Released Items
Grade 10 Math

AzM2

Updated September 2019

Prepared by the Arizona Department of Education
About the Released Items

The AzM2 Released Items provides details about the items, student response types, correct responses, and related scoring considerations for released AzM2 test items.

Within this guide, each item is presented with the following information:

- Cluster
- Content Standard
- Depth of Knowledge (DOK)
- Static presentation of the item
- Static presentation of student response field (when appropriate)
- Answer key, rubric or exemplar
- Applicable score point(s) for each item
- Option rationales (when applicable)

The items included in this guide are representative of the kinds of items that students can expect to experience when taking the computer-based test for AzM2 Grade 10 Math.
Grade 10 Math Released Items

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Content Standard</th>
<th>DOK</th>
</tr>
</thead>
</table>

Relation A is a function. Relation B is **not** a function.

Complete the tables to show possible input and output values for the two relations.

<table>
<thead>
<tr>
<th>Relation A Input</th>
<th>Relation A Output</th>
<th>Relation B Input</th>
<th>Relation B Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>12</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>16</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>7</td>
<td>17</td>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td>9</td>
<td>22</td>
<td>9</td>
<td>34</td>
</tr>
</tbody>
</table>

(1 Point) Student completed both tables with the correct input and output values with the following assumptions:

- \( w \) is not 2 or 9
- \( w = 5 \) if \( v = 17 \)
- otherwise, \( w \) and \( v \) can have any value
- if \( x = 7 \), then \((y, z) = (2, \text{not7}), (5, \text{not 21}) \) or \((9, \text{not 34})\)
- if \( x \neq 7 \), then \( y \) and \( z \) can have any value
(1 Point) Student created any correct dot plot with 8 points, a mean of 6, and a range less than 7.
The equation of a function is given.

\[ f(x) = (2x - 3)(3x + 4) \]

What is one of the zeros of the function?

\[ x = \frac{3}{2} \]

(1 Point) Student entered \( \frac{3}{2}, \frac{-4}{3} \), or any equivalent value for \( x \).
A clothing store sells pants for $25 each and shirts for $20 each. During one month, the store makes $520 from selling a total of 24 pants and shirts.

Create a system of equations that could be used to find the number of pants, $p$, and shirts, $s$, that the store sold.

\[
\text{Equation 1: } 25p + 20s = 520 \\
\text{Equation 2: } p + s = 24
\]

(1 Point) Student entered any correct system of equations.
A function is given.

\[ f(x) = \begin{cases} 
   x^2 + 4, & x < 0 \\
   \frac{1}{2}x + 8, & 0 \leq x \leq 7 \\
   -x^2 + 4x + 5, & x > 7 
\end{cases} \]

What is the \( y \)-intercept value of the function?

(1 Point) Student entered 8 or any equivalent value.
A figure is shown.

Use the Connect Line tool to show the reflection of the figure over the line $y = -x$.

(1 Point) Student plotted a correct reflection with the following assumptions:

- Points plotted within the graph are ignored.
- Lines representing the line of reflection are allowed.
- Segments representing the sides of the original shape are allowed.
An architect is designing a building topped with a hemispherical dome. She creates a scale model of the building using a scale of 0.25 inch : 1 foot. In the scale model, the diameter of the dome is 23.75 inches. What will be the circumference, in feet, of the actual dome?

\[ 95\pi \]

(1 Point) Student entered \( 95\pi, 298.45 \), or any approximate value between 298 and 300, inclusive.
(1 Point) Student entered 84 or any equivalent value.
A triangle has vertices at $R(2, 1)$, $S(-1, 5)$, and $T(3, 8)$.

Drag a statement to each empty box to complete the proof that $\triangle RST$ is a right triangle.

<table>
<thead>
<tr>
<th>Statements</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1. Definition of slope</td>
</tr>
<tr>
<td>2.</td>
<td>2. Definition of slope</td>
</tr>
<tr>
<td>3.</td>
<td>3. Perpendicular lines have negative reciprocal slopes.</td>
</tr>
<tr>
<td>4.</td>
<td>4. Perpendicular lines form right angles.</td>
</tr>
<tr>
<td>5. $\triangle RST$ is a right triangle.</td>
<td>5. Definition of a right triangle</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>slope $RS = \frac{5+1}{1+2} = 6$</th>
<th>slope $RT = \frac{8-1}{3-2} = 7$</th>
<th>slope $ST = \frac{8-5}{3+1} = \frac{3}{4}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>slope $RS = \frac{-1+2}{5+1} = \frac{1}{6}$</td>
<td>slope $RT = \frac{3-2}{8-1} = \frac{1}{7}$</td>
<td>slope $ST = \frac{3+1}{8-5} = \frac{4}{3}$</td>
</tr>
<tr>
<td>slope $RS = \frac{-1-2}{5-1} = \frac{-3}{4}$</td>
<td>slope $RT = \frac{3+2}{8+1} = \frac{5}{9}$</td>
<td>slope $ST = \frac{3+1}{8-5} = \frac{13}{2}$</td>
</tr>
<tr>
<td>slope $RS = \frac{5-1}{1-2} = \frac{-4}{3}$</td>
<td>slope $RT = \frac{8+1}{3+2} = \frac{9}{5}$</td>
<td>slope $ST = \frac{3-1}{8+5} = \frac{2}{13}$</td>
</tr>
</tbody>
</table>

(1 Point) Student created the correct proof. In the exemplar below, statements 1 and 2 can be reversed and be considered correct.
Two chords intersect in circle $O$, as shown.

What is the value of $x$, in degrees?

(1 Point) Student entered 122 or any equivalent value.