

Computer-Based Sample Test Scoring Guide Grade 8 Math



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Prepared by the Arizona Department of Education

## About the Sample Test Scoring Guide

The Arizona's Academic Standards Assessment (AASA) Sample Test Scoring Guides provide details about the items, student response types, correct responses, and related scoring considerations for AASA 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 AASA Grade 8 Math.

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 1 | 8.F.B | 8.F.B.5 | 2 |

Daniel recorded the amount of snowfall during an 8-hour period in the graph shown.
Complete the sentences about the graph.
Move the correct answer to each box. Not all answers will be used

decreasing linear

The graph shows a function that is nonlinear

When $2<x<3$, the graph is $\square$
When $5<x<7$, the graph is

```
constant
```


## Scoring Rubric

| Score | Description |
| :---: | :--- |
| 1 | Student response is "nonlinear" in Gap 1, "increasing" in Gap 2, and "constant" in <br> Gap 3. |
| 0 | The response is incorrect or irrelevant. |

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 2 | 8.G.C | 8.G.C.9 | 2 |

The dimensions, in centimeters (cm), for Cylinder $F$ are shown.


Which cylinders have the same volume as Cylinder $F$ ? (Cylinders are not to scale.)
Select all the correct answers.
$\square \quad \mathrm{A}$.


- B.

$\square \quad \mathrm{C}$.

- D.

$\square E$.


Cylinder E
(1 Point) Student selected all of the correct answers.

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 3 | 8.EE.B | 8.EE.B.6 | 2 |

A linear equation is given.
$y=\frac{2}{3} x-8$
Graph a line with the same slope as the equation given and a $y$-intercept of -4 .
Select two points on the coordinate plane. A line will connect the points.


| Scoring Rubric |  |
| :---: | :--- |
| Score | Description |
| 1 | Student response is to plot the line $y=\frac{2}{3} x-4$. |
| 0 | The response is incorrect or irrelevant. |

(1 Point)

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 4 | 8.G.B | 8. G.B.8 | 2 |

What is the distance between point $V$ and point $W$ ?

A. $\sqrt{5}$
B. $\sqrt{7}$

- C. 5
- D. 7
(1 Point)


## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 5 | 8.EE.A | $8 . E E . A .2$ | 2 |

What are the solutions to the equation $x^{2}=64 ?$
Select all the correct answers on the number line.


| Scoring Rubric |  |
| :---: | :--- |
| Score | Description |
| 1 | The student correctly identifies hot spots at -8 and 8. |
| 0 | The response is incorrect or irrelevant. |

## (1 Point)

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 6 | 8.SP.A | 8. SP.A.2 | 2 |

Which graph shows a line of best fit that best represents the data?

- A

- B.

$\circ$ D.

(1 Point)


## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 7 | 8.EE.A | 8.EE.A.4 | 2 |

Simplify $6.7 \times 10^{8}-5.3 \times 10^{6}$. Express your answer in scientific notation.
Enter your answer in the space provided.
$6.647 \times 10^{8}$


| Scoring Rubric |  |
| :---: | :--- |
| Score | Description |
| 1 | Student response is 6.647 in the first gap and 8 in the second gap or equivalent <br> numbers. <br> Rounding is not allowed. |
| 0 | The response is incorrect or irrelevant. |

(1 Point)

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 8 | 8.F.A | 8.F.A.3 | 1 |

Classify each function as either linear or nonlinear.
Select all the correct answers.

| Function | Linear | Nonlinear |
| :---: | :---: | :---: |
| $y=\frac{1}{7} x+\frac{5}{6}$ | $\bullet$ | $\bigcirc$ |
| $y=4 x^{3}$ | $\ddots$ | $\bullet$ |
| $y=x^{2}$ | $\ddots$ | $\bullet$ |
| $y=3 x$ | $\bullet$ | $\bigcirc$ |


| Scoring Rubric |  |
| :---: | :--- |
| Score | Description |
| 1 | Student response is "Linear" for $y=\frac{1}{7} x+\frac{5}{6}$ <br> Student response is "Nonlinear" for $y=4 x^{3}$ and $y=3 x$. |
| 0 | The response is incorrect or irrelevant. |

## (1 Point)

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 9 | 8.EE.B | 8.EE.B.5 | 1 |

Jeff is walking at a constant speed of 1 mile every 15 minutes. Graph the line that represents the distance Jeff walks, $\boldsymbol{y}$, after $\boldsymbol{x}$ minutes.

Select two points on the coordinate grid. A line will connect the points.
Jeff's Walking Speed


| Scoring Rubric |  |
| :---: | :--- |
| Score | Description |
| 1 | Student response is the selection of correct points on the graph to create the line <br> $y=(1 / 15) x$. |
| 0 | The response is incorrect or irrelevant. |

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 10 | 8.NS.A | 8.NS.A.3 | 2 |

For each inequality, determine whether $c$ could be rational or irrational, or whether it cannot be determined.

Select all the correct answers. You may select more than one answer in each row.

| Inequality | Could Be Rational | Could Be Irrational | Cannot Be Determined |
| :---: | :---: | :---: | :---: |
| $1.9999<c<2.0001$ |  |  | $\square$ |
| $\frac{1}{2}<c<\frac{1}{3}$ |  |  |  |
| $\sqrt{2}<c<\pi$ |  | $\square$ | $\square$ |


| Scoring Rubric |  |
| :---: | :--- |
| Score | Description |
| 1 | Student identified: <br> 1st inequality: $c$ could be rational and $c$ could be irrational <br> 2nd inequality: $c$ could be rational and $c$ could be irrational <br> 3rd inequality: $c$ could be rational and $c$ could be irrational |
| 0 | The response is incorrect or irrelevant. |

## (1 Point)

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 11 | 8.EE.A | 8.EE.A.3 | 2 |

How many times larger is $8 \times 10^{6}$ than $2 \times 10^{3}$ ?
ค A. $4 \times 10^{2}$

- B. $4 \times 10^{3}$
- C. $6 \times 10^{2}$D. $6 \times 10^{3}$
(1 Point)


## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 12 | 8.NS.A | 8.NS.A.2 | 2 |

Which point is the best approximation of $4 \pi$ ?
Select the correct answer on the number line.


| Scoring Rubric |  |
| :---: | :--- |
| Score | Description |
| 1 | The student correctly identifies the approximation of $4 \pi$ at the last hot spot on the <br> right. |
| 0 | The response is incorrect or irrelevant. |

(1 Point)

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 13 | 8.EE.C | 8.EE.C.7 | 1 |

Three linear equations are shown. Determine whether each equation has one solution, no solution, or infinitely many solutions.

Move the correct answer to each box.

| One solution | $7(x+8)=-4$ |
| :---: | :---: |
| No solution | $3 x+(5-2 x)=x-8$ |
| Infinitely many <br> solutions | $3+12 x=3(4 x+1)$ |


| Scoring Rubric |  |
| :---: | :--- |
| Score | Description |
| 1 | Student arranges equations in correct categories. <br> $7(x+8)=-4$ has one solution. <br> $3 x+(5-2 x)=x-8$ has no solution. <br> $3+12 x=3(4 x+1)$ has infinitely many solutions. <br> 0 |

## (1 Point)

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 14 | 8.NS.A | 8.NS.A.1 | 1 |

Classify each number as rational or irrational.
Select each correct answer.

| Number | Classification |
| :---: | :---: |
| 4.3125000001 | Rational |
| $6 \pi$ | Irrational |
| $-0.53 \overline{124}$ | Rational |
| $\sqrt{13}$ | Vrrational |
| $-\frac{\pi}{\pi}$ | Rational |
|  | $\vee$ |

(1 Point) Student selected all of the correct answers from the dropdowns.

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 15 | 8.F.A | 8.F.A.2 | 2 |

The table and the graph represent two functions.
Function 1

| $x$ | $y$ |
| :---: | :---: |
| -2 | -1 |
| -1 | 1 |
| 0 | 3 |
| 1 | 5 |
| 2 | 7 |

Function 2


Which statement is true?

- A. The slope of Function 1 is equal to the slope of Function 2.

○
B. The slope of Function 1 is 2 times as great as the slope of Function 2.

- C. The slope of Function 2 is $\mathbf{1 . 5}$ times as great as the slope of Function 1.

○
D. The slope of Function 2 is negative, and the slope of Function 1 is positive.

## (1 Point)

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 16 | 8.EE.C | 8.EE.C.8 | 2 |

A system of equations is given.
$3 x+2 y=10$
$7 x-3 y=8$
What are the values of $x$ and $y$ for the solution to this system?
Enter your answer in the space provided.

$$
\begin{aligned}
& x=2 \\
& y=2
\end{aligned}
$$



| 1 | 2 | 3 |
| :---: | :---: | :---: |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
|  | 0 | 믐 |
| . | - | 吕 |

## Scoring Rubric

| Score | Description |
| :---: | :--- |
| 1 | Student response is to enter 2 in the first space and 2 in the second space or <br> equivalent numbers. |
| 0 | The response is incorrect or irrelevant. |

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 17 | 8.F.A | 8.F.A.1 | 1 |

Which graphs represent a function?
Select all the correct answers.

- A.


■ B.

$\square \mathrm{C}$.

(Continued on the next page)

Item Number 17 (cont.)
$\square \mathrm{D}$


- E.

(1 Point) Student selected all of the correct answers.


## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 18 | 8.G.A | 8.G.A.3 | 2 |

Triangle $A B C$ is shown on the coordinate grid. Triangle $A B C$ is reflected across the line $y=3$ to create $\triangle A^{\prime} B^{\prime} C^{\prime}$.

Select the correct orientation of $\triangle A^{\prime} B^{\prime} C^{\prime}$ and position it correctly in the coordinate grid.


## Scoring Rubric

| Score | Description |
| :---: | :--- |
|  | Student selects the triangle of correct orientation and places it with vertices at the <br> following locations: <br> $A^{\prime}(1,5)$ <br> $B^{\prime}(4,5)$ <br> $C^{\prime}(2,1)$ |
| 0 | The response is incorrect or irrelevant. |

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 19 | 8.SP.B | 8.SP.B.5 | 1 |

Bob is renovating his bedroom. He is choosing between three different paint colors for the walls (white, tan, and gray) and two different types of flooring (carpet and wood). Which tree diagram could be used to show all possible outcomes for the choices available?
( A.


- B.

- C.

- D.




## (1 Point)

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 20 | 8.G.A | 8.G.A.5 | 2 |

Write an equation that shows $b$ in terms of $a$ and $c$.


Enter your answer in the space provided.

$$
b=c-a
$$




| Scoring Rubric |  |
| :---: | :--- |
| Score | Description |
| 1 | Student response is "c -a " or equivalent equation. |
| 0 | The response is incorrect or irrelevant. |

## (1 Point)

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 21 | 8.SP.A | 8.SP.A.1 | 1 |

Marcus took a survey of his class and recorded the number of hours each student studied for the statistics test, as well as each student's test score. He recorded the results in the table shown

| Statistics Test Survey |  |
| :---: | :---: |
| Number of Hours Studied | Test Score |
| 0 | 75 |
| 1 | 85 |
| 1.5 | 89 |
| 0.5 | 82 |
| 1.5 | 83 |
| 2 | 87 |

Represent Marcus's data in a scatter plot.
Select a location on the coordinate grid to plot each data point from the table


| Scoring Rubric |  |
| :---: | :--- |
| Score | Description |
| 1 | The student correctly plots the points $(0,75),(1,85),(1.5,89),(0.5,82),(1.5,83)$, and <br> $(2,87)$. |
| 0 | The response is incorrect or irrelevant. |

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 22 | 8.EE.A | $8 . E E . A .1$ | 2 |

Which expression is equivalent to $\frac{5^{8}}{5^{2}}$ ?

- A. $5^{4}$
- B. $5^{6}$
$\bigcirc$
C. $5^{10}$D. $5^{16}$
(1 Point)


## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 23 | 8.F.B | 8.F.B.4 | 2 |

A linear equation is represented by the equation $y=9 x-3$. A second linear function has the same $y$-intercept, but has $\frac{1}{3}$ the rate of change.

Create the graph of the second function.
Select two points on the coordinate plane. A line will connect the points


| Scoring Rubric |  |
| :---: | :--- |
| Score | Description |
| 1 | The student correctly graphs the function $y=3 x-3$. |
| 0 | The response is incorrect or irrelevant. |

## (1 Point)

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 24 | 8.G.A | 8.G.A.3 | 1 |

Quadrilateral $A B C D$ is transformed by the rule $(x, y) \rightarrow(x+3, y-3)$ to create quadrilateral $A^{\prime} B^{\prime} C^{\prime} D^{\prime}$.

Select the correct orientation of the quadrilateral $A^{\prime} B^{\prime} C^{\prime} D^{\prime}$ and position it correctly in the coordinate grid.


## Scoring Rubric

| Score | Description |
| :---: | :--- |
| 1 | Student places the quadrilateral in the same orientation with $A^{\prime}$ at $(4,-2), B^{\prime}$ at $(6,0), C^{\prime}$ at <br> $(7,3)$, and $D^{\prime}$ at $(3,2)$. |
| 0 | The response is incorrect or irrelevant. |

(1 Point)

## Grade 8 Math Sample Test

| Item <br> Number | Cluster | Content <br> Standard | DOK |
| :---: | :---: | :---: | :---: |
| 25 | 8.SP.A | 8.SP.A.3 | 2 |

The plot shows the amount of coal consumption for electricity generation in the United States since 1990, with the line of best fit given by $y=800+15.5 x$.


Based on the graph, which statements are true?
Select all the correct answersA. The consumption of coal in 1990 was 15.5 tons.

- B. On average, the consumption of coal increased each year.
- C. The $y$-intercept is the best estimate of coal consumption in 1990D. The average change in coal consumption was 250 tons per yearE. The average change in coal consumption per decade was 200 tons.
(1 Point) Student selected all of the correct answers.

