**Math Assessment Samples**

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| **Grade** | 3 | **Item Type** | DND |
| **Standard** | 3.OA.2 | **DOK** | 2 |
| **Stem** | There are 28 students in a class. During art, the class sits at tables, with 4 students at each table.<br><br>Drag and drop the numbers and symbol into the boxes to build an expression to find the number of tables used.<br><br>[target1] [target2] [target3] | | |
| **Objects** | +<br>–<br>×<br>÷<br>4<br>28 | | |
| **Option Rationales** | The number 28 belongs in the first box because it is the total number of students.<br>The symbol ÷ belongs in the second box because the total is divided into equal groups.<br>The number 4 belongs in the third box because it is the number of students in each group. | | |

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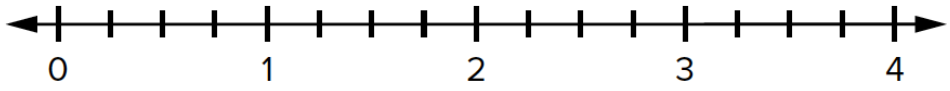
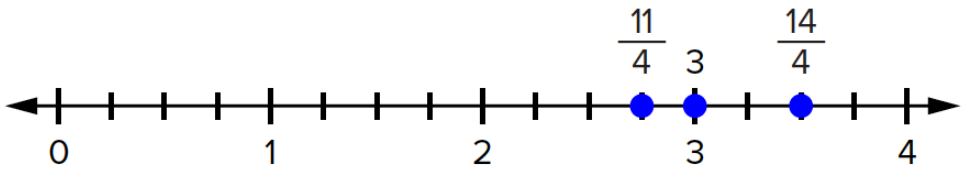
| **Grade** | 3 | **Item Type** | Two Part: Hot Spot/Dropdown |
| **Standard** | 3.NF.A.1 | **DOK** | 2 |
| **Stem** | A farmer has 2 large jars of milk.<br>• Jar R has $\frac{11}{4}$ liters of milk.<br>• Jar S has $\frac{14}{4}$ liters of milk.<br>The farmer wants to find which jar has an amount of milk that is closer to 3 liters.<br>**Part A**<br>Plot $\frac{11}{4}$, $\frac{14}{4}$, and 3 on the number line.<br>Select a place on the number line to plot the points. | | |
| **Answer Options** |  | | |
| **Option Rationales** | The student plots $\frac{11}{4}$, $\frac{14}{4}$, and 3 on the number line.<br>  | | |

| Stem | Part B<br><br>Which jar has an amount of milk closest to 3 liters?<br><br>Choose the words to correctly complete the sentence.<br><br>[Inline choice 1] has an amount of milk closer to 3 liters because jar R is [Inline choice 2] of a liter from 3 liters, while jar S is [Inline choice 3] of a liter from 3 liters. |
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| **Answer Options** | [Inline choice 1]<br>▪ Jar R<br>▪ Jar S<br><br>[Inline choice 2]<br>▪ one-fourth<br>▪ two-fourths<br>▪ three-fourths<br><br>[Inline choice 3]<br>▪ one-fourth<br>▪ two-fourths<br>▪ three-fourths |
| **Option Rationales** | [Inline choice 1]<br>▪ Correct. Jar R is closer to 3 liters than jar S.<br>▪ Identified the jar that has at least 3 liters of milk, not the jar that has an amount of milk closest to 3 liters.<br><br>[Inline choice 2]<br>▪ Correct. 11/4 is 1/4 of a liter from 12/4 = 3.<br>▪ Counted the number of tick marks from 11/4 to 3 on the number line, including the tick mark at 11/4, rather than counting intervals.<br>▪ Compared the amount of milk in jar R to 2 liters, not 3 liters.<br><br>[Inline choice 3]<br>▪ Compared the amount in jar R rather than the amount in jar S.<br>▪ Correct. 14/4 is 2/4 of a liter from 12/4 = 3.<br>▪ Compared the difference between jar R and jar S. |

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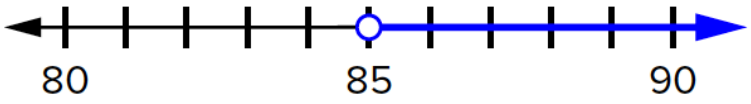
| **Grade** | 6 | **Item Type** | Hotspot |
| **Standard** | 6.EE.8 | **DOK** | 1 |
| **Stem** | An art dealer estimates that a piece of stained glass is more than 85 years old.<br><br>Plot the solution to an inequality that represents all possible ages of the piece of stained glass based on the art dealer's estimate.<br><br>Select a solution set indicator. Drag the points on the indicator to the appropriate location on the number line. | | |
| **Answer Options** | [Interactive number line functionality: 0 to 100 in increments of 10; Allow test-takers the option of plotting points at halfway marks; Provide the following indicators: Open circle with arrow to the left, open circle with arrow to the right, line segment with both endpoints as open circles] | | |
| **Option Rationales** |  <br>The student plots the solution to $x > 85$ as an open circle at 85 with arrow pointing to right. | | |

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| **Grade** | 7 | **Item Type** | MC |
| **Standard** | 7.RP.A.1 | **DOK** | 2 |
| **Stem** | To make gluten-free flour, ¼ cup of white rice flour is used for every 1½ cups of brown rice flour. A baker is making gluten-free flour with 6 cups of brown rice flour in all. How many cups of white rice flour will the baker need? | | |
| **Answer Options** | A. 1<br>B. 1.5<br>C. 4.5<br>D. 36 | | |
| **Option Rationales** | A. Correct<br>B. The student multiplied 6 by ¼.<br>C. The student subtracted 1.5 from 6.<br>D. The student transposed the 6 and *x* when setting up a ratio. | | |

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| **Grade** | 7 | **Item Type** | MC |
| **Standard** | 7.RP.A.3 | **DOK** | 2 |
| **Stem** | A factory produces approximately 32,000 bolts each hour when operating at 100% capacity. How many bolts are produced in one 24-hour period when the factory operates at 85% capacity for 8 hours of the day? | | |
| **Answer Options** | A. 217,600<br>B. 512,000<br>C. 539,200<br>D. 729,600 | | |
| **Option Rationales** | A. The student found the total for 8 hours of work at an 85% capacity.<br>B. The student found the total for 16 hours of work at a 100% capacity.<br>C. The student found the sum of 16 hours of work at a 100% capacity and 1 hour of work at 85% capacity.<br>D. Correct | | |

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| **Grade** | Alg1 | **Item Type** | Two-Part: MS/Numeric Entry |
| **Standard** | A.REI.4b | **DOK** | 1 |
| **Stem** | **Part A**<br><br>For which values of $b$ does the equation $2x^2 + bx + 8 = 0$ have no real roots?<br><br>Select **all** of the correct answers. | | |
| **Answer Options** | A. $-9$<br>B. $-2$<br>C. 0<br>D. 7<br>E. 8 | | |
| **Option Rationales** | A. The quantity within the radical when using the quadratic equation is positive.<br>B. Correct. $-2$ as *b* would have no real roots.<br>C. Correct. 0 as *b* would have no real roots.<br>D. Correct. 7 as *b* would have no real roots.<br>E. The quantity within the radical when using the quadratic equation is equal to zero. | | |
| **Stem** | **Part B**<br><br>Write an inequality to represent the set of values for $b$ for which the equation $2x^2 + bx + 8 = 0$ has at least one real root.<br><br>Enter your answers in the spaces provided.<br><br>$b \geq \square$ or $b \leq \square$ | | |
| **Option Rationales** | $b \geq 8$ or $b \leq -8$ | | |

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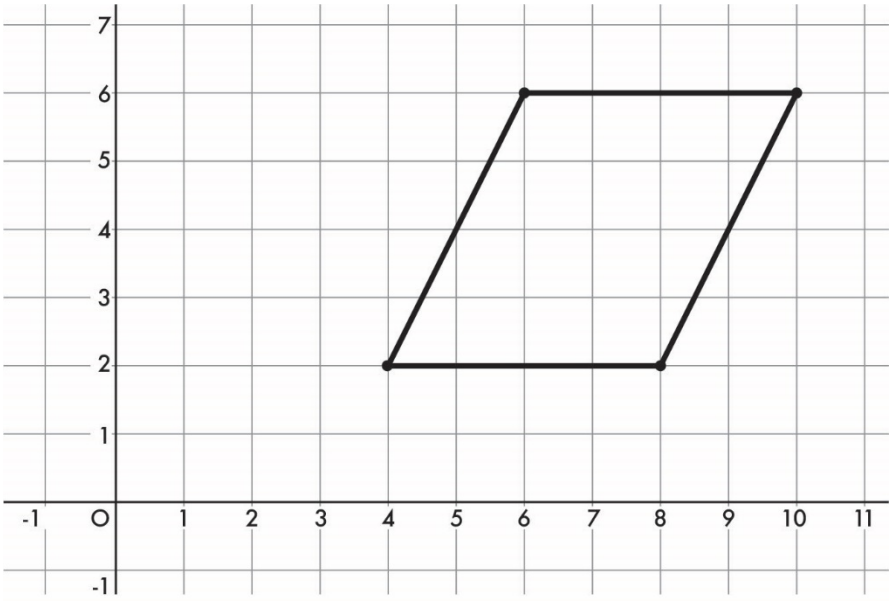
| **Grade** | Geometry | **Item Type** | MC |
| **Standard** | HSG.CO.A.3 | **DOK** | 2 |
| **Stem** | A figure is shown on the coordinate plane.<br>  <br><br>Which transformation would carry the figure onto itself? | | |
| **Answer Options** | A. 90° rotation about (7, 4)<br>B. 180° rotation about (7, 4)<br>C. reflection across $x = 7$<br>D. reflection across $y = 4$ | | |
| **Option Rationales** | A. This transformation would not carry the figure onto itself.<br>B. Correct<br>C. This reflection would not carry the figure onto itself.<br>D. This reflection would not carry the figure onto itself. | | |

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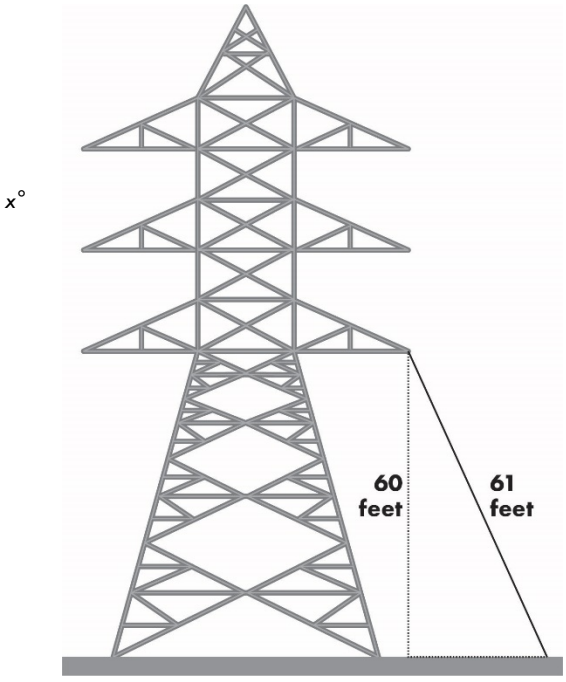
| **Grade** | Geometry | **Item Type** | Numeric Entry |
| **Standard** | HSG.SRT.C.8 | **DOK** | 2 |
| **Stem** | A utility company installs a new electricity tower. The diagram shows how an anchoring wire will be placed on one side of the tower. The wire has a length of 61 feet and will be mounted 60 feet above the ground.<br>  <br><br>What is the measure of the angle, *x*, at which the wire should be mounted so it is anchored tight to the ground?<br>Round your answer to the nearest whole degree. | | |
| **Key** | 10 degrees | | |