = \frac{4}{8}$ cup of rice in each bag	None
5	Multiple Choice 4.NS.3g	C: Group C	None
6	TEI Drag and Drop 4.NS.4d	Top to bottom: <ul style="list-style-type: none"> • tenths • thousands • tens • ones • hundreds • hundredths 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger "over" another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered "Answered" when each box contains an answer.</p> <p>Sometimes a restriction is placed on where a dragger can be placed to limit errors students can make. See Grade 3 item 23 for functionality.</p>
7	TEI Multiple Select 4.NS.4e	These and only these three answers. Top to bottom: <ul style="list-style-type: none"> • 82.59 • 82.5 	To answer this question, students must select all the numbers that can make the statement true. Tell students that when there are an unspecified number of

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
		<ul style="list-style-type: none"> • 82 	<p>answers, the question will be considered “Answered” when one answer has been selected. This is so no clue or hint is given as to how many answers are correct. This question will be considered “Answered” when one answer has been selected.</p>
8	TEI Drag and Drop 4.NS.4e	<p>Top to bottom:</p> <ul style="list-style-type: none"> • 8.13 • 8.149 • 8.698 • 8.7 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered “Answered” when each box contains an answer.</p>
9	Multiple Choice 4.NS.5c	D: $\frac{1}{5}$ and 0.2	None
10	TEI Multiple Select 4.CE.1a	<p>These and only these two answers.</p> <p>Top to bottom:</p> <ul style="list-style-type: none"> • More than \$4,000 • Closer to \$4,000 than to \$5,000 	<p>This question specifies the number of answers a student must select. Have students select the boxes next to the two answers they want to select. Then have students try to select a third box. If a student tries to select more</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>than the number of answers indicated, a message stating, <i>“You must remove an answer before you can choose a new one.”</i> appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message.</p> <p>Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when two answers have been selected.</p>
11	TEI Fill in the Blank 4.CE.2b	16	<p>To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, <i>“You cannot use that character.”</i> This message will remain on the screen for approximately three seconds.</p> <p>Tell students that the answer does not need to be as long as the response box, and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.</p>
12	TEI Equation Editor 4.CE.2c	Any expression equal to 55 with only one operation	<p>To answer this question, students must type a response in the box. Encourage students to try removing their response and then entering a different expression so they</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			can practice using different operation symbols. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, "Invalid Key Entry." This question will be considered "Answered" once a number or symbol has been placed in the box.
13	TEI Equation Editor 4.CE.2c	Any expression equal to 144	To answer this question, students must type a response in the box. Encourage students to enter different expressions equivalent to 144 so they may practice using different operation symbols. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, "Invalid Key Entry." This question will be considered "Answered" once a number or symbol has been placed in the box.
14	Multiple Choice 4.CE.2e	C: 1×50 2×25 5×10	None
15	TEI Hot Spot 4.CE.2f	These and only these four answers: <ul style="list-style-type: none"> • 1 • 2 • 4 • 8 	To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a response has been selected, this question will be considered "answered." This

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			is so no clue or hint is given as to how many answers are correct. There are four correct answers to this question. All responses must be selected for the question to be correct.
16	TEI Equation Editor 4.CE.2h	$96 \times 36 = 3456$ All equations with one operation that accurately represent the contextual situation will be scored correct.	To answer this question, students must type a response in the box in the form of an equation that uses one operation. Any equation with one operation that represents the contextual situation will be scored as correct. Please note: this answer must contain an “equals” symbol and one operation symbol. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>Invalid Key Entry.</i> ” This question will be considered “Answered” once a number or symbol has been placed in the box.
17	TEI Fill in the Blank 4.CE.2i	49R5 or 49r5	To answer this question, students must type a response in the box. Tell students that the answer does not need to be as long as the response box. Make sure students understand that a blank space is never an allowable character, so a blank space cannot be entered between the characters in the dividend (i.e., 49 R 5 cannot be entered). This question will be considered “Answered” once a number or symbol has been placed in the box.
18	TEI Drag and Drop 4.CE.3a	Top to bottom: <ul style="list-style-type: none"> • 7 	Drag and Drop test questions may be answered by selecting

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
		<ul style="list-style-type: none"> 8 	<p>a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger "over" another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered "Answered" when each box contains an answer.</p> <p>(Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)</p>
19	Multiple Choice 4.CE.3a	B: A little less than 16	None
20	Multiple Choice 4.CE.3b	C: $\frac{7}{5}$ miles	None
21	Multiple Choice 4.CE.3c	B: $2\frac{1}{2}$ feet	None
22	TEI Hot Spot 4.CE.3d	Exactly 3 boxes should be shaded. All variations of 3 boxes will score as correct.	Teacher Note: The shaded model given defines $\frac{1}{3}$ as one of three boxes shaded in a rectangle divided into thirds; therefore, one whole would be represented as three of three boxes shaded. Based on this information, $\frac{1}{3} \times 3$ should be represented as 3 shaded

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>boxes. Any three boxes may be shaded within Model A for the answer to be considered correct.</p> <p>To answer this question, students must click on a rectangle below the question to shade their answer. Once they select a rectangle, it will be shaded. Students should continue to select rectangles until they have finished shading the answer. Tell students that when there are an unspecified number of answers, the question will be considered “Answered” when one answer (or part) has been selected (or shaded). This is so no clue or hint is given as to how many answers are correct (or should be shaded).</p>
23	TEI Fill in the Blank 4.CE.4a	8.72	<p>To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “<i>You cannot use that character.</i>” This message will remain on the screen for approximately three seconds. This question will be considered Answered” once a number or symbol has been placed in the box.</p>
24	Multiple Choice 4.CE.4b	A: \$2.94	None
25	Multiple Choice 4.MG.1ab	C: 20 ounces	None
26	Multiple Choice 4.MG.1d	A: 32	None
27	Multiple Choice 4.MG.1d	A: 12 yards 2 feet	None

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
28	Multiple Choice 4.MG.2a	D: 6:55	None
29	TEI Match Table Grid 4.MG.3bce	<p>These and only these answers selected in each row:</p> <ul style="list-style-type: none"> • Row 1: Area=16 square inches • Row 2: Perimeter=16 inches and Area=16 inches • Row 3: Perimeter=16 inches 	<p>To answer this question, a student will select a response or responses in each row. Students may select more than one response in each row. To deselect a response and remove the check, the response must be selected again. Once 3 responses have been selected, this question will be considered "answered." This is so no clue or hint is given as to how many answers are correct. There are 4 correct responses to this question. All responses must be selected for the question to be correct.</p>
30	TEI Drag and Drop 4.MG.4e	<p>Line PW parallel line XY or Line XY parallel line PW</p>	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger "over" another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered "Answered"</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			when each box contains an answer.
31	TEI Hot Spot 4.MG.5a	<p>These and only these three answers:</p> <ul style="list-style-type: none"> • There are exactly four sides. • All sides must be congruent. • Both pairs of opposite sides must be parallel. 	<p>To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a response has been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are three correct answers to this question. All responses must be selected for the question to be correct. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)</p>
32	TEI Multiple Select 4.MG.6b	<p>These and only these two answers.</p> <p>Top to bottom:</p> <ul style="list-style-type: none"> • Figure C • Figure D 	<p>To answer this question, all correct answers must be selected. Have students select the boxes next to the answers they want to select. To deselect an answer, the answer choice must be selected again. When there are an unspecified number of answers, the question will be considered "Answered" when one answer has been selected. This is so no clue or hint is given as to how many answers are correct. This</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			question will be considered “Answered” when one answer has been selected.
	Math Question Set	No Answer	<p>Sometimes students will see a set of questions about one model, graph, or equation. When a question set is provided, the first screen will always be the given information. It will not contain a question. The directions tell students to read the information and answer the questions that follow. Once students have read the information, they should click the right arrow to continue to the first question. Note that this given information will appear with each question in the set.</p> <p>Note: The pencil tool marks will remain on the given information when a student advances to the next test question.</p>
33	Multiple Choice 4.PS.1c	A	None
34	TEI Multiple Select 4.PS.1d	<p>These and only these two answers.</p> <p>Top to bottom:</p> <ul style="list-style-type: none"> • What was the greatest number of cups of lemonade sold during a single hour? • During which two-hour time interval were the fewest cups of lemonade sold? 	<p>This question specifies the number of answers a student must select. Have students select the boxes next to the two answers they want to select. Then have them try to select a third box. If a student tries to select more than the number of answers indicated, a message stating, “<i>You must remove an answer before you can choose a new one.</i>” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x”</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			is selected to close the message. Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when two answers have been selected.
35	TEI Fill in the Blank 4.PS.1d	105	To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>You cannot use that character.</i> ” This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box, and a blank space can never be entered into a response box. This question will be considered Answered” once a number or symbol has been placed in the box.
			This screen announces the end of the math question set. In a computer adaptive test (CAT), students may go back to previously answered questions within a math question set. Once students proceed beyond this transition screen in a CAT, they will not be able to return to questions within the math question set.
36	TEI In Line Choice 4.PS.2a	Top to bottom: <ul style="list-style-type: none"> • green • yellow or red 	To see the choices select the down arrow next to “Choose. . .” This test question has two in-line

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			choice items for students to select. The question will appear “Answered” when both in-line choices have been selected.
37	Multiple Choice 4.PS.2d	A: W	None
38	Multiple Choice 4.PS.2e	A: Spinner A	None
39	Multiple Choice 4.PFA.1b	B: 68	None
40	TEI Equation Editor 4.PFA.1c	Unique input/output values that represent the rule “subtract 15” must be entered into each of the 3 rows. In each row, the value in the right column must be 15 less than the value in the left column.	To answer this question, students must type responses in the boxes. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>Invalid Key Entry.</i> ” This question will be considered “Answered” once a number has been placed in one of the empty boxes.

Grade 5 Mathematics

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
1	TEI Drag and Drop 5.NS.1c	<p>Top to bottom:</p> <ul style="list-style-type: none"> • 0.375 • 0.333... • 0.300 	<p><i>The pencil tool has been added to the tool bar.</i></p> <ul style="list-style-type: none"> • Students may use the pencil tool to underline text, make notes, or draw a diagram, etc. • When the pencil tool is selected on the tool bar, the pencil palette will appear on the right side of the screen. • Students can undo, redo, and delete pencil marks using the pencil palette on the right side of the screen. • Students must deselect or “turn off” the pencil tool in the pencil palette and select the pointer tool from the tool bar to answer the test item. • Both the pencil tool and the drawing interaction tool may be used on the test item but not at the same time. To use the drawing interaction tool, the students must deselect or “turn off” the pencil tool. • Please note pencil marks will not adjust proportionally when using zoom in/out. Students should zoom in/out on the test item prior to marking on the test item. <p>Notice the “No Calculator” symbol in the top right corner</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>of the screen. This symbol will appear when the calculator is not active on the test question. If the Desmos Virginia calculator appears on the toolbar, it is an allowable tool for the test question. If the Desmos Virginia calculator does not appear on the toolbar, a calculator may not be used to answer this question.</p> <p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger "over" another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered "Answered" when each box contains an answer.</p>
2	TEI Drag and Drop 5.NS.1d	Top to bottom: <ul style="list-style-type: none"> • $4\frac{4}{5}$ • 4.595 • 4.49 • $4\frac{1}{3}$ 	Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered “Answered” when each box contains an answer.</p> <p>Sometimes a restriction is placed on where a dragger can be placed to limit errors students can make. See Grade 3 item 23 for functionality.</p>
3	TEI Hot Spot 5.NS.1d	<p>These and only these three answers:</p> <ul style="list-style-type: none"> • $1\frac{2}{3}$ • $1\frac{5}{8}$ • 1.534 	<p>To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a response has been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are three correct answers to this question. All responses must</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			be selected for the question to be correct. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)
4	TEI Hot Spot 5.NS.2b	These and only these four answers: <ul style="list-style-type: none"> • 5 • 2 • 29 • 17 	This question specifies the number of answers a student must select. To answer this question, the student must select four answers in the gray box. A bold blue box will outline the selected answer choices to indicate a student has chosen that response as an answer. If a student tries to select more than one answer, a message stating, “You must remove an answer before you can choose a new one.” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Have students try to select an additional answer so that they can see this message appear. This question will be considered “Answered” when four answers have been selected. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)
5	Multiple Choice 5.NS.2c	C: 3 x 5 x 5	None
6	Multiple Choice 5.CE.1b	D: 4,602	None
7	Multiple Choice	D: 88	None

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
	5.CE.1c		
8	Multiple Choice 5.CE.2a	A: 12	None
9	TEI Fraction Model 5.CE.2b	The figure should be divided into 10 parts and any 3 parts can be shaded.	Follow the directions to complete this model. The question will be considered “Answered” once the number of parts in the model has been changed. This is so no clue or hint is given as to how many parts should be shaded.
10	TEI Fraction Model 5.CE.2c	The figure should be divided into 10 parts and any 7 parts can be shaded.	Follow the directions to complete this model. The question will be considered “Answered” once the number of parts in the model has been changed. This is so no clue or hint is given as to how many parts should be shaded.
11	TEI Equation Editor 5.CE.2c	$7\frac{5}{8}$ or $\frac{61}{8}$	To answer this question, students must type a response in the box. Students must use the structure box to enter a fraction or a mixed number. For this question, the decimal is not an allowable character, and students will receive the message “Invalid Key Entry” if they try to enter it. Have students try to enter a decimal value to see this message. Encourage students to try removing their response and then entering a different expression. This question will be considered “Answered” once a number or symbol has been placed in the box.

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
12	TEI Fill in the Blank 5.CE.2c	$\frac{1}{4}$	To answer this question, students must type a response in the box. Make sure students know to enter the forward slash “/” for the fraction bar. Have students attempt to enter a character (such as a decimal) that cannot be used as part of the answer. A message will appear that states, “ <i>You cannot use that character.</i> ” This message will remain on the screen for approximately three seconds. This question will be considered “Answered” once a number or symbol has been placed in the box.
13	Multiple Choice 5.CE.2c	A: $1\frac{1}{2}$	This question has a drawing interaction box. Have students select and practice the various tools. <i>*This is a calculator-active item and the icon will be removed from the practice item and the calculator tool will be added to the tool bar.</i>
14	Multiple Choice 5.CE.3c	B: 0.603	None
15	Multiple Choice 5.CE.3d	C: 3.215 kilograms	None
16	Multiple Choice 5.CE.3d	A: \$4.73	None
17	Multiple Choice 5.CE.3d	A: 5.25	None
18	TEI Multiple Select 5.CE.4a	These and only these two answers. Top to bottom: <ul style="list-style-type: none"> • $3 + 4 \times 3$ • $40 - (20 + 5)$ 	This question specifies the number of answers a student must select. Have students select the boxes next to the two answers they want to select. Then have them try to select a third box. If a student

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>tries to select more than the number of answers indicated, a message stating, “<i>You must remove an answer before you can choose a new one.</i>” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message.</p> <p>Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when two answers have been selected.</p>
19	Multiple Choice 5.CE.4b	A: 3 + 6	None
20	TEI Fill in the Blank 5.MG.1c	<p>1,200 milliliters</p> <p>1200, 1,200.0, and 1200.0 will also score as correct.</p>	<p>To answer this question, students must type a response in the box. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. Tell students when answers have four or more digits, a comma may or may not be used. If a comma is used, it must be in the correct location within the number. This question will be considered Answered” once a number or symbol has been placed in the box.</p>
21	Multiple Choice 5.MG.2a	A: $3 \times 4 \times \frac{1}{2}$	None
22	Multiple Choice 5.MG.2c	C: Volume	None
23	Multiple Choice 5.MG.2e	A: 600 cubic meters	This question has a drawing interaction box. Have

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			students select and practice the various tools.
24	Multiple Choice 5.MG.2g	D: Area of 21 square units and perimeter of 24 units	This question has a drawing interaction box. Have students select and practice the various tools.
25	Multiple Choice 5.MG.3a	B: Angle 2	This question has a drawing interaction box. Have students select and practice the various tools. Students may want to practice using the protractor tool on this question.
26	TEI Match Table Grid 5.MG.3b	<p>These and only these answers selected in each column.</p> <p>Column 1:</p> <ul style="list-style-type: none"> • Right Triangle • Isosceles Triangle <p>Column 2:</p> <ul style="list-style-type: none"> • Acute Triangle • Equilateral Triangle • Isosceles Triangle <p>Column 3:</p> <ul style="list-style-type: none"> • Obtuse Triangle • Scalene Triangle 	To answer this question, a student will select a response or responses in each column. Students may select more than one response in each column. To deselect a response and remove the check, the response must be selected again. Once 3 responses have been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are 7 correct responses to this question. All responses must be selected for the question to be correct.
27	Multiple Choice 5.MG.3b	C. Figure C	This question has a drawing interaction box. Have students select and practice the various tools.
28	TEI Fill in the Blank 5.MG.3f	<p>145 degrees</p> <p>Answers ranging from 142 to 148 also are scored as correct.</p>	The protractor tool should be used to determine the answer. Have students select the protractor tool. To move the protractor, select any place within the boundaries of the blue protractor and drag it to another location. To rotate the protractor, select and drag

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>an end with the circle. Have students practice moving and rotating the protractor. To put the protractor tool away, select the protractor tool icon again; or select the pointer tool.</p> <p>To answer this question, students must type a response in the box. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.</p>
29	Multiple Choice 5.PFA.1a	B: 256, 64, 16, 4	None
30	TEI Equation Editor 5.PFA.2c	$y + 45$ Equivalent expressions that use these numbers will score as correct.	<p>Students must type a response in the box. Encourage students to try removing their response and then entering a different equation so they can practice using different operation symbols. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “<i>Invalid Key Entry.</i>” This question will be considered “Answered” once a number or symbol has been placed in the box.</p>
	Math Question Set	No Answer	<p>Sometimes students will see a set of questions about one model, graph, table, data set, or equation. When a question set is provided, the first screen will always be the given information. It will not</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>contain a question. The directions tell students to read the information and answer the questions that follow. Once students have read the information, they should click the right arrow to continue to the first question. Note that this given information will appear with each question in the set.</p> <p>Note: The pencil tool marks will remain on the given information when a student advances to the next test question.</p>
31	Multiple Choice 5.PS.1b	C: What is the number of miles the students rode each day?	None
32	Multiple Choice 5.PS.2c	C: 18, because it is the middle number of miles when the data are ordered from least to greatest	None
33	TEI – Equation Editor 5.PS.1d	<ul style="list-style-type: none"> • Row 1: <ul style="list-style-type: none"> ▪ Stem = 0 ▪ Leaf = 9 • Row 2: <ul style="list-style-type: none"> ▪ Stem = 1 ▪ Leaf = 0, 0, 8, 8, 8 • Row 3: <ul style="list-style-type: none"> ▪ Stem = 2 ▪ Leaf = 2 	<p>To answer this question students must first click on the box in the stem-and-leaf plot that they wish to fill and then click on or type the number that they want to put in that box. Note that not all boxes need to be filled to answer the question. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “<i>Invalid Key Entry.</i>” This question is considered “Answered” once one number has been placed in a box.</p>
			This screen announces the end of the math question set. In a computer adaptive test

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			(CAT), students may go back to previously answered questions within a math question set. Once students proceed beyond this transition screen in a CAT, they will not be able to return to questions within the math question set.
34	Multiple Choice 5.PS.1a	D: What is the number of days each student was absent last month?	None
35	TEI Drag and Drop 5.PS.1c	<p>Left to right:</p> <ul style="list-style-type: none"> • Above 0: two X's • Above 1: four X's • Above 2: one X • Above 3: zero X's (blank dragger) • Above 4: two X's • Above 5: one X 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger "over" another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location.</p> <p>The value for "3" on this line plot is zero. Students must place the empty dragger into the response box above the 3. If students do not place a dragger into the line plot above "3" (as shown by the empty shaded box), the</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			question will not be considered “Answered.” Note: All response boxes must be filled for this question to be considered “Answered.”
36	Multiple Choice 5.PS.1e	C: 5	This question has a drawing interaction box. Have students select and practice the various tools.
37	TEI Drag and Drop 5.PS.2	Top to bottom: <ul style="list-style-type: none"> • Mean 35 • Median 32 • Mode 30 • Range 31 	Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered “Answered” when each box contains an answer.
38	Multiple Choice 5.PS.2a	B: fair share	None
39	TEI In Line Choice 5.PS.2c	Top to bottom: <ul style="list-style-type: none"> • 7 • 5 	To see the choices select the down arrow next to “Choose. . .” This test question has two in-line choice items for students to

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			select. The question will appear “Answered” when both in-line choices have been selected.
40	Multiple Choice 5.PS.2e	A: 21, 24, 29, 25, 27	None
41	Multiple Choice 5.PS.3a	C: $\frac{4}{8}$	None

Grade 6 Mathematics

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
1	TEI Hot Spot 6.NS.1c	Exactly 6 parts should be shaded. All variations of 6 parts will score correct.	<p><i>The pencil tool has been added to the tool bar.</i></p> <ul style="list-style-type: none"> • Students may use the pencil tool to underline text, make notes, or draw a diagram, etc. • When the pencil tool is selected on the tool bar, the pencil palette will appear on the right side of the screen. • Students can undo, redo, and delete pencil marks using the pencil palette on the right side of the screen. • Students must deselect or “turn off” the pencil tool in the pencil palette and select the pointer tool from the tool bar to answer the test item. • Both the pencil tool and the drawing interaction tool may be used on the test item but not at the same time. To use the drawing interaction tool, the students must deselect or “turn off” the pencil tool. • Please note pencil marks will not adjust proportionally when using zoom in/out. Students should zoom in/out on the test item prior to marking on the test item.

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>Notice the “No Calculator” symbol in the top right corner of the screen. This symbol will appear when the calculator is not active on the test question. If the Desmos Virginia calculator appears on the toolbar, it is an allowable tool for the test question. If the Desmos Virginia calculator does not appear on the toolbar, a calculator may not be used to answer this question. To answer this question, students must click on a square below the question. Once they select a square, the square will be shaded. Students should continue to select squares until they have finished shading their answer. Tell students that when there are an unspecified number of answers, the question will be considered “Answered” when one answer (or part) has been selected (or shaded). This is so no clue or hint is given as to how many answers are correct (or should be shaded).</p>
2	TEI Fraction Model 6.NS.1d	The figure should be divided into 5 parts with 1 of those parts shaded OR the model should be divided into 10 parts with any 2 of those parts shaded.	Follow the directions to complete this model. This question will be considered “Answered” when either the Fewer button or the More button has been used one time to change the number of parts in the model. This is so no clue or hint is given for the total number of parts (or the number of parts that

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
3	TEI Hot Spot 6.NS.1e	<p>These and only these two answers:</p> <ul style="list-style-type: none"> • 0.60 • 60% 	<p>should be shaded) for a correct answer.</p> <p>To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a response has been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are two correct answers to this question. All responses must be selected for the question to be correct. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)</p>
4	TEI Drag and Drop 6.NS.1e	<p>Top to bottom:</p> <ul style="list-style-type: none"> • $\frac{7}{10}$ • 10% • 0.09 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>remaining draggers to shift location in the answer option area.</p> <p>Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered “Answered” when each box contains an answer.</p> <p>Sometimes a restriction is placed on where a dragger can be placed to limit errors students can make. See Grade 7 item 41 for functionality.</p>
5	TEI Hot Spot 6.NS.2a	<p>These and only these three answers:</p> <ul style="list-style-type: none"> • -25 • 0 • $\frac{57}{3}$ 	<p>To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a response has been selected, this question will be considered "Answered."</p> <p>This is so no clue or hint is given as to how many answers are correct. There are three correct answers to this question. All responses must be selected for the question to be correct.</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			(Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)
6	Multiple Choice 6.NS.2	A: -10	None
7	TEI Hot Spot 6.NS.2d	These and only these two answers: <ul style="list-style-type: none"> • 4 • -4 	To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a response has been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are two correct answers to this question. All responses must be selected for the question to be correct. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)
8	TEI Equation Editor 6.NS.3a	14^3 Equivalent expressions will score as correct.	Students must type a response in the box. Students can type in numbers, operations, and/or exponents to represent an equivalent expression. Students will need to use the structure box to enter an

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			exponent. Since this question asks for an expression, answers containing “=” would be considered incorrect. Encourage students to try removing their response and then entering a different expression so they can practice using different operation symbols. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>Invalid Key Entry.</i> ” This question will be considered “Answered” once a number or symbol has been placed in the box.
9	Multiple Choice 6.NS.3c	C: 36 is a perfect square because $6^2 = 36$	None
10	Multiple Choice 6.CE.1a	B: $\frac{3}{7} \cdot \frac{1}{4}$	This question has a drawing interaction box. Have students select and practice the various tools.
11	Multiple Choice 6.CE.1b	C: $3\frac{1}{9}$	None
12	Multiple Choice 6.CE.1c	B: greater than $8\frac{1}{4}$ because the divisor is a value between 0 and 1.	None
13	Multiple Choice 6.CE.1e	B: 15 bows	None
14	TEI Fill in the Blank 6.CE.1e	90	To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>You cannot use that character.</i> ”

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered "Answered" once a number or symbol has been placed in the box.
15	Multiple Choice 6.CE.2a	A: $-3 \cdot 6 = -18$	None
16	TEI Hot Spot 6.CE.2b	<p>These and only these four answers:</p> <ul style="list-style-type: none"> • -2 • 0 • 4 • 10 	<p>To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a response has been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are four correct answers to this question. All responses must be selected for the question to be correct. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
17	TEI Hot Spot 6.CE.2c	Plot point at: <ul style="list-style-type: none"> • -2 	This number line model is a type of hot spot technology-enhanced item. To answer this question, students should select a location on the number line. Students can change their answer by selecting another location on the number line. This question will be considered “Answered” once a point is plotted on the number line.
18	Multiple Choice 6.MG.1a	B: Wayne’s line segment shows a radius, and Dani’s line segment shows a diameter.	None
19	Multiple Choice 6.MG.1c	D: $\frac{59}{18.8}$	None
20	TEI In Line Choice 6.MG.1e	Top to bottom: <ul style="list-style-type: none"> • 133 • 41 	To see the choices select the down arrow next to “Choose. . .” This test question has two in-line choice items for students to select. The question will appear “Answered” when both in-line choices have been selected.
21	Multiple Choice 6.MG.2a	B: $0.5 \cdot 3 \cdot 6$	None
22	TEI Hot Spot 6.MG.2b	These and only these 2 answers: <ul style="list-style-type: none"> • 4 meters • 5 meters 	This question specifies the number of answers a student must select. If a student tries to select more than the number of answers indicated, a message stating, “ <i>You must remove an answer before you can choose a new one.</i> ” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Have students try

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			to select an additional answer so that they can see this message appear. Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when two answers have been selected. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)
23	Multiple Choice 6.MG.3d	C: Point <i>M</i>	None
24	TEI Drag and Drop 6.MG.3d	Any of these ordered pairs: <ul style="list-style-type: none"> • (–6, 0) • (–2, 0) • (3, 0) • (5, 0) 	Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location.

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			This question will be considered “Answered” when each box contains an answer.
25	Multiple Choice 6.MG.4a	C (The image of the equilateral triangle.)	None
26	TEI Fill in the Blank 6.MG.4c	<i>TY</i> <i>YT, yt, and ty</i> will also be scored as correct.	To answer this question, students must type a response in the box. Tell students that this question will only allow two characters to be entered. The characters that can be entered are restricted to these characters: T, t, U, u, V, v, W, w, X, x, Y, and y. If a student tries to enter more than two characters or a letter not listed above, a message will appear that states, “ <i>You cannot use that character.</i> ” This question will be considered “Answered” once a number or symbol has been placed in the box.
27	Multiple Choice 6.PS.1c	D: Survey every fifth student who enters the cafeteria during each lunch period.	None
28	Multiple Choice 6.PS.1e	D: 75	None
29	Multiple Choice 6.PS.1f	C: The percent of earthworms greater than 6 inches long	None
30	Multiple Choice 6.PS.2a	C: 7 letters	None
31	TEI Match Table Grid 6.PS.2b	These and only these answers selected in each row. <ul style="list-style-type: none"> • Row 1: Mean and Median • Row 2: Mean, Median, and Mode 	To answer this question, a student will select a response or responses in each row. Students may select more than one response in each row. To deselect a response and remove the check, the

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>response must be selected again. Once 2 responses have been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are 5 correct responses to this question. All responses must be selected for the question to be correct.</p>
	<p>Math Question Set</p>	<p>No Answer</p>	<p>Sometimes students will see a set of questions about one model, graph, table, data set, or equation. When a question set is provided, the first screen will always be the given information. It will not contain a question. The directions tell students to read the information and answer the questions that follow. Once students have read the information, they should click the right arrow to continue to the first question. Note that this given information will appear with each question in the set.</p> <p>Note: The pencil tool marks will remain on the given information when a student advances to the next test question.</p>
<p>32</p>	<p>TEI Multiple Select 6.PS.1a</p>	<p>These and only these two answers.</p> <p>Top to bottom:</p> <ul style="list-style-type: none"> • How many more minutes did Ava use completing homework than Eli? 	<p>This question specifies the number of answers a student must select. If a student tries to select more than the number of answers indicated, a message stating, “<i>You must remove</i></p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
		<ul style="list-style-type: none"> Which student used the greatest number of minutes completing homework? 	<p><i>an answer before you can choose a new one.</i>” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Have students try to select an additional answer so that they can see this message appear. Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when two answers have been selected.</p>
33	Multiple Choice 6.PS.2bc	C: mean increases	None
34	Multiple Choice 6.CE.1de	C: 44 min	None
			<p>This screen announces the end of the math question set. In a computer adaptive test (CAT), students may go back to previously answered questions within a math question set. Once students proceed beyond this transition screen in a CAT, they will not be able to return to questions within the math question set.</p>
35	TEI Hot Spot 6.PFA.1ab	<p>These and only these three answers:</p> <ul style="list-style-type: none"> 2: 5 2 to 5 $\frac{2}{5}$ 	<p>This question specifies the number of answers a student must select. To answer this question, the student must select three answers in the gray box. A bold blue box will outline the selected answer choices to indicate a student has</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description								
			<p>chosen that response as an answer. If a student tries to select more than one answer, a message stating, “You must remove an answer before you can choose a new one.” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Have students try to select an additional answer so that they can see this message appear. This question will be considered “Answered” when three answers have been selected. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)</p>								
36	TEI Multiple Select 6.PFA.1ef	<p>These and only these two answers.</p> <p>Top to bottom:</p> <ul style="list-style-type: none"> • 10 chairs and 4 beds • Table: <table border="1" data-bbox="646 1583 930 1661"> <tbody> <tr> <td>x</td> <td>15</td> <td>40</td> <td>60</td> </tr> <tr> <td>y</td> <td>6</td> <td>16</td> <td>24</td> </tr> </tbody> </table>	x	15	40	60	y	6	16	24	<p>This question specifies the number of answers a student must select. Have students select the boxes next to the two answers they want to select. Then have them try to select a third box. If a student tries to select more than the number of answers indicated, a message stating, “<i>You must remove an answer before you can choose a new one.</i>” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x”</p>
x	15	40	60								
y	6	16	24								

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>is selected to close the message.</p> <p>Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when two answers have been selected.</p>
37	TEI Hot Spot 6.PFA.2ae	<p>These and only these two answers:</p> <ul style="list-style-type: none"> • Row one (the two-column table) • Row two (contextual situation involving donuts) 	<p>This question specifies the number of answers a student must select. To answer this question, the student must select two answers in the gray box. A bold blue box will outline the selected answer choices to indicate a student has chosen that response as an answer. If a student tries to select more than one answer, a message stating, “You must remove an answer before you can choose a new one.” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Have students try to select an additional answer so that they can see this message appear. This question will be considered “Answered” when two answers have been selected. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
38	Multiple Choice 6.PFA.2e	A	None
39	Multiple Choice 6.PFA.3b	B: $y + 5 = 6$	None
40	TEI Drag and Drop 6.PFA.3b	<p>The equation mat should have:</p> <ul style="list-style-type: none"> 1 cup and 2 circles to the left of “=” and 4 circles to the right of “=” <p>OR</p> <ul style="list-style-type: none"> 4 circles to the left of “=” and 1 cup and 2 circles to the right of “=”. 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, the two boxes shade blue. This indicates that the dragger can be placed in any box. Have students try to place one dragger “over” another dragger. The student will notice the new dragger will drop to the last position in the box. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered “Answered” after any one symbol (cup or circle) has been placed on the equation mat.</p>
41	Multiple Choice 6.PFA.3c	D: 108	None
42	Multiple Choice 6.PFA.3d	B: Model B	None
43	TEI Equation Editor 6.PFA.4b	$x \geq -2$ Equivalent inequalities score as correct.	<p>Students must type a response in the box. Inform students that they can use either the negative or the minus symbol on the palette, and both will result in a correct score. Encourage students to try removing their response and then entering a different</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			expression so they can practice using different operation symbols. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>Invalid Key Entry.</i> ” This question will be considered “Answered” once a number or symbol has been placed in the box.
44	TEI Interactive Number Line 6.PFA.4c	A ray pointing right with an open circle at 14	Students must first select a ray. The selected ray will appear on the number line. Then they will drag the endpoint to a location on the number line. If the student wishes to remove what has been graphed, the “Remove” button should be selected.
45	Multiple Choice 6.PFA.4d	D: -12 is a solution to $x \geq -12$ because $-12 = -12$	None

Grade 7 Mathematics

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
1	TEI Fill in the Blank 7.CE.1a	\$19.50 Equivalent answers are scored as correct.	<p><i>The pencil tool has been added to the tool bar.</i></p> <ul style="list-style-type: none"> • Students may use the pencil tool to underline text, make notes, or draw a diagram, etc. • When the pencil tool is selected on the tool bar, the pencil palette will appear on the right side of the screen. • Students can undo, redo, and delete pencil marks using the pencil palette on the right side of the screen. • Students must deselect or “turn off” the pencil tool in the pencil palette and select the pointer tool from the tool bar to answer the test item. • Both the pencil tool and the drawing interaction tool may be used on the test item but not at the same time. To use the drawing interaction tool, the students must deselect or “turn off” the pencil tool. • Please note pencil marks will not adjust proportionally when using zoom in/out. Students should zoom in/out on the test item prior to marking on the test item. <p>To answer this question, students must type a response in the box. Have students</p>

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			<p>attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “<i>You cannot use that character.</i>” This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.</p>
2	Multiple Choice 7.CE.2d	C: 205	None
3	Multiple Choice 7.CE.2d	D: 30%	This question has a drawing interaction box. Have students select and practice the various tools.
4	TEI Drag and Drop 7.CE.2d	<p>Clockwise from top:</p> <ul style="list-style-type: none"> • Other • Food • Utilities • Rent 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original</p>

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			location. This question will be considered “Answered” when each box contains an answer.
5	TEI Drag and Drop 7.NS.1b	Left to right: <ul style="list-style-type: none"> • Fraction Form $\frac{1}{100}$ • Decimal Form 0.01 	Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students select one of the fractions. As they move this number, only the box on the left shades blue, indicating this is the only box that will accept this dragger. Have students try to place a decimal answer into the box on the left. They will not be able to do this. The decimal numbers can only be used in the box on the right. Sometimes a restriction is placed on where a dragger can be placed to limit errors made by students. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered “Answered” when each box contains an answer.
6	TEI Hot Spot 7.NS.1c	These and only these two answers: <ul style="list-style-type: none"> • $(13,250,000 = 1.325 \times 10^7)$ 	Notice the “No Calculator” symbol in the top right corner of the screen. This symbol will appear when the calculator is not active on the

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		<ul style="list-style-type: none"> <li data-bbox="654 275 914 348">• $(0.00000102 = 1.02 \times 10^{-6})$ 	<p data-bbox="1027 275 1417 600">test question. If the Desmos Virginia calculator appears on the toolbar, it is an allowable tool for the test question. If the Desmos Virginia calculator does not appear on the toolbar, a calculator may not be used to answer this question.</p> <p data-bbox="1027 638 1417 1766">This question specifies the number of answers a student must select. To answer this question, the student must select two answers in the gray box. A bold blue box will outline the selected answer choices to indicate a student has chosen that response as an answer. If a student tries to select more than one answer, a message stating, <i>“You must remove an answer before you can choose a new one.”</i> appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Have students try to select an additional answer so that they can see this message appear. This question will be considered “Answered” when two answers have been selected. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)</p>
7	TEI Multiple Select 7.NS.1c	These and only these two answers.	This question specifies the number of answers a student must select. Have students

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		Top to bottom: <ul style="list-style-type: none"> • $2.8 \times 10^4 = 28,000$ • $7.4 \times 10^{-4} = 0.00074$ 	select the boxes next to the two answers they want to select. Then have them try to select a third box. If a student tries to select more than the number of answers indicated, a message stating, “ <i>You must remove an answer before you can choose a new one.</i> ” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when two answers have been selected.
8	TEI Hot Spot 7.NS.2a	These and only these three answers. <ul style="list-style-type: none"> • 0 • -0.2 • $\frac{1}{5}$ 	To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a response has been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are three correct answers to this question. All responses must be selected for the question to be correct.

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			(Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)
9	Multiple Choice 7.NS.3b	B: 18 and 18	None
10	TEI Fill in the Blank 7.MG.1b	86.9 cm ² Equivalent answers are score das correct.	To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>You cannot use that character.</i> ” This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.
11	Multiple Choice 7.MG.1b	C: 1,187 sq in.	None
12	Multiple Choice 7.MG.1c	A: 16 cubic inches	None
13	TEI In Line Choice 7.MG.1d	Left to right: <ul style="list-style-type: none"> • width • 1.9 	To see the choices select the down arrow next to “Choose. . .” This test question has two in-line choice items for students to select. The question will appear “Answered” when both in-line choices have been selected.
14	TEI Hot Spot 7.MG.1d	These and only these three dimensions. <ul style="list-style-type: none"> • 9 ft x 6 ft x 1 ft • 9 ft x 2 ft x 3 ft 	This question specifies the number of answers a student must select. To answer this question, the student must

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		<ul style="list-style-type: none"> 3 ft x 6 ft x 3 ft 	<p>select three answers in the gray box. A bold blue box will outline the selected answer choices to indicate a student has chosen that response as an answer. If a student tries to select more than one answer, a message stating, “<i>You must remove an answer before you can choose a new one.</i>” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Have students try to select an additional answer so that they can see this message appear. This question will be considered “Answered” when three answers have been selected. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)</p>
15	Multiple Choice 7.MG.1e	C: decrease by 24	None
16	Multiple Choice 7.MG.2abc	C: $\overline{FH} \cong \overline{JL}$	None
17	Multiple Choice 7.MG.2d	A: $\frac{9}{m} = \frac{10}{5}$	None
18	TEI Fill in the Blank 7.MG.2g	102 degrees	<p>To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “<i>You cannot use that character.</i>” This message will remain on the screen for approximately</p>

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			three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.
19	TEI Match Table Grid 7.MG.3b	<p>These and only these answers selected in each row.</p> <ul style="list-style-type: none"> • Row 1: Rhombus, Square • Row 2: Rectangle, Square • Row 3: Parallelogram, Rectangle, Rhombus, Square 	To answer this question, a student will select a response or responses in each row. Students may select more than one response in each row. To deselect a response and remove the check, the response must be selected again. Once 3 responses have been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are 8 correct responses to this question. All responses must be selected for the question to be correct. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)
20	TEI In Line Choice 7.MG.3b	<p>Top to bottom:</p> <ul style="list-style-type: none"> • perpendicular • congruent 	To see the choices select the down arrow next to “Choose. . .” This test question has two in-line choice items for students to select. The question will appear “Answered” when both in-line choices have been selected.
21	TEI Drag and Drop 7.MG.3c	<p>Top to bottom:</p> <ul style="list-style-type: none"> • $m\angle A = 130^\circ$ 	Drag and Drop test questions may be answered by selecting

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		<ul style="list-style-type: none"> • $m\angle B = 130^\circ$ • $m\angle D = 50^\circ$ 	<p>a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box.</p> <p>Have students try to place one dragger "over" another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location.</p> <p>Point out that all degree measurements may be used more than once, but there is a limit to the number of times these measurements may be used.</p> <p>This question will be considered "Answered" when each box contains an answer.</p>
22	TEI Fill in the Blank 7.MG.3d	<p>9 feet</p> <p>Equivalent answers are scored as correct.</p>	<p>To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, "<i>You cannot use that character.</i>" This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered "Answered" once a number or</p>

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			symbol has been placed in the box.
23	Multiple Choice 7.MG.4a	B: (2, -6)	None
24	TEI Hot Spot 7.MG.4b	Plot these and only these points: <ul style="list-style-type: none"> • (-2, 1) • (1, -2) • (-2, -2) 	This coordinate grid is a type of hot spot technology-enhanced item. Students will select a location on the coordinate grid and plot a point. Once two points have been plotted, a line will connect the two points. The triangle will be completed once the student selects the third point. Once students have plotted a point, they may remove the point by selecting it again, or they may click on the point and drag it to a new location. Encourage students to click several different points to see how to correct a mistake. The question will appear as “Answered” when the student plots three points.
25	Multiple Choice 7.PFA.1a	B: $d = 0.25F$	None
26	Multiple Choice 7.PFA.1a	B: $\frac{3}{2}$	None
27	Multiple Choice 7.PFA.1b	B: It is positive because as the x -values increase, the y -values increase.	None
28	TEI Hot Spot 7.PFA.1c	Plot any two of these points: <ul style="list-style-type: none"> • (-2, -4) • (-1, -2) • (0, 0) • (1, 2) • (2, 4) 	This coordinate grid is a type of hot spot technology-enhanced item. Students will select a location on the coordinate grid and plot a point. Once two points have been plotted, the line containing the two points will form. Once students have plotted a point, they may remove the point by selecting it again, or they may click on

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			the point and drag it to a new location. Encourage students to click several different points to see how to correct a mistake. The question will appear as “Answered” when the student plots two points.
29	TEI Equation Editor 7.PFA.1ae	$y = 25x$ Equivalent equations are scored as correct.	Students must type a response in the box. Students can type in numbers, operations, and symbols to represent an equivalent equation. If students choose to use parentheses, they will need to use the forward arrow on the palette to exit the parentheses. Inform students that they can use either the negative or the minus symbol on the palette, and both will result in a correct score. Encourage students to try removing their response and then entering a different equation so they can practice using different numbers, operations, and/or symbols. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “Invalid Key Entry.” This question will be considered “Answered” once a number or symbol has been placed in the box.
	Math Question Set	No Answer	Sometimes students will see a set of questions about one model, graph, table, data set, or equation. When a question set is provided, the first screen will always be the given information. It will not contain a question. The

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			<p>directions tell students to read the information and answer the questions that follow. Once students have read the information, they should click the right arrow to continue to the first question. Note that this given information will appear with each question in the set.</p> <p>Note: The pencil tool marks will remain on the given information when a student advances to the next test question.</p>
30	Multiple Choice 7.PFA.1ae	A: $y = 19x$	None
31	Multiple Choice 7.PFA.1e	B	None
32	Multiple Choice 7.CE.2d	B: \$0.95	None
			<p>This screen announces the end of the math question set. In a computer adaptive test (CAT), students may go back to previously answered questions within a math question set. Once students proceed beyond this transition screen in a CAT, they will not be able to return to questions within the math question set.</p>
33	Fill in the Blank 7.PFA.2a	<p>107</p> <p>Equivalent answers are scored as correct.</p>	<p>To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “<i>You cannot use that character.</i>” This message will remain on the screen for approximately three seconds. Tell students</p>

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			that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.
34	Multiple Choice 7.PFA.2a	A: 20 – 72	None
35	Equation Editor 7.PFA.2c	$-12x - 4$ Equivalent simplified expressions are scored as correct.	Students must type a response in the box. Students can type in numbers, operations, and symbols to represent an equivalent equation. If a student chooses to use parentheses, they will need to use the forward arrow on the palette to exit the parentheses. Inform students that they can use either the negative or the minus symbol on the palette, and both will result in a correct score. Encourage students to try removing their response and then entering a different equation so they can practice using different numbers, operations, and/or symbols. If a student attempts to type in a character that does not appear on the palette, a message stating “ <i>Invalid Key Entry</i> ” will appear. This question will be considered “Answered” once a number or symbol has been placed in the box.
36	Multiple Choice 7.PFA.2d	C: 28	None
37	Equation Editor 7.PFA.2d	-2.5	Students must type a response in the box. Students can type in numbers, operations, and

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		Equivalent answers are scored as correct.	<p>symbols to represent an equivalent equation. Inform students that they can use either the negative or the minus symbol on the palette, and both will result in a correct score.</p> <p>Encourage students to try removing their response and then entering a different equation so they can practice using different numbers, operations, and/or symbols. If a student attempts to type in a character that does not appear on the palette, a message stating “<i>Invalid Key Entry</i>” will appear.</p> <p>This question will be considered “Answered” once a number or symbol has been placed in the box.</p>
38	Multiple Choice 7.PFA.3b	D: $d = 23.0$	None
39	TEI Equation Editor 7.PFA.3d	$(d - 3) + 8 = 12$ Equivalent expressions are scored as correct.	<p>Students must type a response in the box. Students can type in numbers, operations, and symbols to represent an equivalent equation. They will need to use the forward arrow on the palette to exit the parentheses. Inform students that they can use either the negative or the minus symbol on the palette, and both will result in a correct score.</p> <p>Encourage students to try removing their response and then entering a different equation so they can practice using different numbers, operations, and/or symbols.</p> <p>Have students attempt to enter</p>

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			<p>a character that cannot be used as part of the answer. A message will appear that states, “Invalid Key Entry” This question will be considered “Answered” once a number or symbol has been placed in the box.</p>
40	Multiple Choice 7.PFA.3f	D: 4 pencils	None
41	TEI Drag and Drop 7.PFA.4a	<p>Left to right</p> <ul style="list-style-type: none"> • -30 • \geq 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place an inequality symbol into the box on the left. They will not be able to do this. The inequality symbols can only be used in the box on the right. Sometimes a restriction is placed on where a dragger can be placed to limit errors students can make. Have students select the number -30. As they move this number, only the box on the left shades blue, indicating this is the only box that will accept this dragger. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location.</p>

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			This question will be considered “Answered” when each box contains an answer.
42	Multiple Choice 7.PFA.4ac	C: {-4, -3, -2}	None
43	TEI Interactive Number Line 7.PFA.4ac	A ray pointing left with a closed circle at 4	Students must first select a ray. The selected ray will appear on the number line. Then students will drag the endpoint to a location on the number line. If the student wishes to remove what has been graphed, the “Remove” button should be selected.
44	Fill in the Blank 7.PS.1a	$\frac{1}{3}$ Equivalent fractions are scored as correct.	To answer this question, students must type a response in the box. Students must enter their answer as a fraction. The decimal and percent keys have been disabled. Students should use the forward slash to create the fraction. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>You cannot use that character.</i> ” This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.
45	Multiple Choice 7.PS.1c	B: 0.25	None
46	TEI In Line Choice 7.PS.1d	Top to bottom: • A	To see the choices select the down arrow next to

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		<ul style="list-style-type: none"> C 	“Choose. . .” This test question has two in-line choice questions for students to select. The question will appear “Answered” when both in-line choices have been selected.
47	Multiple Choice 7.PS.1abd	A: The theoretical probability of $\frac{1}{3}$ is less than the experimental probability.	None
48	TEI Histogram 7.PS.2d	<p>Bars should each be raised to these heights:</p> <ul style="list-style-type: none"> Interval 1-10: height of 6; Interval 11-20: height of 4; Interval 21-30: height of 4; Interval 31-40: height of 6 	To answer this question, students must select a bar and drag the height to a location on the graph. If a student wants to change the height, they may select the bar and drag it to a different height. Once one bar has been moved, the question will appear as “Answered” even if all the bars are returned to the original heights.
49	Multiple Choice 7.PS.2f	C: A stem-and-leaf plot because it lists each value in a set of data.	None

Grade 8 Mathematics

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1	Multiple Choice 8.CE.1b	B: $40(0.06) + 40(0.2)$	<p><i>The pencil tool has been added to the tool bar.</i></p> <ul style="list-style-type: none"> • Students may use the pencil tool to underline text, make notes, or draw a diagram, etc. • When the pencil tool is selected on the tool bar, the pencil palette will appear on the right side of the screen. • Students can undo, redo, and delete pencil marks using the pencil palette on the right side of the screen. • Students must deselect or “turn off” the pencil tool in the pencil palette and select the pointer tool from the tool bar to answer the test item. • Both the pencil tool and the drawing interaction tool may be used on the test item but not at the same time. To use the drawing interaction tool, the students must deselect or “turn off” the pencil tool. • Please note pencil marks will not adjust proportionally when using zoom in/out. Students should zoom in/out on the test item prior to marking on the test item.
2	TEI Fill in the Blank 8.CE.1c	10% or equivalent answers (10.0, 10.00, 10.000, etc.).	To answer this question, students must type a response in the box. Have students attempt to enter a character

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			<p>that cannot be used as part of the answer. A message will appear that states, “<i>You cannot use that character.</i>” This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.</p>
3	Multiple Choice 8.CE.1c	B: 98%	None
4	Multiple Choice 8.NS.1c	D: 3.2×10^{-2}	None
5	TEI Drag and Drop 8.NS.2a	<p>All answers must be placed in the correct boxes.</p> <ul style="list-style-type: none"> • At left: <ul style="list-style-type: none"> ▪ Irrational Numbers • At right, top to bottom: <ul style="list-style-type: none"> ▪ Rational Numbers ▪ Integers ▪ Whole Numbers ▪ Natural Numbers 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered</p>

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			<p>“Answered” when each box contains an answer.</p> <p>Sometimes a restriction is placed on where a dragger can be placed to limit errors students can make. See Grade 7 item 41 for functionality.</p>
6	TEI Match Table Grid 8.NS.2b	<p>These and only these answers selected in each row.</p> <ul style="list-style-type: none"> • Row 1: Two correct responses – Rational OR Rational, *Integer • Row 2: Irrational • Row 3: Rational, Integer • Row 4: Irrational • Row 5: Rational, Integer 	<p>To answer this question, a student will select a response or responses in each row. Students may select more than one response in each row. To deselect a response and remove the check, the response must be selected again. Once 5 responses have been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are 7 correct responses to this question. All responses must be selected for the question to be correct. *Mathematicians do not always agree about this classification.</p>
7	TEI Hot Spot 8.NS.2bc	<p>These and only these three answers:</p> <ul style="list-style-type: none"> • $\sqrt{36}$ • -11 • $\frac{75}{3}$ 	<p>To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a response has been selected, this question will be considered "Answered." This is so no clue or hint is given</p>

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			as to how many answers are correct. There are 3 correct answers to this question. All responses must be selected for the question to be correct. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)
8	TEI Drag and Drop 8.MG.1a	Left to right: <ul style="list-style-type: none"> • 1, 3 (or 3,1) • 3 • 2 • 4 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Point out that all draggers may be used more than once.</p> <p>Have students try to place one dragger "over" another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered "Answered" when each box contains an answer.</p> <p>This question has a drawing interaction box. Have students select and practice the various tools.</p>
9	Multiple Choice 8.MG.1a	C: $\angle P$ and $\angle Q$	None
10	Multiple Choice 8.MG.1b	C: 108°	None
11	Multiple Choice 8.MG.2bd	A: 196 sq in	None

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12	TEI Fill in the Blank 8.MG.2c	108 in.	To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>You cannot use that character.</i> ” This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.
13	Multiple Choice 8.MG.3a	A (0, 0)	None
14	TEI Shape Transformation 8.MG.3f	Plot the quadrilateral at: <ul style="list-style-type: none"> • $A'(-2,3)$ • $B'(-5,3)$ • $C'(-3,0)$ • $D'(0,2)$ 	To answer this question, students will select one of the four images and drag it to a location on the coordinate grid. If students want to select a different image, they can drag a different image to the grid and the first image will return to its original location. Encourage students to select and move different quadrilaterals to the grid. For this question, students could place the quadrilateral for the translation and then place another quadrilateral for the reflection. They will see that the first quadrilateral returns to its original location once they release the second quadrilateral.
15	Multiple Choice	C: Model C	None

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
	8.MG.4a		
16	TEI Multiple Select 8.MG.4b	<p>These and only these two answers.</p> <p>Top to bottom:</p> <ul style="list-style-type: none"> 1m, 1m, $\sqrt{2}$m 7ft, 24ft, 25ft 	<p>This question specifies the number of answers a student must select. Have students select the boxes next to the two answers they want to select. Then have them try to select a third box. If a student tries to select more than the number of answers indicated, a message stating, “<i>You must remove an answer before you can choose a new one.</i>” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message.</p> <p>Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when two answers have been selected.</p>
17	Multiple Choice 8.MG.5a	D: 74 cm ²	None
18	Multiple Choice 8.MG.5a	B: 0.23 cm ²	None
19	Multiple Choice 8.MG.5c	D: 76 ft	None
20	TEI Drag and Drop 8.PFA.1a	<p>Top to bottom:</p> <ul style="list-style-type: none"> Top row: 2x, 5 Bottom row: 6, 12x, 30 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered “Answered” when each box contains an answer.</p>
21	TEI Equation Editor 8.PFA.1b	$-3x + 4$ Or $4 - 3x$	<p>Students must type a response in the box. Students can type in numbers, operations, and/or symbols to represent an equivalent expression. Students will need to use the structure box to enter an exponent. Inform students that they can use either the negative or the minus symbol on the palette, and both will result in a correct score. Encourage students to try removing their response and then entering a different expression so they can practice using different operation symbols. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “Invalid Key Entry.” This question will be considered “Answered” once a number or symbol has been placed in the box.</p>
22	Multiple Choice 8.PFA.2b	C: {(2, 8), (3, 5)}	None

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
23	TEI Equation Editor 8.PFA.3b	Slope = $\frac{4}{3}$ y-intercept = -7	Students must type a response in both boxes. Students will need to use the structure box to enter a fraction. Inform students that they can use either the negative or the minus symbol on the palette, and both will result in a correct score. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>Invalid Key Entry.</i> ” This question will be considered “Answered” once a number or symbol has been placed in both boxes.
24	Multiple Choice 8.PFA.3b	C: The number of candy bars sold	None
25	Multiple Choice 8.PFA.3b	D: 3	None
26	Multiple Choice 8.PFA.3c	A: Graph A	None
27	Multiple Choice 8.PFA.3d	B: Table B	None
28	Multiple Choice 8.PFA.3e	D: $y = 2x - 1$	None
29	Multiple Choice 8.PFA.4b	C: $-\frac{6}{11}$	None
30	TEI Fill in the Blank 8.PFA.4b	$x = -12$ or equivalent answers (-12.0, -24/2, etc.)	To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>You cannot use that character.</i> ” This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.
31	TEI Fill in the Blank 8.PFA.4e	2175 or equivalent answers (2175.0, 2175.00, etc.)	To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>You cannot use that character.</i> ” This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box. Information for teachers: The answer with or without a decimal point will score as correct.
32	TEI Interactive Number Line 8.PFA.5ab	A ray pointing right with a closed circle at $-\frac{1}{2}$	Students must first select a ray. The selected ray will appear on the number line. Then students will drag the endpoint to a location on the number line. If the student wishes to remove what has been graphed, the “Remove” button should be selected.
33	Multiple Choice 8.PFA.5c	D: $10 + 8(y - 1) \leq 200$	None
34	Multiple Choice 8.PS.1a	B: Randomly selecting one tile from Bag B, not replacing the tile, then	None

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
		randomly selecting another tile from Bag B	
35	TEI In Line Choice 8.PS.1ac	Top to bottom: <ul style="list-style-type: none"> replacing it 36% 	To see the choices select the down arrow next to “Choose. . .” This test question has two in-line choice items for students to select. The question will appear “Answered” when both in-line choices have been selected.
36	Two Part Question: Number Line Hot Spot and Multiple Choice 8.PS.1ad	Part A: <ul style="list-style-type: none"> Plot a point on 1/10 Part B: <ul style="list-style-type: none"> C: dependent events, because he did not replace the tile between selections 	Part A: This number line model is a type of hot spot technology-enhanced item. To answer this question, students should select a location on the number line. Students can change their answer by selecting another location on the number line. This question will be considered “Answered” once Part A and Part B are both answered.
37	Multiple Choice 8.PS.1c	A: $\frac{1}{8}$	None
38	Multiple Choice 8.PS.1c	C: 24%	None
	Math Question Set	No Answer	Sometimes students will see a set of questions about one model, graph, table, data set, or equation. When a question set is provided, the first screen will always be the given information. It will not contain a question. The directions tell students to read the information and answer the questions that follow. Once students have read the information, they should click the right arrow to continue to the first question. Note that

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>this given information will appear with each question in the set.</p> <p>Note: The pencil tool marks will remain on the given information when a student advances to the next test question.</p>
39	Multiple Choice 8.PS.2c	C: No, because the scores are only from one member of the golf team	None
40	TEI Drag and Drop 8.PS.2d	<p>Left to right:</p> <ul style="list-style-type: none"> • 107 • 113 • 118 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger "over" another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered "Answered" when each box contains an answer.</p>
41	TEI In Line Choice 8.PS.2j	<p>Top to bottom:</p> <ul style="list-style-type: none"> • the same as • the scale is not consistent 	<p>To see the choices select the down arrow next to "Choose. . ." This test question has two in-line choice items for students to select. The question will appear "Answered" when</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			both in-line choices have been selected.
			This screen announces the end of the math question set. In a computer adaptive test (CAT), students may go back to previously answered questions within a math question set. Once students proceed beyond this transition screen in a CAT, they will not be able to return to questions within the math question set.
42	Multiple Choice 8.PS.2f	B: The lower extreme increased.	None
43	Multiple Choice 8.PS.2g	B: Dennis	None
44	Multiple Choice 8.PS.2h	D: 18	None
45	Multiple Choice 8.PS.3b	C: the amount of water for each sample	None
46	Multiple Choice 8.PS.3d	D: Scatterplot D	None Note: Text-to-speech will read the information for each scatterplot, but it will not be highlighted on the screen.

EOC Mathematics - Algebra 1

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
1	Multiple Choice A.EO.1b	B: 35	<p><i>The pencil tool has been added to the tool bar.</i></p> <ul style="list-style-type: none"> • Students may use the pencil tool to underline text, make notes, or draw a diagram, etc. • When the pencil tool is selected on the tool bar, the pencil palette will appear on the right side of the screen. • Students can undo, redo, and delete pencil marks using the pencil palette on the right side of the screen. • Students must deselect or “turn off” the pencil tool in the pencil palette and select the pointer tool from the tool bar to answer the test item. • Both the pencil tool and the drawing interaction tool may be used on the test item but not at the same time. To use the drawing interaction tool, the students must deselect or “turn off” the pencil tool. • Please note pencil marks will not adjust proportionally when using zoom in/out. Students should zoom in/out on the test item prior to marking on the test item. <p>Note: The pencil tool marks will remain on the given information when a student</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			advances to the next test question.
2	TEI Hot Spot A.EO.2c	<p>These and only these three answers:</p> <ul style="list-style-type: none"> • 3 • $x - 5$ • $3x + 2$ 	<p>To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a response has been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are three correct answers to this question. All responses must be selected for the question to be correct. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)</p>
3	Multiple Choice A.EO.2d	D: $5x - 6$	None
4	TEI Multiple Select A.EO.2c	<p>These and only these three answers.</p> <p>Top to bottom:</p> <ul style="list-style-type: none"> • $3(2x^2 - 4x - 6)$ • $6(x^2 - 2x - 3)$ • $6(x + 1)(x - 3)$ 	<p>This question specifies the number of answers a student must select. Have students select the boxes next to the two answers they want to select. Then have them try to select a third box. If a student tries to select more than the number of answers indicated, a message stating, "<i>You must remove an answer before you can choose a new one.</i>" appears in the top right corner of the screen. This message</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			will remain for approximately three seconds unless the “x” is selected to close the message. Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when three answers have been selected.
5	Multiple Choice A.EO.3b	D: $\frac{5}{x^{18}}$	None
6	TEI Equation Editor A.EO.4a	$6\sqrt{5}$ or equivalent answer	Students must type a response in the box. Students will need to use a structure box to enter a radical, fraction, or exponent. They will need to use the forward arrow on the palette to exit a structure box. Encourage students to try removing their response and then entering a different expression so they can practice using different symbols. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>Invalid Key Entry.</i> ” This question will be considered “Answered” once a number or symbol has been placed in the box.
7	Multiple Choice A.EO.4b	C: 875	None
8	Multiple Choice A.EO.4b	C: $12^3\sqrt{2}$	None
9	TEI Drag and Drop A.EO.4c	Left to right: <ul style="list-style-type: none"> • 8 • 6 	Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking"

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Point out that all draggers may be used up to two times. Selecting a dragger for the second time and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered “Answered” when each box contains an answer.</p>
10	TEI Interactive Number Line A.EI.1c	A ray pointing left with an open circle at -4 .	<p>Students must first select a ray. The selected ray will appear on the number line. Then students will drag the endpoint to a location on the number line. If the student wishes to remove what has been graphed, the “Remove” button should be selected.</p>
11	TEI Equation Editor A.EI.1c	$x > -9$ or $-9 < x$ Equivalent answers are scored as correct.	<p>Students must type a response in the box. Inform students that they can use either the negative or the minus symbol on the palette, and both will result in a correct score. Encourage students to try removing their response and then entering a different expression so they can practice using different symbols. Have students attempt to enter a character</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			that cannot be used as part of the answer. A message will appear that states, <i>“Invalid Key Entry.”</i> This question will be considered “Answered” once a number or symbol has been placed in the box.
12	TEI Hot Spot A.EI.1e	This and only this answer should be selected: <ul style="list-style-type: none"> • The equation has no solutions. 	This question specifies the number of answers a student must select. To answer this question, the student must select one answer in the gray box. A bold blue box will outline the selected answer choices to indicate a student has chosen that response as an answer. If a student tries to select more than one answer, a message stating, <i>“You must remove an answer before you can choose a new one.”</i> appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Have students try to select an additional answer so that they can see this message appear. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)
13	Multiple Choice A.EI.2de	C	None
14	TEI Drag and Drop A.EI.2fg	Top to bottom: <ul style="list-style-type: none"> • \cong • $>$ 	Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>blue. This indicates that the dragger can be placed in any box. Point out that all draggers may be used up to two times. Selecting a dragger for the second time and moving it to an empty box causes the remaining draggers to shift location in the answer option area.</p> <p>Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered “Answered” when each box contains an answer. This question has a drawing interaction box. Have students select and practice the various tools.</p>
15	TEI Solution Set A.EI.2g	<p>Graph Line 1 and Line 2:</p> <ul style="list-style-type: none"> • $y > 2 - x$ using a dashed boundary line • $y \leq 3x - 2$ using a solid boundary line <p>Select the Solution Set:</p> <ul style="list-style-type: none"> • Region bounded by (1, 1), (5, -3), (5, 5) and (2.33, 5). 	<p>Students should follow the directions on the screen. If students want to change the location of a line, they should select the part of the answer to be changed (Line 1 or Line 2) and then click on a point to remove it. Students can also drag a point to a new location. To change the solution set, students can click on the shaded region to remove it. Note: This question is considered answered after a point has been placed on the grid.</p>
16	Hot Spot A.EI.2g	Region 2 and only region 2 should be selected.	This question is a type of hot spot technology-enhanced item. Students must use the hot spot buttons beneath the graph to select the region of

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>the graph to be shaded. Tell students that this question will be considered “Answered” once a region is selected. If students want to change an answer, they should select another region or use the eliminator tool to remove the answer. Please tell students if the eliminator tool is used to remove an answer, the shading will remain on the graph until another region has been selected and the question will appear as “Unanswered.”</p>
17	<p>TEI Equation Editor A.EI.3a</p>	<p>$x = -3$ and $x = 1$ or $x = 1$ and $x = -3$</p>	<p>Students must type a response in the box. Inform students that they can use either the negative or the minus symbol on the palette, and both will result in a correct score. Encourage students to try removing their response and then entering a different expression so they can practice using different symbols. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “<i>Invalid Key Entry.</i>” This question will be considered “Answered” once a number or symbol has been placed in the box.</p>
18	<p>TEI Match Table Grid A.EI.3b</p>	<p>These and only these answers selected in each row.</p> <ul style="list-style-type: none"> • Row 1: No Real Solutions • Row 2: No Real Solutions 	<p>To answer this question, a student will select a response in each row. To change a response and remove an answer, select another column in that row. Once there is a response in each row, this</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
		<ul style="list-style-type: none"> Row 3: Exactly Two Real Solutions Row 4: Exactly One Real Solution 	question will be considered "Answered."
19	TEI Hot Spot A.EI.3b	<p>These and only these two answers:</p> <ul style="list-style-type: none"> $g(x) = 9(x - 8)^2$ $j(x) = x^2 - 8x + 16$ 	To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a response has been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are two correct answers to this question. All responses must be selected for the question to be correct. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)
20	Multiple Choice A.F.1a	D: Marla says the domain is all positive real numbers, and the range is all positive real numbers.	None
21	TEI Hot Spot A.F.1a	<p>These and only these two answers:</p> <ul style="list-style-type: none"> $h(x) = \frac{5}{3}x - 5$ $k(x) = -0.4x + 1.2$ 	To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>response has been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are two correct answers to this question. All responses must be selected for the question to be correct. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)</p>
22	TEI In Line Choice A.F.1b	<p>Top to bottom:</p> <ul style="list-style-type: none"> • one-half • two more than 	<p>To see the choices select the down arrow next to "Choose. . ." This test question has two in-line choice items for students to select. The question will appear "Answered" when both in-line choices have been selected.</p>
23	TEI Hot Spot A.F.1bfh	<p>Plot any two of these ordered pairs:</p> <ul style="list-style-type: none"> • $(-3, -7)$ • $(-2, -4)$ • $(-1, -1)$ • $(0, 2)$ • $(1, 5)$ • $(2, 8)$ 	<p>This coordinate grid is a type of hot spot technology-enhanced item. Students will select a location on the coordinate grid and plot a point. Once two points have been plotted, a line will connect the two points. Once students have plotted a point, they may remove the point by selecting it again, or they may click on the point and drag it to a new location. This question will be considered "Answered" when the line appears.</p>
24	TEI In Line Choice A.F.1bh	<p>Top to bottom:</p> <ul style="list-style-type: none"> • down • steeper 	<p>To see the choices select the down arrow next to "Choose. . ." This test question has two in-line choice items for students to</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			select. The question will appear “Answered” when both in-line choices have been selected.
25	TEI Hot Spot A.F.1e	Plot one of these ordered pairs: <ul style="list-style-type: none"> • $(6, -1)$ • $(9, -6)$ • $(0, 9)$ 	This coordinate grid is a type of hot spot technology-enhanced item. To answer the question, students will plot one point on the graph. Once students have plotted a point, they may remove the point by selecting it again, or they may click on the point and drag it to a new location. This question will be considered “Answered” when one point is plotted.
26	Multiple Choice A.F.2b	B: 3	None
27	Multiple Choice A.F.2b	D: $y = (x - 2)(x + 5)$	None
28	TEI In Line Choice A.F.2c	Top to bottom: <ul style="list-style-type: none"> • reflected over the x-axis • vertically compressed by a factor of 0.25 	To see the choices select the down arrow next to “Choose. . .” This test question has two in-line choice items for students to select. The question will appear “Answered” when both in-line choices have been selected.
29	TEI Function Graph A.F.2c	Graph: <ul style="list-style-type: none"> • $y=2x^2+1$ • vertex at $(0, 1)$ • any one of these ordered pairs <ul style="list-style-type: none"> ▪ $(1, 3)$ ▪ $(-1, 3)$ ▪ $(2, 9)$ ▪ $(-2, 9)$ 	To select the vertex first, students should place their cursor in the shaded region that does not overlap with the second point. Then move the vertex to the correct location. Last, drag the second point to a location on the function. Encourage students to practice moving the points to different location on the grid.
30	TEI Hot Spot A.F.2cd	Plot any three of these ordered pairs: <ul style="list-style-type: none"> • $(0, 1)$ 	This coordinate grid is a type of hot spot technology-enhanced item. To answer the

Question Number	Item Type SOL Code	Correct Answer	Functionality Description						
		<ul style="list-style-type: none"> • (2, 2) • (-2, 2) • (4, 5) • (-4, 5) • (6, 10) • (-6, 10) 	<p>question, students will plot 3 points on the graph. If students want to remove a point, they may do so by selecting it again, or they may click on the point and drag it to a new location.</p> <p>This question will be considered “Answered” when all three points are plotted.</p>						
31	Multiple Choice A.F.2e	B: (1, 300)	None						
32	Multiple Choice A.F.2f	C: Graph C	None						
33	Multiple Choice A.F.2g	C: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td><i>x</i></td> <td><i>y</i></td> </tr> <tr> <td>3</td> <td>64</td> </tr> <tr> <td>4</td> <td>81</td> </tr> </table>	<i>x</i>	<i>y</i>	3	64	4	81	None
<i>x</i>	<i>y</i>								
3	64								
4	81								
34	Multiple Choice A.F.2h	B: Table 1 and Table 4	None						
35	Multiple Choice A.F.2h	B: $f(x)$ and $h(x)$ only	None						
	Math Question Set	No Answer	<p>Sometimes students will see a set of questions about one model, graph, table, data set, or equation. When a question set is provided, the first screen will always be the given information. It will not contain a question. The directions tell students to read the information and answer the questions that follow. Once students have read the information, they should click the right arrow to continue to the first question. Note that this given information will appear with each question in the set. A variety of items have been included with this Math Question Set, but only 2 or 3 test questions will be included in a Math Question Set on a state assessment.</p>						

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
36	TEI Multiple Select A.ST.1a	<p>These and only these two answers.</p> <p>Top to bottom:</p> <ul style="list-style-type: none"> • What is your current GPA? • How many minutes do you spend on your cell phone on a typical day? 	<p>This question specifies the number of answers a student must select. Have students select the boxes next to the two answers they want to select. Then have them try to select a third answer. If a student tries to select more than the number of answers indicated, a message stating, <i>“You must remove an answer before you can choose a new one.”</i> appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when two answers have been selected.</p>
37	TEI Drag and Drop A.ST.1di	<p>Top to bottom:</p> <ul style="list-style-type: none"> • Linear • the points follow a pattern that is consistent with more time spent on the phone resulting in a lower GPA 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Point out that the words linear and quadratic can only be placed in first box and the three phrases can only be placed in the second box. Sometimes a restriction is placed on where a dragger can</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>be placed to limit student errors.</p> <p>Have students select the word linear. As they move this word, only the first box shades blue, indicating this is the only box that will accept this dragger. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location.</p> <p>This question will be considered “Answered” when each box contains an answer.</p>
38	Multiple Choice A.ST.1e	C: a strong relationship	<p>Teacher Note: While the correlation coefficient is not the focus of this standard, it is appropriate to introduce it as part of the conversation when describing strengths and weaknesses of the model. Students can use the data with a curve of best fit to conceptually see the relationship and/or their understanding of the correlation coefficient to access this question.</p>
39	TEI Multiple Select A.ST.1fi	<p>These and only these three answers.</p> <p>Top to bottom:</p> <ul style="list-style-type: none"> • The slope of the curve of best fit is steeper for Lincoln High School. • A student at Lincoln High School who uses a cell phone for 0 hours would typically have a GPA of 3.8. 	<p>This question specifies the number of answers a student must select. Have students select the boxes next to the three answers they want to select. Then have them try to select a fourth box. If a student tries to select more than the number of answers indicated, a message stating, “<i>You must remove an answer before you can choose a new one.</i>” appears in the top right</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
		<ul style="list-style-type: none"> At both schools there is a negative relationship between the average number of hours per day a student uses a cell phone and their GPA. 	<p>corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when three answers have been selected.</p>
40	Multiple Choice A.ST.1i	C: The more time students spend on their cell phones, the lower their GPA.	None
41	Multiple Choice A.ST.1de	D: $y = 1.7x^2 + 2.9x - 5.2$	None
42	Multiple Choice A.ST.1f	D: 91,400	None

EOC Mathematics – Geometry

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
1	TEI Drag and Drop G.RLT.1a	<p>Top to bottom:</p> <ul style="list-style-type: none"> • $p \leftrightarrow q$; • $p \vee q$; • $\therefore p \wedge q$ 	<p><i>The pencil tool has been added to the tool bar.</i></p> <ul style="list-style-type: none"> • Students may use the pencil tool to underline text, make notes, or draw a diagram, etc. • When the pencil tool is selected on the tool bar, the pencil palette will appear on the right side of the screen. • Students can undo, redo, and delete pencil marks using the pencil palette on the right side of the screen. • Students must deselect or “turn off” the pencil tool in the pencil palette and select the pointer tool from the tool bar to answer the test item. • Both the pencil tool and the drawing interaction tool may be used on the test item but not at the same time. To use the drawing interaction tool, the students must deselect or “turn off” the pencil tool. • Please note pencil marks will not adjust proportionally when using zoom in/out. Students should zoom in/out on the test item prior to marking on the test item. <p>Note: The pencil tool marks will remain on the given</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>information when a student advances to the next test question.</p> <p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger "over" another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered "Answered" when each box contains an answer.</p> <p>Sometimes a restriction is placed on where a dragger can be placed to limit errors students can make. See Algebra 1 item 37 for functionality.</p>
2	Multiple Choice G.RLT.1b	C: 0.1	None
3	TEI Multiple Select G.RLT.1b	<p>These and only these two answers.</p> <p>Top to bottom:</p>	This question specifies the number of answers a student must select. Have students select the boxes next to the two answers they want to

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
		<ul style="list-style-type: none"> • The statement “<i>if $\triangle ABC$ is not equilateral, then it is not isosceles</i>” is false. • The contrapositive of the conditional statement is “<i>if $\triangle ABC$ is not isosceles, then it is not equilateral.</i>” 	<p>select. Then have them try to select a third box. If a student tries to select more than the number of answers indicated, a message stating, “<i>You must remove an answer before you can choose a new one.</i>” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message.</p> <p>Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when two answers have been selected.</p>
4	Multiple Choice G.RLT.1cd	C: 65	None
5	Multiple Choice G.RLT.1d	D: Some triangles are both acute and isosceles.	None
6	TEI Match Table Grid G.RLT.2a	<p>These and only these answers selected in each row.</p> <ul style="list-style-type: none"> • Row 1: Supplementary Angles and Consecutive Exterior Angles • Row 2: Congruent Angles • Row 3: Congruent Angles and Alternate Interior Angles • Row 4: Congruent Angles and Corresponding Angles • Row 5: Supplementary Angles 	<p>To answer this question, a student will select a response or responses in each row. Students may select more than one response in each row. To deselect a response and remove the check, the response must be selected again. Once 5 responses have been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are 8 correct responses to this question. All responses must be</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			selected for the question to be correct.
7	Multiple Choice G.RLT.2a	B: $\angle 1 \cong \angle 6$, $\angle 4$ and $\angle 5$ are supplementary	None
8	Multiple Choice G.RLT.2bc	D: $y = 150 - 2x$	None
9	TEI Hot Spot G.RLT.3a	These and only these 2 answers: <ul style="list-style-type: none"> $(-4, -5)$ $(3, 2)$ 	This question specifies the number of answers a student must select. To answer this question, the student must select two answers in the gray box. A bold blue box will outline the selected answer choices to indicate a student has chosen that response as an answer. If a student tries to select more than one answer, a message stating, “ <i>You must remove an answer before you can choose a new one.</i> ” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Have students try to select an additional answer so that they can see this message appear. This question will be considered “Answered” when two answers have been selected. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)
10	TEI Hot Spot G.RLT.3c	Plot points at: <ul style="list-style-type: none"> $(-5, -4)$ $(2, -3)$ 	This pair of coordinate grids is a type of hot spot technology-enhanced item. The grid on the left provides a workspace with drawing

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			interaction. This question will appear as “Answered” when the vertices are plotted on the grid on the right side of the screen. Once students have plotted a point, they may remove the point by selecting it again, or they may click on the point and drag it to a new location.
11	TEI Shape Transformation G.RLT.3c	Plot points at: <ul style="list-style-type: none"> • A' (-2, 2) • B' (-2, 4) • C' (-5, 5) • D' (-4, 2) 	To answer this question, students will select one of the four images and drag it to the correct location on the coordinate grid. If the student wants to select a different image, they can move the first image back to the right of the grid or they can drag the new image to the grid. Once the student drags the new image to the grid, the previous image will be removed from the grid.
12	TEI Match Table Grid G.TR.1a	These and only these answers selected in each row. <ul style="list-style-type: none"> • Row 1: Will NOT Form a Triangle • Row 2: Will Form a Triangle • Row 3: Will Form a Triangle 	To answer this question, a student will select a response in each row. To change a response and remove an answer, select another column in that row. Once there is a response in each row, this question will be considered "Answered."
13	TEI Equation Editor G.TR.1b	$2 < x < 15$ or equivalent values	Students must type a compound inequality in the box. Encourage students to try removing their response and then entering a different expression so they can practice using different operation symbols. Have students attempt to enter a character that cannot be used

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			as part of the answer. A message will appear that states, “ <i>Invalid Key Entry.</i> ” This question will be considered “Answered” once a number or symbol has been placed in the box.
14	Multiple Choice G.TR.1d	C: $m\angle K$ is the greatest of the interior angles	None
15	TEI Drag and Drop G.TR.2a	Top to bottom: <ul style="list-style-type: none"> • Base angles of an isosceles triangle are congruent • Reflexive property • Angle-Side-Angle (ASA) Postulate 	Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered “Answered” when each box contains an answer.
16	Multiple Choice G.TR.2b	C: 4	None
17	Multiple Choice G.TR.2d	C: $\triangle MTP$	None
18	TEI Drag and Drop G.TR.3a	Left to right: <ul style="list-style-type: none"> • Statement 3: <ul style="list-style-type: none"> ▪ $\angle CDA \cong \angle BAD$ ▪ $\angle CBA \cong \angle BCD$ • Reason 4: 	Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
		<ul style="list-style-type: none"> ▪ Angle-Angle (AA) Postulate 	<p>then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger "over" another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered "Answered" when each box contains an answer.</p>
19	TEI Hot Spot G.TR.3ae	<p>These and only these two answers:</p> <ul style="list-style-type: none"> • Students must select $\triangle DBE$ • AND one of the following: $\triangle ACF$, or $\triangle BCE$, or $\triangle BEA$, or $\triangle EAF$. 	<p>This question specifies the number of answers a student must select. To answer this question, the student must select two answers in the gray box. A bold blue box will outline the selected answer choices to indicate a student has chosen that response as an answer. If a student tries to select more than one answer, a message stating, "You must remove an answer before you can choose a new one." appears in the top right corner of the screen. This message will remain for approximately three seconds unless the "x" is selected to close the message. Have students try to select an additional answer so that they can see</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			this message appear. This question will be considered “Answered” when two answers have been selected. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)
20	TEI Drag and Drop G.TR.3d	<p>Top to bottom:</p> <ul style="list-style-type: none"> • Reflect over the line $y = x$ • Dilate by a factor of 0.5 about the origin 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered “Answered” when each box contains an answer.</p>
21	TEI Fill in the Blank G.TR.4c	$\frac{8}{21}$ or equivalent fraction	To answer this question, students must type a response in the box. Make sure students know to enter the forward slash “/” for the fraction bar. Have students attempt to enter a character that cannot be used as part of

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>the answer. A message will appear that states, “<i>You cannot use that character.</i>” This message will remain on the screen for approximately three seconds. This question will be considered “Answered” once a number or symbol has been placed in the box.</p>
22	TEI Equation Editor G.TR.4c	$\tan \theta = \frac{x}{2}$ <p>Equivalent equations are scored as correct.</p>	<p>Students must type a response in the box. Students will need to use the tangent structure box, the fraction structure box to enter a fraction, and the theta key on the palette. Encourage students to try removing their response and then entering a different equation so they can practice using different structure boxes and symbols. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “<i>Invalid Key Entry.</i>” This question will be considered “Answered” once a number or symbol has been placed in the box.</p>
23	Multiple Choice G.TR.4d	A: $4\sqrt{3}$ in.	None
	Math Question Set	No Answer	<p>Sometimes students will see a set of questions about one model, graph, table, data set, or equation. When a question set is provided, the first screen will always be the given information. It will not contain a question. The directions tell students to read the information and</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			answer the questions that follow. Once students have read the information, they should click the right arrow to continue to the first question. Note that this given information will appear with each question in the set. A variety of items have been included with this set, but only 2-3 items will be included in a question set on a state assessment.
24	Multiple Choice G.DF.1a	B: Pentagon	None
25	Multiple Choice G.DF.1b	B: 414 square feet	None
26	Multiple Choice G.DF.1c	D: $V = 18(12)(h) + \frac{1}{2}(18)(12)(9 - h)$	None
27	Fill in the Blank G.DF.1d	21 Equivalent equations are scored as correct.	To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>You cannot use that character.</i> ” This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box, and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.
28	TEI Hot Spot G.DF.1c	These and only these two answers: • Figure B	This question specifies the number of answers a student must select. To answer this

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
		<ul style="list-style-type: none"> Figure C 	<p>question, the student must select two answers in the gray box. A bold blue box will outline the selected answer choices to indicate a student has chosen that response as an answer. If a student tries to select more than one answer, a message stating, “<i>You must remove an answer before you can choose a new one.</i>” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Have students try to select an additional answer so that they can see this message appear. This question will be considered “Answered” when two answers have been selected. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)</p>
29	Multiple Choice G.DF.1d	C: 12 cm	None
30	Multiple Choice G.DF.2a	A: The volume is decreased by a factor of 1/3.	None
31	TEI In Line Choice G.DF.2ac	Top to bottom: <ul style="list-style-type: none"> 252 216 	To see the choices select the down arrow next to “Choose. . .” This test question has two in-line choice items for students to select. The question will appear “Answered” when both in-line choices have been selected.
32	Multiple Choice	A: 54 cm	None

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
	G.DF.2bce		
33	TEI Drag and Drop G.DF.2d	2:3 OR 3:2	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger "over" another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered "Answered" when each box contains an answer. Since the question does not specify the order of comparison (i.e., small to large), both answers are considered correct.</p>
34	Multiple Choice G.PC.1b	A: The length of each diagonal is $\sqrt{r^2 + m^2}$.	None
35	Multiple Choice G.PC.1d	C: $\overline{WX} \cong \overline{ZY}$ and $\overline{ZW} \cong \overline{YX}$	This question has an Interactive Model. Select the button to play the model. There is no sound with this question.
36	Multiple Choice G.PC.2c	A: 36°	None
37	Multiple Choice G.PC.3bc	C: 25	None

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
38	TEI Fill in the Blank G.PC.3c	34 degrees	To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>You cannot use that character.</i> ” This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.
39	Multiple Choice G.PC.3cd	A: 80°	None
40	Multiple Choice G.PC.3d	B: $\frac{3\pi}{4}$ units	None
41	Multiple Choice G.PC.3df	C: 5.78 m	None
42	Multiple Choice G.PC.3e	D: 616 sq in.	None
43	Multiple Choice G.PC.3e	A: 117π cm ²	None
44	Multiple Choice G.PC.4b	C: (4, 0)	None
45	TEI Hot Spot G.PC.4b	Plot center of Circle <i>O</i> at: <ul style="list-style-type: none"> • (0, 2) Plot any one of these points: <ul style="list-style-type: none"> • (5, 2) • (0, 7) • (0, -3) • (-5, 2) • (3, 6) • (4, 5) • (-3, 6) • (-4, 5) 	This coordinate grid is a type of hot spot technology-enhanced item. To answer the question, students will plot 2 points on the graph. Once students have plotted a point, they may remove the point by selecting it again, or they may click on the point and drag it to a new location. This question will be

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
		<ul style="list-style-type: none"> • $(3, -2)$ • $(4, -1)$ • $(-3, -2)$ • $(-4, -1)$ 	considered “Answered” when both points are plotted.
46	<p>Two Part Item Part A: TEI Equation Editor Part B: TEI Equation Editor G.PC.4bc</p>	<p>Part A: Coordinates of O: $(-3, -1)$ Length of \overline{CD}: 10 Part B: $(x + 3)^2 + (y + 1)^2 = 25$ or equivalent answers</p>	<p>To answer Part A and B, Students must type a response in the box. Students will need to use the structure box to enter an exponent. Inform students that they can use either the negative or the minus symbol on the palette, and both will result in a correct score. Encourage students to try removing their response and then entering a different expression to practice using different symbols. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “<i>Invalid Key Entry.</i>”</p> <p>The question will be considered “Answered” once Part A and Part B are both answered.</p>

EOC Mathematics – Algebra 2

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
1	Multiple Choice A2.EO.1a	C: $\frac{2x+3}{(x-4)(x+7)}$	<p><i>The pencil tool has been added to the tool bar.</i></p> <ul style="list-style-type: none"> • Students may use the pencil tool to underline text, make notes, or draw a diagram, etc. • When the pencil tool is selected on the tool bar, the pencil palette will appear on the right side of the screen. • Students can undo, redo, and delete pencil marks using the pencil palette on the right side of the screen. • Students must deselect or “turn off” the pencil tool in the pencil palette and select the pointer tool from the tool bar to answer the test item. • Both the pencil tool and the drawing interaction tool may be used on the test item but not at the same time. To use the drawing interaction tool, the students must deselect or “turn off” the pencil tool. • Please note pencil marks will not adjust proportionally when using zoom in/out. Students should zoom in/out on the test item prior to marking on the test item. <p>Note: The pencil tool marks will remain on the given information when a student</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			advances to the next test question.
2	TEI Drag and Drop A2.EO.1a	Top to bottom: <ul style="list-style-type: none"> • $(2d + 5)^2$ • $(4d + 1)$ 	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger "over" another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location.</p> <p>This question will show as "Answered" once the student uses two draggers. If the student places two draggers into the numerator or two draggers into the denominator, this question would still show as "Answered" since the minimum number of draggers to show the question as answered is two.</p> <p>Sometimes a restriction is placed on where a dragger can be placed to limit errors students can make. See Algebra 1 item 37 for functionality.</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
3	Multiple Choice A2.EO.1c	D: $-\frac{d^6}{7}$	None
4	Multiple Choice A2.EO.2a	A: $4n^2p^9\sqrt[3]{9n^2}$	None
5	TEI Multiple Select A2.EO.2ac	<p>These and only these two answers. Top to bottom:</p> <ul style="list-style-type: none"> • $3q^{\frac{17}{6}}r^{\frac{11}{6}}$ • $3q^2r^6\sqrt[6]{q^5r^5}$ 	<p>This question specifies the number of answers a student must select. Have students select the boxes next to the two answers they want to select. Then have them try to select a third box. If a student tries to select more than the number of answers indicated, a message stating, “<i>You must remove an answer before you can choose a new one.</i>” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when two answers have been selected.</p>
6	Multiple Choice A2.EO.3b	B: $(5m - 7)(25m^2 + 35m + 49)$	None
7	TEI Hot Spot A2.EI.1b	<p>These and only these two points.</p> <ul style="list-style-type: none"> • -2 • 6 	<p>This number line model is a type of hot spot technology-enhanced item. To answer this question, students should select a location on the number line. Students can change their answer by selecting another location on the number line. This question will be considered “Answered” once a point is plotted on the number line.</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
8	TEI Interactive Number Line A2.EI.1d	A ray pointing left with an open circle at 0 and a ray pointing right with an open circle at 4.	Students must first select a ray. The selected ray will appear on the number line. Then students will drag the endpoint to a location on the number line. If the student wishes to remove what has been graphed, the “Remove” button should be selected.
9	TEI Interactive Number Line A2.EI.1d	A ray pointing left with an open circle at 0 and a ray pointing right with an open circle at 4.	Students must first select a ray. The selected ray will appear on the number line. Then students will drag the endpoint to a location on the number line. If the student wishes to remove what has been graphed, the “Remove” button should be selected.
10	TEI Equation Editor A2.EI.2bd	$-16 + 8i\sqrt{35}$ Equivalent expressions are scored as correct.	Students must type a response in the box. Students will need to use the radical structure box to enter a radical. They will need to use the forward arrow on the palette to exit the radical symbol. Students may use the imaginary unit on the palette or the “i” on the keyboard. Inform students that they can use either the negative or the minus symbol on the palette, and both will result in a correct score. Encourage students to try removing their response and then entering a different expression so they can practice using different structure boxes and symbols. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “Invalid Key Entry.”

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			Note: Either the minus or the negative symbol may be used on the palette, and both would score correct. This question will be considered "Answered" once a number or symbol has been placed in the box.
11	TEI Hot Spot A2.EI.3c	These and only these answers: <ul style="list-style-type: none"> • -1 • 3.25 	To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a response has been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are two correct answers to this question. All responses must be selected for the question to be correct. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)
12	Multiple Choice A2.EI.3c	C: $y = -26$ and $y = -11$	None
13	Multiple Choice A2.EI.4b	D: \emptyset (the empty set)	None
14	Multiple Choice A2.EI.5abc	D: $\{ \}$ (the empty set)	None
15	TEI Hot Spot A2.EI.6a	These and only these three answers: <ul style="list-style-type: none"> • $(x + 1)$ • $(3x + 2)$ • $(x - 5)$ 	To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			<p>a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a response has been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are three correct answers to this question. All responses must be selected for the question to be correct.</p> <p>(Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)</p>
16	TEI Hot Spot A2.F.1b	<p>These and only these two answers:</p> <ul style="list-style-type: none"> • $f(x) = \frac{-3}{x^2}$, • $f(x) = \frac{3}{(x+1)^2}$ 	<p>To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a response has been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are two correct answers to this question. All responses must be selected for the question to be correct.</p> <p>(Text-to-speech will read each word but not highlight each word. The box containing</p>

Question Number	Item Type SOL Code	Correct Answer	Functionality Description
			words will be outlined but not highlighted.)
17	Multiple Choice A2.F.1b	Answer B: $f(x) = \frac{8}{x-3}$	None
18	Multiple Choice A2.F.1c	D: Graph D	None
19	TEI Function Graph A2.F.1c	Graph: <ul style="list-style-type: none"> • $f(x) = 2(3)^x - 4$ • y-intercept $(0, -2)$ • asymptote $y = -4$ • point $(1, 2)$ 	To answer this question, students must follow the directions in the test question. To select the y -intercept first, students should place their cursor in the shaded region that does not overlap with the second point. Then move the y -intercept to the correct location. Next, students will drag the asymptote to the correct location. Last, students will drag the second point to a location on the function. Encourage students to move the points and asymptote to different locations on the grid to understand how the item type functions. The “Reset” button will revert the graph to its original state.
20	TEI Hot Spot A2.F.1d	Any two of these three points: <ul style="list-style-type: none"> • $(0, 0)$ • $(4, 6)$ • $(6, 9)$ 	This coordinate grid is a type of hot spot technology-enhanced item. Once students have plotted a point, they may remove the point by selecting it again, or the students may click on the point and drag it to a new location. The item will appear as “Answered” when the student plots two points on the coordinate grid. Encourage students to click several different points to see if they can plot more than two points.

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21	Multiple Choice A2.F.1d	D: The volume of the gas varies inversely with the pressure because $vp = 3,600$.	None
22	Multiple Choice A2.F.1d	D: It is an inverse variation because $10 = xy$.	None
23	TEI Multiple Select A2.F.2a	<p>These and only these three answers.</p> <p>Top to bottom:</p> <ul style="list-style-type: none"> • Domain: $(-\infty, -3) \cup (-3, -2) \cup (-2, \infty)$ • There is a point of discontinuity at $x = -2$. • There is a zero at $(2, 0)$. 	<p>This question specifies the number of answers a student must select. Have students select the boxes next to the three answers they want to select. Then have them try to select a fourth box. If a student tries to select more than the number of answers indicated, a message stating, “<i>You must remove an answer before you can choose a new one.</i>” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when three answers have been selected.</p>
24	TEI Fill in the Blank A2.F.2a	<p>$x = -1$</p> <p>Equivalent expressions are scored as correct.</p>	<p>To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “<i>You cannot use that character.</i>” This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response</p>

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			box and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.
25	Multiple Choice A2.F.2a	C: one x -intercept and no y -intercept	None
26	TEI Multiple Select A2.F.2a	<p>These and only these two answers.</p> <p>Top to bottom:</p> <ul style="list-style-type: none"> • $g(x) = x^2 + 2x - 3$ • $k(x) = \sqrt{x} - 4$ 	<p>This question specifies the number of answers a student must select. Have students select the boxes next to the two answers they want to select. Then have them try to select a third box. If a student tries to select more than the number of answers indicated, a message stating, “<i>You must remove an answer before you can choose a new one.</i>” appears in the top right corner of the screen. This message will remain for approximately three seconds unless the “x” is selected to close the message. Tell students if they change their mind and want to select a different answer, they must deselect one of their previous answers. This question will be considered “Answered” when two answers have been selected.</p>
27	Multiple Choice A2.F.2a	Answer B: $\{x \mid -5 \leq x \leq 2\}$	None
28	TEI Fill in the Blank A2.F.2a	2.5 or $\frac{5}{2}$ or equivalent answers.	To answer this question, students must type a response in the box. Make sure students know how to enter the fraction bar, which is the forward slash key (“/”). Have students attempt to enter a character that cannot be used

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			<p>as part of the answer. A message will appear that states, “<i>You cannot use that character.</i>” This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.</p>
29	TEI Drag and Drop A2.F.2ab	$(x + 2)^2 + 13$	<p>Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. Selecting a dragger and moving it to the empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger “over” another dragger. This cannot be done. If a student wishes to change the answer, the dragger must be moved back to the original location. This question will be considered “Answered” when the box has an answer.</p>
30	TEI Match Table Grid A2.F.2bh	<p>These and only these answers selected in each row.</p> <ul style="list-style-type: none"> • Row 1: Columns 1 and 3 • Row 2: Columns 1, 2, and 3 • Row 3: Column 1 • Row 4: Column 2 • Row 5: Column 3 	<p>To answer this question, a student will select a response in each row. To change a response and remove an answer, select another column in that row. Once there is a response in each row, this question will be considered "answered."</p>

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31	Multiple Choice A2.F.2c	C: [0, 2)	None
32	TEI Hot Spot A2.F.2c	These and only these two answers: <ul style="list-style-type: none"> • $-\infty < x < -1$ • $2 < x < \infty$ 	To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a response has been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are two correct answers to this question. All responses must be selected for the question to be correct. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)
33	TEI Fill in the Blank A2.F.2e	-4 or equivalent answers	To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, " <i>You cannot use that character.</i> " This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered Answered"

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			once a number or symbol has been placed in the box.
34	Multiple Choice A2.F.2g	D: y approaches 0	None
35	Multiple Choice A2.F.2g	A: $f(x)$ approaches $-\infty$	None
36	TEI Drag and Drop A2.F.2h	Left to right: <ul style="list-style-type: none"> $y = 4$ $x = 3$ 	Drag and Drop test questions may be answered by selecting a dragger and moving it to a location or by "clicking" on a dragger and then "clicking" the location for it to be placed. As soon as a dragger is selected, all the boxes shade blue. This indicates that the dragger can be placed in any box. Selecting a dragger and moving it to an empty box causes the remaining draggers to shift location in the answer option area. Have students try to place one dragger "over" another dragger. This cannot be done. If a student wishes to change an answer, the dragger must be moved back to the original location. This question will be considered "Answered" when each box contains an answer.
37	TEI Equation Editor A2.F.2i	$g^{-1}(x) = x^2 + 8$ <p>Equivalent equations are scored as correct.</p> <p>Note: This item will be revised to say, "What is the inverse of $g(x) = \sqrt{x - 8}$ when $x \geq 8$?"</p>	Students must type a response in the box. Students will need to use a structure box to enter an exponent or radical. Students will need to use the forward arrow on the palette to exit the structure box. Encourage students to try removing their response and then entering a different equation so they can practice using different structure boxes and symbols. Have students attempt to enter a character

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			<p>that cannot be used as part of the answer. A message will appear that states, “<i>Invalid Key Entry.</i>”</p> <p>This question will be considered “Answered” once a number or symbol has been placed in the box</p>
38	TEI Fill in the Blank A2.F.2k	13 or equivalent answer	<p>To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “<i>You cannot use that character.</i>”</p> <p>This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. Information for teachers: This question will be considered “Answered” once a number or symbol has been placed in the box.</p>
39	Multiple Choice A2.F.2k	A: Graph A	None
	Math Question Set	No Answer	<p>Sometimes students will see a set of questions about one model, graph, table, data set, or equation. When a question set is provided, the first screen will always be the given information. It will not contain a question. The directions tell students to read the information and answer the questions that follow. Once students have read the information, they should click the right arrow to continue to</p>

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			the first question. Note that this given information will appear with each question in the set. A variety of items have been included with this set, but only 2-3 items will be included in a question set on a state assessment.
40	Multiple Choice A2.ST.1b	B: ask the school administration for the data files that contain all the test scores on the State 10 th Grade English assessment for her school	None
41	TEI Match Table Grid A2.ST.1cefhij	These and only these answers selected in each row. <ul style="list-style-type: none"> • Row 1: False • Row 2: True • Row 3: False 	To answer this question, a student will select a response in each row. To change a response and remove an answer, select another column in that row. Once there is a response in each row, this question will be considered "Answered."
42	TEI In Line Choice A2.ST.1fgh	Top to bottom: <ul style="list-style-type: none"> • 123 • less 	To see the choices select the down arrow next to "Choose. . ." This test question has two in-line choice items for students to select. The question will appear "Answered" when both in-line choices have been selected.
43	Multiple Choice A2.ST.1j	D: graph titled "Class D 10 th Grade English Assessment"	None
44	Multiple Choice A2.ST.1ehi	A: 22	None
45	TEI Fill in the Blank A2.ST.1ehi	163 or 164	To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, "You cannot use that character."

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			This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.
46	TEI Hot Spot A2.ST.1ehi	These and only these seven intervals: <ul style="list-style-type: none"> • 26-28 • 28-30 • 30-32 • 32-34 • 34-36 • 36-38 • 38-40 	This histogram model is a type of hot spot technology-enhanced item. To answer this item, students must select an interval or intervals. Tell students that this item will be considered “Answered” once one interval is selected. If the students want to change an answer, they should select the interval again to deselect it.
47	TEI Fill in the Blank A2.ST.1fh	Values greater than or equal to -1.444 and less than or equal to -1.44 to include all equivalent values in fraction or decimal form	To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>You cannot use that character.</i> ” This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered Answered” once a number or symbol has been placed in the box.
48	Multiple Choice A2.ST.1fh	B: Kelli	None

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49	TEI Hot Spot A2.ST.1i	<p>One of the following sets of regions:</p> <ul style="list-style-type: none"> • Region 3 and Region 4 OR • Region 3 and Region 5 OR • Region 4 and Region 6 OR • Region 5 and Region 6 	<p>To answer this question, a student will select a response or responses. A bold blue box outlines the answer choice when it is selected, indicating a student has chosen that response as an answer. To deselect an answer and remove the blue box, the answer choice must be selected again. Once a response has been selected, this question will be considered "Answered." This is so no clue or hint is given as to how many answers are correct. There are four possible ways to get a correct answer with two different regions. (Text-to-speech will read each word but not highlight each word. The box containing words will be outlined but not highlighted.)</p>
50	Multiple Choice A2.ST.2eh	B: $y = 997(1.03)^x$	None
51	TEI In Line Choice A2.ST.2f	<p>Top to bottom:</p> <ul style="list-style-type: none"> • 0.916 • strong positive • closely models 	<p>To see the choices select the down arrow next to "Choose. . ." This test question has three in-line choice items for students to select. The question will appear "Answered" when all three in-line choices have been selected.</p>
52	TEI Fill in the Blank A2.ST.3bd	336 or equivalent answer	<p>Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, "You cannot use that character." This message will remain on the screen for approximately three seconds.</p>

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			Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.
53	TEI Fill in the Blank A2.ST.3cde	63 or equivalent answer	To answer this question, students must type a response in the box. Have students attempt to enter a character that cannot be used as part of the answer. A message will appear that states, “ <i>You cannot use that character.</i> ” This message will remain on the screen for approximately three seconds. Tell students that the answer does not need to be as long as the response box and a blank space can never be entered into a response box. This question will be considered “Answered” once a number or symbol has been placed in the box.