
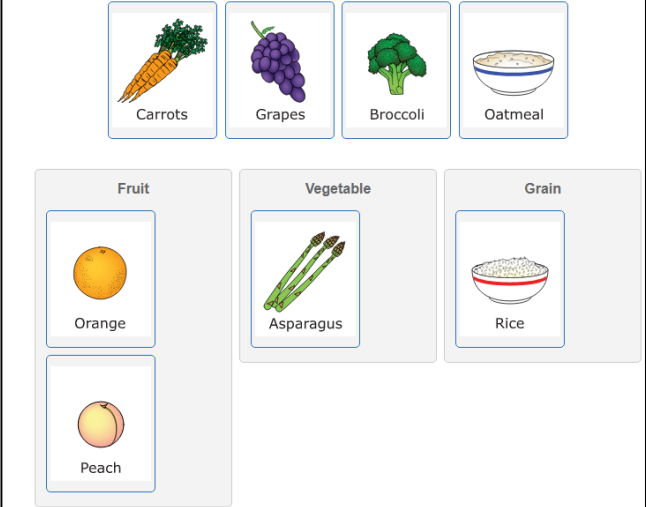
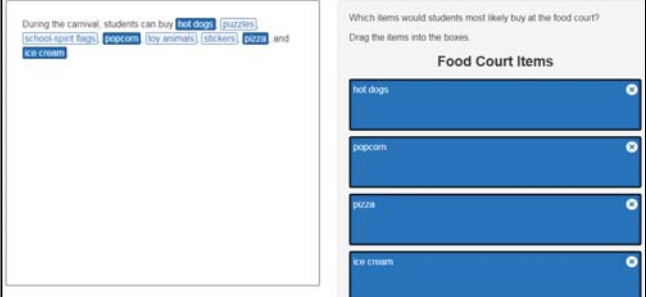


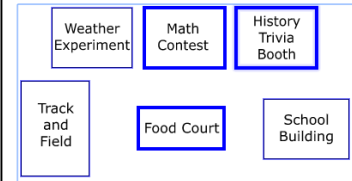
Item Types Teacher Guide

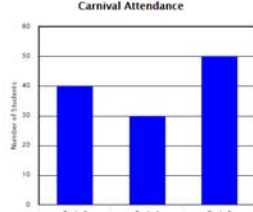
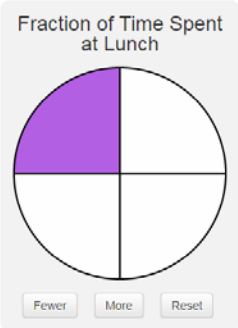
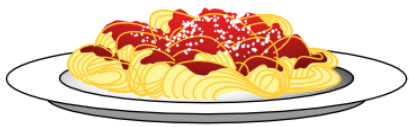
This guide provides educators with details on the item types students may experience in the Item Types Tutorial and on the MCA. Educators may also access the Item Types Tutorial to familiarize themselves with it before using the tutorial with students. While the items in the tutorial are generic, any information specific to a content area is addressed in this guide.

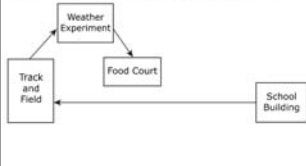
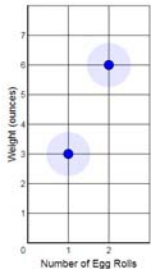
Text-to-speech is available in the Item Types Tutorial if students need audio support for the text in the tutorial.

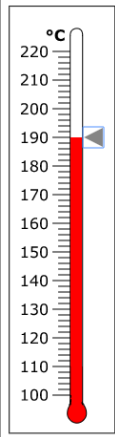


Item Types	Sample Screenshot										
<p>Multiple Response</p> <p>Multiple-response items have more than one correct answer, and students should select all of the answers that they think are correct. These items have a square checkbox next to each answer choice.</p> <p>Students must read the directions carefully before answering so they know if a certain number of responses are specified. Some items will say how many responses to select and other items will not.</p> <p>To change their answer, students select the answer options they want to change.</p>	<p>The table shows the number of students in grades 3, 4, and 5 who attended a school carnival.</p> <table border="1"> <thead> <tr> <th colspan="2">Carnival Attendance</th> </tr> <tr> <th>Grade</th> <th>Number of Students</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>40</td> </tr> <tr> <td>4</td> <td>30</td> </tr> <tr> <td>5</td> <td>50</td> </tr> </tbody> </table> <p>Which students attended the carnival? Select the grades you want to choose.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Kindergartners <input type="checkbox"/> First graders <input type="checkbox"/> Second graders <input checked="" type="checkbox"/> Third graders <input checked="" type="checkbox"/> Fourth graders <input checked="" type="checkbox"/> Fifth graders <p>Sample shown: Grades 3–5 Tutorial, Item 10 (This item type also appears in the Grades 6–HS Tutorial, Item 8)</p>	Carnival Attendance		Grade	Number of Students	3	40	4	30	5	50
Carnival Attendance											
Grade	Number of Students										
3	40										
4	30										
5	50										

Item Types	Sample Screenshot
<p>Drag and Drop</p> <p>Students answer drag and drop items by dragging an answer choice to the correct box. Answer choices may be text or graphics.</p> <p>While the functionality is similar across all types, there are different types of drag and drop items:</p> <ul style="list-style-type: none"> Some items let students drag two or more answer choices into the same box, while other items allow only one choice. In some items, answer choices can only be dragged into certain boxes. In some items, the same answer choice can be dragged multiple times (it replenishes after it is dragged; Example 1), but in other items, each answer choice can be dragged only one time (Example 2). <p>When an answer choice is dragged, the boxes into which it can be placed turn blue.</p> <p>To change an answer, students may need to drag a choice out of the box before they can put another one in.</p>	<p>Example 1</p> <p>The diagram shows the paths a student used to go from the school building to the track and field and from the track and field to the food court.</p>  <p>Use the centimeter ruler to measure the distances represented by the arrows.</p> <p>Drag the numbers into the correct boxes.</p> <p>3 6 10 12</p> <p>The distance in the diagram from the school building to the track and field is <input type="text" value="12"/> centimeters.</p> <p>The distance in the diagram from the track and field to the food court is <input type="text" value="3"/> centimeters.</p> <p>Sample shown: Grades 3–5 Tutorial, Item 5 (This item type also appears in the Grades 3–5 Tutorial, Item 9 and Grades 6–HS Tutorial, Item 4)</p> <p>Example 2</p> <p>A booth at an international festival sold fresh foods. Identify each food as a fruit, vegetable, or grain.</p> <p>Drag each food into the correct box.</p>  <p>Sample shown: Grades 6–HS Tutorial, Item 7 (This item type also appears in the Grades 3–5 Tutorial, Item 4 and Grades 6–HS Tutorial, Item 13)</p>
<p>Text Extractor (Reading MCA only)</p> <p>Text extractor items are a specific type of drag and drop item. Students must drag text selections from a passage to boxes to answer the item. Each text selection can only be used one time.</p> <p>To remove a selection, students must select the “x” in the upper-right corner of the box or drag a new text selection to the box.</p>	 <p>Sample shown: Grades 3–5 Tutorial, Item 2 (This item type also appears in the Grades 6–HS Tutorial: Item 2)</p>

Item Types	Sample Screenshot										
<p>Hot Spot</p> <p>Students answer these items by selecting an object. Objects may be text or graphics.</p> <p>There may be more than one answer, so students will select as many objects as needed to answer the question.</p> <p>To change their answer, students select the object(s) they want to change.</p>	<p>A student visited the food court, the math contest, and the history trivia booth. Identify each location the student visited.</p> <p>Select each location you want to choose.</p>  <p>Sample shown: Grades 3–5 Tutorial, Item 6) (This item type also appears in the Grades 6–HS Tutorial, Item 14)</p>										
<p>Hot Text (Reading MCA only)</p> <p>Students answer these items by selecting one or more highlighted selections of the text.</p> <p>To change their answer, students select the highlighted selections of the text they want to change.</p>	<p>The table shows walking times between events at the carnival.</p> <table border="1"> <thead> <tr> <th>Event</th> <th>Time (minutes)</th> </tr> </thead> <tbody> <tr> <td>Track and Field to Weather Experiment</td> <td>1</td> </tr> <tr> <td>Weather Experiment to Math Contest</td> <td>1</td> </tr> <tr> <td>Math Contest to Food Court</td> <td>2</td> </tr> </tbody> </table> <p>Based on the information in the table, identify the sentence that contains an error.</p> <p>Select the phrase you want to choose.</p> <p>It takes 1 minute to walk from the track and field to the weather experiment.</p> <p>It takes 1 minute to walk from the weather experiment to the math contest.</p> <p>It takes 1 minute to walk from the math contest to the food court.</p> <p>Sample shown: Grades 3–5 Tutorial: Item 7 (This item type also appears in the Grades 6–HS Tutorial, Item 5)</p>	Event	Time (minutes)	Track and Field to Weather Experiment	1	Weather Experiment to Math Contest	1	Math Contest to Food Court	2		
Event	Time (minutes)										
Track and Field to Weather Experiment	1										
Weather Experiment to Math Contest	1										
Math Contest to Food Court	2										
<p>Fill in the Blank (Mathematics and Science MCA only)</p> <p>For some items, students must type an answer in the box using their keyboard.</p> <p>For all grades of math:</p> <ul style="list-style-type: none"> Students can answer using digits 0–9, the forward slash (/) to show fractions, and the period to show decimals. Students must change a mixed number to an improper fraction or decimal because a space is not an allowable character. For items with an answer greater than or equal to 1,000, students must enter the answer without a comma. <p>In addition, for grades 7, 8, and 11 math, students can use the hyphen (-) to show negative numbers.</p> <p>For science, students can answer using letters A–Z or the digits 0–9. On select items, the comma, forward slash (/), and decimal characters are allowable characters.</p> <p>To change or remove their answer, students use the backspace key on the keyboard and then enter their new answer.</p>	<p>The table shows the number of students participating in events at the school carnival.</p> <table border="1"> <thead> <tr> <th colspan="2">School Carnival Participation</th> </tr> <tr> <th>Event</th> <th>Number of Students</th> </tr> </thead> <tbody> <tr> <td>Weather Experiment</td> <td>50</td> </tr> <tr> <td>Math Contest</td> <td>40</td> </tr> <tr> <td>Track and Field</td> <td>90</td> </tr> </tbody> </table> <p>How many students participated in the weather experiment event?</p> <p>Enter your answer in the box.</p> <p><input type="text" value="50"/> students</p> <p>Sample shown: Grades 3–5 Tutorial, Item 15 (This item type also appears in the Grades 6–HS Tutorial, Item 12)</p>	School Carnival Participation		Event	Number of Students	Weather Experiment	50	Math Contest	40	Track and Field	90
School Carnival Participation											
Event	Number of Students										
Weather Experiment	50										
Math Contest	40										
Track and Field	90										

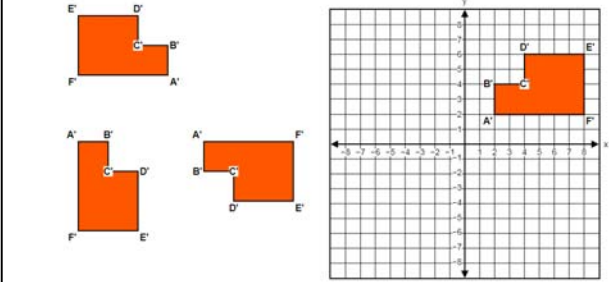
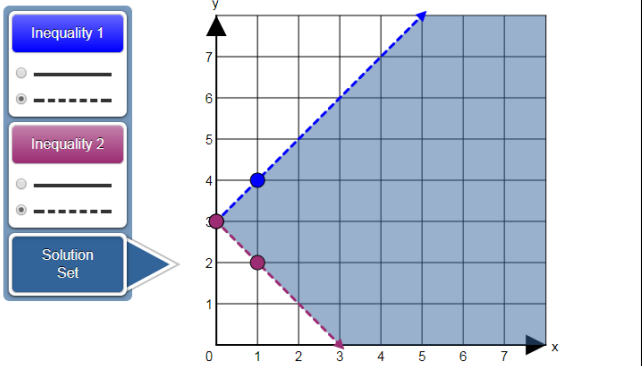
Item Types	Sample Screenshot								
<p>Bar Graph (Mathematics and Science MCA only)</p> <p>Students answer bar graph items by dragging one or more bars in the bar graph. For some items, students may only be able to move some of the bars.</p> <p>To change their answer, students select the bar to move it.</p>	<p>The table shows the number of students in grades 3, 4, and 5 who attended a school carnival.</p> <table border="1"> <thead> <tr> <th>Grade</th> <th>Number of Students</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>40</td> </tr> <tr> <td>4</td> <td>30</td> </tr> <tr> <td>5</td> <td>50</td> </tr> </tbody> </table> <p>Create a bar graph that shows the number of students in each grade who attended the school carnival.</p> <p>Drag the top of each bar to the correct height.</p>  <p>Sample shown: Grades 3–5 Tutorial, Item 1; (This item type also appears in the Grades 6–HS Tutorial, Item 1)</p>	Grade	Number of Students	3	40	4	30	5	50
Grade	Number of Students								
3	40								
4	30								
5	50								
<p>Fraction Model (Mathematics MCA only)</p> <p>For some fraction model items, students must use the More or Fewer buttons: select More to divide the model into more parts; select Fewer to divide the model into fewer parts. Parts of the model can be shaded by selecting them.</p> <p>To remove the shading on a part of the model, students select the part again.</p> <p>For some fraction model items, the More and Fewer buttons are grayed out and students only need to shade parts of the model to answer the question.</p> <p>Students select the Reset button to start the item over.</p>	<p>During the school carnival, a student spent $\frac{1}{4}$ of the time at lunch. Create a fraction model that is shaded to show the fraction of time spent at lunch.</p> <p>Divide the figure into equal parts by using the More and Fewer buttons. Then, select the parts you want to shade.</p>  <p>Sample shown: Grades 3–5 Tutorial, Item 3 (This item type also appears in the Grades 6–HS Tutorial, Item 3)</p>								
<p>Inline Choice</p> <p>For in-line choice items, students must select the answer from one or more dropdown menus.</p> <p>To view all of the answer choices, students select the dropdown menu. Students select one answer from each dropdown menu.</p> <p>To change their answer, students select a different answer from the dropdown menu.</p>	<p>Spaghetti is originally from Italy.</p>  <p>Select the continent to complete the sentence.</p> <p>Italy is located in <input type="text" value="Europe"/></p> <ul style="list-style-type: none"> Choose... Africa Asia Australia Europe North America South America <p>Sample shown: Grades 6–HS Tutorial, Item 6 (This item type also appears in the Grades 3–5 Tutorial, Item 8)</p>								

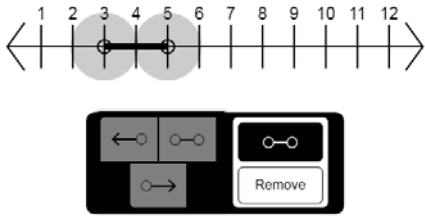
Item Types	Sample Screenshot												
<p>Match Table Grid</p> <p>For some match table grid items, students select one or more answers in each row or column. Students should select all of the answers that they think are correct. These items have a square checkbox for each answer choice. To remove a selection, students select the square checkbox again.</p> <p>For some match table grid items, students select only one answer in each row or column. These items have a circle for each answer choice. To change their selection, students select a different circle.</p>	<p>Sarah and Akeem volunteered at different events at the carnival.</p> <ul style="list-style-type: none"> • Sarah: Track and Field, Weather Experiment • Akeem: Track and Field, Math Contest <p>At which events did each student volunteer?</p> <p>Select the answers you want to choose in each row.</p> <table border="1"> <thead> <tr> <th>Student</th> <th>Track and Field</th> <th>Weather Experiment</th> <th>Math Contest</th> </tr> </thead> <tbody> <tr> <td>Sarah</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Akeem</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </tbody> </table> <p>Sample shown: Grades 3–5 Tutorial, Item 11 (This item type also appears in the Grades 6–HS Tutorial, Item 9)</p>	Student	Track and Field	Weather Experiment	Math Contest	Sarah	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Akeem	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Student	Track and Field	Weather Experiment	Math Contest										
Sarah	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>										
Akeem	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<p>Order</p> <p>Students answer order items by dragging the answer options into the correct order.</p> <p>To change their answer, students drag an answer choice to another position.</p>	<p>The diagram shows the path a student traveled during the carnival.</p>  <p>Starting from the school building, determine the order in which the student visited different locations.</p> <p>Drag each location into the correct order, with the first location on top.</p> <table border="1"> <tbody> <tr><td>School Building</td></tr> <tr><td>Track and Field</td></tr> <tr><td>Weather Experiment</td></tr> <tr><td>Food Court</td></tr> </tbody> </table> <p>Sample shown: Grades 3–5 Tutorial, Item 12 (This item type also appears in the Grades 6–HS Tutorial, Item 10)</p>	School Building	Track and Field	Weather Experiment	Food Court								
School Building													
Track and Field													
Weather Experiment													
Food Court													
<p>Point Graph (Mathematics and Science MCA only)</p> <p>For some graphing items, students must select one or more points on a graph.</p> <p>Students select a location on the graph to plot a point.</p> <p>To remove a point, students select the point they want to remove.</p> <p>For some items, a line or line segment will connect the points the student plotted.</p>	<p>A food truck served egg rolls. The weight of 1 egg roll is 3 ounces. The weight of 2 egg rolls is 6 ounces.</p> <p>Plot the points that represent the weight based on the number of egg rolls.</p> <p>Select a location on the graph to plot each point.</p> <p>Egg Roll Weights</p>  <p>Sample shown: Grades 6–HS Tutorial, Item 15 (This item type also appears in the Grades 3–5 Tutorial, Item 13)</p>												

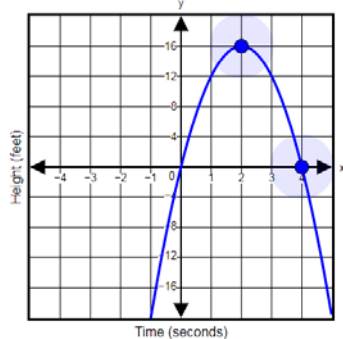
Item Types	Sample Screenshot
<p>Slider (Mathematics and Science MCA only)</p> <p>For slider items, students must drag an arrow slider up or down to answer the question.</p> <p>To change their answer, students drag the arrow slider to a new location.</p>	<p>Students learned that oil is heated to 190°C to cook french fries. Show this temperature on the thermometer.</p> <p>Drag the top of the bar to the correct height.</p>  <p>Sample shown: Grades 6–HS Tutorial, Item 11 (This item type also appears in the Grades 3–5 Tutorial, Item 14)</p>
<p>Ruler (Science MCA only)</p> <p>Students see the Ruler button in the toolbar only on items where they need to use it.</p> <p>To use the ruler, students select the Ruler button in the toolbar.</p> <p>Students then drag the ruler to the place on the question they want to measure. Students can select the handles at either end of the ruler to rotate the ruler.</p> <p>Students select the Ruler button again to close the ruler.</p>	 <p>A student bought a food truck key chain at the international festival.</p>  <p>Using the inch ruler, what is the length of the key chain?</p> <p>Enter your answer in the box.</p> <p><input type="text" value="3"/> inches</p> <p>Sample shown: Grades 6–HS Tutorial, Item 12 (This item type also appears in the Grades 3–5 Tutorial, Item 5)</p>

Grades 6–HS Item Types Tutorial Only

The following item types are in the Grades 6–HS Item Types Tutorial ONLY.

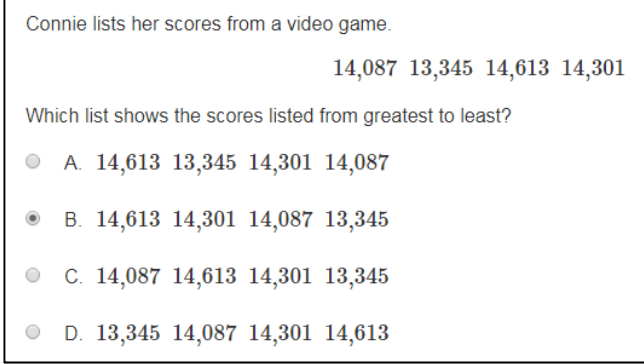
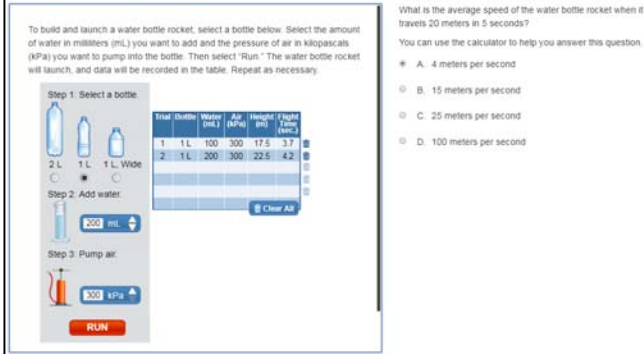
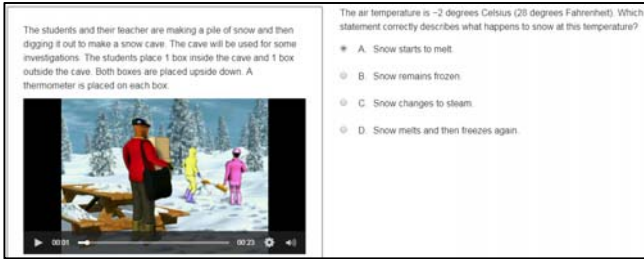
Item Types	Sample Screenshot
<p>Shape Transformation (grades 7 and 11 Mathematics MCA only)</p> <p>Students answer shape transformation items by selecting and dragging a shape to the appropriate position on the grid.</p> <p>To change their answer, students move the shape to a different position or drag a different shape onto the grid.</p>	<p>Grade 7 and 11 Math Only</p> <p>During an international festival, food trucks are required to park in different spaces. Place the matching food truck into the parking space outlined on the grid.</p>  <p>Sample shown: Grades 6–HS Tutorial, Item 17</p>
<p>System of Inequalities (grade 11 Mathematics MCA only)</p> <p>Students select the Inequality 1 box to graph the first inequality. A large arrow will appear at the right when the box has been selected. Inside the box, students select the solid or dashed line for the inequality and plot two points on the grid. A line will connect the two points.</p> <p>Students then select the Inequality 2 box to graph the second inequality. Inside the box, students select the solid or dashed line for the second inequality and plot two points on the grid. A line will connect the two points.</p> <p>Next, students select the box labeled Solution Set and then select a region on the grid to shade.</p> <p>To change a line, students select the box representing the line they want to change. On the grid, students select or move the point they want to change.</p> <p>To remove the shading, students must first ensure the box labeled Solution Set is selected. A large arrow will appear to the right of the box. Then students select the region.</p>	<p>Grade 11 Math Only</p> <p>A system of inequalities is shown.</p> $y < 3 + x$ $y > 3 - x$ <p>What is the solution to the system of inequalities?</p> <p>Graph the 2 inequalities on the grid, and select the region that represents the solution for the system.</p>  <p>Sample shown: Grades 6–HS Tutorial, Item 20</p>

Item Types	Sample Screenshot
<p>Number Line (grades 8 and 11 Mathematics MCA only)</p> <p>Students answer number line items by selecting a type of solution set and then moving the endpoints to the correct position.</p> <p>Some items allow students to graph more than one solution on the number line. For these items, students select additional solution set types as needed to display their answer. The active solution is in black and the inactive solution is in gray.</p> <p>Students may need to remove a type of solution before they can select another one by selecting Remove on the active solution.</p>	<p>Grade 8 and 11 Math Only</p> <p>A student spent between 3 and 5 hours at an international festival. What are the possible amounts of time the student spent at the festival?</p> <p>Select a type of solution set. Then move the endpoints to the correct position.</p>  <p>Sample shown: Grades 6–HS Tutorial, Item 18</p>

Item Types	Sample Screenshot
<p>Function Graph (grade 11 Mathematics MCA only)</p> <p>Students answer function graph items by selecting one graph type and graphing a solution.</p> <ol style="list-style-type: none"> 1. Linear Functions: Students select the Linear button. A line with two points will appear, and students drag each point to the appropriate location on the grid. To remove the linear function, students select the Linear button again. 2. Absolute Value Functions: Students select the Absolute Value button. An absolute value function with two points will appear. One point is the vertex, and the other is another point on the function. Students drag each point to the appropriate location on the grid. To remove the absolute value function, students select the Absolute Value button again. NOTE: Absolute Value is not included in the Item Types Tutorial. Students may practice this functionality in the item samplers. 3. Quadratic Functions: Students select the Quadratic button. A quadratic function with two points will appear. One point is the vertex, and the other is another point on the function. Students drag each point to the appropriate location on the grid. To remove the quadratic function, students select the Quadratic button again. 4. Exponential Functions: Students select the Exponential button. An exponential function with two points will appear. An asymptote will also appear on the graph as a gray dashed line on the x-axis. Students drag the asymptote line up or down to the appropriate location on the grid. Then, students drag each point to the appropriate locations on the grid. To remove the exponential function, students select the Exponential button again. 	<p>Grade 11 Math Only</p> <p>At the international festival, a ball was launched from the ground into the air. It reached a maximum height of 16 feet after 2 seconds and hit the ground after 4 seconds. Model the relationship representing the height of the ball as a function of time.</p> <p>Select the button to choose the type of graph. Drag the 2 points to the correct position.</p>  <p>Sample shown: Grades 6–HS Tutorial, Item 19</p>

Item Types Not Included in the Item Types Tutorial

The following item types are not included in the Item Types Tutorial; students may practice answering these items in the item samplers, as needed.

Item Types	Sample Screenshot																		
<p>Multiple Choice</p> <p>Multiple-choice items have only one correct answer. These items have a circle next to each answer choice.</p> <p>Students answer multiple-choice items by selecting the answer or the circle to the left.</p>	 <p>Connie lists her scores from a video game.</p> <p style="text-align: right;">14,087 13,345 14,613 14,301</p> <p>Which list shows the scores listed from greatest to least?</p> <ul style="list-style-type: none"> <input type="radio"/> A. 14,613 13,345 14,301 14,087 <input checked="" type="radio"/> B. 14,613 14,301 14,087 13,345 <input type="radio"/> C. 14,087 14,613 14,301 13,345 <input type="radio"/> D. 13,345 14,087 14,301 14,613 <p>Sample shown: Grade 3 Mathematics Item Sampler, Section 1, Item 1</p>																		
<p>Simulations (Science MCA only)</p> <p>Some science scenarios include simulations where students run a simulated experiment. Some items require using data generated by running the simulation.</p> <p>Students choose variables or options using dropdown menus and buttons.</p> <p>To remove data, students delete the information in one row by selecting the trash can or delete all of the information in the table by selecting the Clear All button.</p> <p>Students may repeat the simulation as many times as needed.</p>	 <p>To build and launch a water bottle rocket, select a bottle below. Select the amount of water in milliliters (mL) you want to add and the pressure of air in kilopascals (kPa) you want to pump into the bottle. Then select "Run." The water bottle rocket will launch, and data will be recorded in the table. Repeat as necessary.</p> <p>Step 1: Select a bottle.</p> <table border="1"> <thead> <tr> <th>Trial</th> <th>Bottle (mL)</th> <th>Water (mL)</th> <th>Air (kPa)</th> <th>Height (m)</th> <th>Time (s)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1 L</td> <td>100</td> <td>300</td> <td>17.5</td> <td>3.7</td> </tr> <tr> <td>2</td> <td>1 L</td> <td>200</td> <td>300</td> <td>22.6</td> <td>4.2</td> </tr> </tbody> </table> <p>Step 2: Add water. 200 mL</p> <p>Step 3: Pump air. 300 kPa</p> <p>What is the average speed of the water bottle rocket when it travels 20 meters in 5 seconds? You can use the calculator to help you answer this question.</p> <ul style="list-style-type: none"> <input checked="" type="radio"/> A. 4 meters per second <input type="radio"/> B. 15 meters per second <input type="radio"/> C. 25 meters per second <input type="radio"/> D. 100 meters per second <p>Sample shown: Grade 8 Science Item Sampler, Section 1, Item 9</p>	Trial	Bottle (mL)	Water (mL)	Air (kPa)	Height (m)	Time (s)	1	1 L	100	300	17.5	3.7	2	1 L	200	300	22.6	4.2
Trial	Bottle (mL)	Water (mL)	Air (kPa)	Height (m)	Time (s)														
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<p>Video Player (Science MCA only)</p> <p>Some science scenarios include a video player. Students select Play to start the video.</p> <p>Students have the option to pause the video, and it can be replayed as needed.</p> <p>Students can adjust the speed and volume of the video. Closed captioning is available for students who need it.</p>	 <p>The students and their teacher are making a pile of snow and then digging it out to make a snow cave. The cave will be used for some investigations. The students place 1 box inside the cave and 1 box outside the cave. Both boxes are placed upside down. A thermometer is placed on each box.</p> <p>The air temperature is -2 degrees Celsius (28 degrees Fahrenheit). Which statement correctly describes what happens to snow at this temperature?</p> <ul style="list-style-type: none"> <input checked="" type="radio"/> A. Snow starts to melt. <input type="radio"/> B. Snow remains frozen. <input type="radio"/> C. Snow changes to steam. <input type="radio"/> D. Snow melts and then freezes again. <p>Sample shown: Grade 5 Science Item Sampler, Section 1, Item 10</p>																		