Computer-Based Sample Test Scoring Guide
Grade 7 Math
AzM2

Updated September 2019

Prepared by the Arizona Department of Education
About the Sample Test Scoring Guide

The AzM2 Sample Test Scoring Guides provide details about the items, student response types, correct responses, and related scoring considerations for AzM2 Sample Test items.

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

- Item number
- 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

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 7 Math.
Grade 7 Math Sample Test

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Cluster</th>
<th>Content Standard</th>
<th>DOK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7.NS.A</td>
<td>7.NS.A.1</td>
<td>3</td>
</tr>
</tbody>
</table>

Gary is thinking of three numbers, $a$, $b$, and $c$, where $b - a = c$ and $c < 0$. Select all of the number lines that could represent Gary’s numbers.

(1 Point) Student selected the four correct number lines.
Data Set A is shown.

Data Set A and Data Set B have the same mean absolute deviation. Data Set B has 6 elements.

Create Data Set B so that the mean is 2 mean absolute deviations larger than the mean for Data Set A. Click above the number line to create this data set.

(1 Point) Student created a correct data set.
A square pyramid is shown.

The pyramid can be sliced horizontally or vertically.
Select all of the shapes that could represent the cross section of the pyramid.

![Diagram of shapes]

(1 Point) Student selected the three correct shapes.
A bowling alley charges $x$ dollars per guest and a fixed $50$ rental fee for parties. Which equation represents the total cost, $y$, for 9 guests?

A $y = 9x$

B $y = 9x + 41$

C $y = 9x + 50$

D $y = 50x + 9$

**(1 Point)** Student selected the correct option.
The circumference of a circle is 18.84 inches.
What is the diameter of the circle, to the nearest inch?

(1 point) Student entered 6; any value between 5.99 and 6, inclusive.
<table>
<thead>
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<th>Item Number</th>
<th>Cluster</th>
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</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>7.EE.B</td>
<td>7.EE.B.3</td>
<td>2</td>
</tr>
</tbody>
</table>

Raquel is building a shelf for her wall. The length of the wall is 11 feet 3 inches. The shelf will be built on the center of the wall, and the length of the shelf will be \( \frac{1}{3} \) the length of the wall.

What is the distance, in inches, from the edge of the wall to the edge of the shelf?

45

(1 point) Student entered 45 or any equivalent value.
One apple costs $0.55 at the grocery store. Customers receive one free apple for every 8 apples that they buy. Anna paid a total of $8.80 for her apples.

How many free apples did Anna receive?

2

(1 Point) Student entered 2 or any equivalent value.
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Cluster</th>
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<th>DOK</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>7.NS.A</td>
<td>7.NS.A.2</td>
<td>2</td>
</tr>
</tbody>
</table>

Which expression is equivalent to \(\frac{-3}{4} \cdot \frac{7}{-2} \div \frac{3}{-8}\)?

- **A** \(\frac{-1}{2} \cdot \frac{7}{-2}\)
- **B** \(\frac{1}{2} \cdot \frac{7}{-2}\)
- **C** \(\frac{2}{1} \cdot \frac{7}{-2}\)
- **D** \(\frac{2}{1} \cdot \frac{7}{2}\)

**1 point** Student selected the correct option.
The box plot shows a comparison of the heights of gymnasts and basketball players. The mean absolute deviation for each group is approximately 2.

**Heights of Gymnasts and Basketball Players**

Gymnasts

Basketball

Players

How many mean absolute deviations describe the difference between the two medians?

7.5

(1 point) Student entered 7.5 or any equivalent value.
Dana walks \(\frac{3}{4}\) mile in \(\frac{1}{4}\) hour.

What is Dana’s walking rate in miles per hour?

(1 Point) Student entered 3 or any equivalent value.
<table>
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<th>Item Number</th>
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<tbody>
<tr>
<td>11</td>
<td>7.EE.A</td>
<td>7.EE.A.2</td>
<td>3</td>
</tr>
</tbody>
</table>

Rafi has $48.00 to spend on games. Each game costs $3.00. He writes the expression shown to represent the amount of money he has after purchasing $g$ games.

$$48 - 3g$$

He writes an equivalent expression as shown.

$$3(16 - g)$$

What does the number 16 represent in the equivalent expression?

- the total number of games Rafi can buy
- $\frac{1}{3}$ of the number of games Rafi can buy
- the amount of money Rafi has after buying $g$ games
- the amount of money Rafi has after buying 3 games

(1 point) Student selected the correct option.
A figure is shown.

What is the value of $m$?

(1 point) Student entered 58 or any equivalent value.
Charmaine observes the number of times the 5:00 p.m. train is early, late, and on time. She records her observations of the train for 80 days in a row in the table shown.

| Early | 23 times |
| Late  | 9 times  |
| On Time | 48 times |

Based on Charmaine’s data, how many trains are likely to be late over the next 400 days?

(1 point) Student entered 45 or any equivalent value.
Jackson buys a new shirt. The shirt is 25% off of the original price. Jackson pays a total of $11.34 for the shirt, which includes a sales tax of 8%.

What is the original price, in dollars, of the shirt?

(1 point) Student entered 14.00 or any equivalent value.
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<tr>
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<td>7.NS.A</td>
<td>7.NS.A.3</td>
<td>3</td>
</tr>
</tbody>
</table>

The total change in the water level of a lake from the beginning of April to the end of August was \(-4.7\) inches. The table shows the changes in the water level from the beginning to the end of several months.

Complete the table to show possible changes in the water level, in inches, for July and August.

<table>
<thead>
<tr>
<th>Month</th>
<th>Water Level Change (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>April</td>
<td>3.5</td>
</tr>
<tr>
<td>May</td>
<td>1.1</td>
</tr>
<tr>
<td>June</td>
<td>(-4.3)</td>
</tr>
<tr>
<td>July</td>
<td>(-2.6)</td>
</tr>
<tr>
<td>August</td>
<td>(-2.4)</td>
</tr>
<tr>
<td>Total Change</td>
<td>(-4.7)</td>
</tr>
</tbody>
</table>

(1 point) Student completed the table with all correct values.
A box is filled with different-colored markers. When a marker is chosen randomly from the box, it is likely that the marker will be blue.

Select all of the possible probabilities that a randomly selected marker will be blue.

- 0
- $\frac{1}{3}$
- $\frac{2}{3}$
- $\frac{3}{4}$
- 1
- $\frac{3}{2}$

**[1 point]** Student selected the two correct probabilities.
A furniture factory makes 250 tables each day. Create an equation that can be used to find the total number of tables made, \( y \), after \( x \) days.

\[
y = 250x
\]

(1 Point) Student entered \( y = 250x \) or any equivalent equation.
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<td>7.RP.A</td>
<td>7.RP.A.2</td>
<td>3</td>
</tr>
</tbody>
</table>

Igor’s car travels 25 miles on a gallon of gas. The car’s gas tank has a capacity of 10 gallons. The distance Igor can travel is shown in the graph.

Before his trip, Igor stops at a gas station where 10 gallons of gas costs $41.90. His gas tank is already $\frac{2}{5}$ full and he spends $16.76 on gas.

What is the maximum distance, in miles, Igor can travel with the gas he now has in his tank?

(1 point) Student entered 200 or any equivalent value.
A fair cube has 2 blue sides, 2 red sides, and 2 green sides. What is the probability of rolling a blue or red side?

\[
\frac{4}{6}
\]

(1 point) Student entered \(\frac{4}{6}\) or any equivalent value.
Select one phrase that describes the sum or difference of each expression.

<table>
<thead>
<tr>
<th></th>
<th>Greater than zero</th>
<th>Less than zero</th>
<th>Equal to zero</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 − (−7)</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>7 + (−7)</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>(−7) + (−7)</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>(−7) − 7</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

(1 point) Student selected the correct phrase for each example.
Which pair of data sets provides no evidence that the values of Set A are greater than the values of Set B?

(1 Point) Student selected the correct option.
Which expression is equivalent to $\frac{3}{5}(5n - 12) - \frac{1}{4}(3n + 16)$?

(A) $2 \frac{1}{4}n - 3 \frac{1}{5}$
(B) $2 \frac{1}{4}n - 11 \frac{1}{5}$
(C) $3 \frac{3}{4}n - 3 \frac{1}{5}$
(D) $3 \frac{3}{4}n + 11 \frac{1}{5}$

(1 point) Student selected the correct option.
Angelo drew the two rectangles shown. The second is a scale drawing of the first.

First Rectangle
4.5 in.
6.5 in.

Second Rectangle
11.25 in.
16.25 in.

What scale factor did Angelo use to draw the second rectangle?

2.5

(1 point) Student entered 2.5 or any equivalent value.
(1 point) Student created a correct triangle.
A dance studio offers ballet and hip-hop classes. The studio has 8 ballet classes for every 12 hip-hop classes. How many hip-hop classes are there for each ballet class?

1.5

(1 point) Student entered 1.5 or any equivalent value.
The students in two classes record the number of states they have visited. The box plots show the summary of the data for each class.

**Class 1**

**Class 2**

Complete the statements to correctly compare Class 1 and Class 2.

The data for Class 1 has **less** variability compared to Class 2 since the interquartile range for Class 1 is **less than** Class 2.

**1 point** Student selected “less” from first dropdown, and “less than” in second dropdown.