## Kentucky Summative Assessments


# Grade 10 Mathematics
# Released Items
## 2023

**1**

MA1020014_1

The equation for the ideal gas law, $pV = nRT$, relates the pressure, $p$, the volume, $V$, the number of moles, $n$, the universal gas constant, $R$, and the temperature, $T$, in a closed container. Which equation can be used to highlight the temperature of the ideal gas law?

**A** $T = \frac{pV}{nR}$

**B** $T = \frac{nR}{pV}$

**C** $T = pV - nR$

**D** $T = nR - pV$

# Released Item Performance

## Kentucky Summative Assessments

**Spring 2023**
**Grade 10**
**Mathematics**

**Item:** MA1020014*
**Book Question Number:** 1

**Standard:** KY.HS.A.15

**Item Type:** MC
**Key:** A

| Student Group | Number of Students | Percent Correct | Average Item Score | Item Breakout Statistics - Answer Choice Options | | | |
|---|---|---|---|---|---|---|---|
| | | | | A (%) | B (%) | C (%) | D (%) |
| *All Students* | **49,120** | 30% | 0.30 | 30% | 31% | 31% | 8% |
| *Gender* | | | | | | | |
| Female | **23,995** | 31% | 0.31 | 31% | 32% | 30% | 7% |
| Male | **25,122** | 29% | 0.29 | 29% | 31% | 32% | 9% |
| *Ethnicity* | | | | | | | |
| African American | **5,292** | 25% | 0.25 | 25% | 33% | 34% | 9% |
| American Indian or Alaska Native | **69** | 29% | 0.29 | 29% | 28% | 33% | 10% |
| Asian | **922** | 50% | 0.50 | 50% | 25% | 18% | 6% |
| Hispanic or Latino | **4,379** | 27% | 0.27 | 27% | 33% | 32% | 8% |
| Native Hawaiian or Pacific Islander | **77** | 34% | 0.34 | 34% | 31% | 27% | 8% |
| White (non-Hispanic) | **36,134** | 31% | 0.31 | 31% | 31% | 31% | 8% |
| Two or more races | **2,242** | 29% | 0.29 | 29% | 32% | 31% | 8% |
| | | | | | | | |
| Migrant | **219** | 29% | 0.29 | 29% | 30% | 33% | 7% |
| | | | | | | | |
| English Learner | **1,945** | 22% | 0.22 | 22% | 33% | 36% | 9% |
| | | | | | | | |
| Economically Disadvantaged | **27,602** | 26% | 0.26 | 26% | 31% | 34% | 9% |
| | | | | | | | |
| Students with Disabilities | **5,036** | 23% | 0.23 | 23% | 30% | 35% | 12% |

* Calculator section

**2**

MA1019004_2

The table shows the number of candles Julian sold each day for five days.

**Julian's Candle Sales**

| Day | Number of Candles Sold |
|---|---|
| Monday | 2 |
| Tuesday | 5 |
| Wednesday | 3 |
| Thursday | 11 |
| Friday | 9 |

The total of Julian's candle sales for the five days is \$45. Each candle she sold cost the same price. Which equation can be used to determine the price ($p$), in dollars, of each candle?

**A** $2 + 5 + 3 + 11 + 9 = 45p$

**B** $2p + 5p + 3p + 11p + 9p = 45$

**C** $45 - (2 + 5 + 3 + 11 + 9) = p$

**D** $45 - 2 + 5 + 3 + 11 + 9 = p$

# Released Item Performance

## Kentucky Summative Assessments

**Spring 2023**
**Grade 10**
**Mathematics**

**Item:** MA1019004
**Book Question Number:** 2

**Standard:** KY.HS.A.12

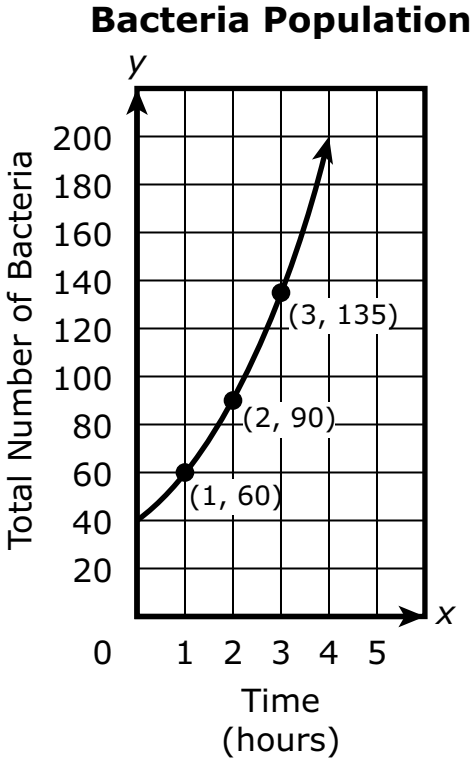
**Item Type:** MC
**Key:** B

| Student Group | Number of Students | Percent Correct | Average Item Score | Item Breakout Statistics - Answer Choice Options | | | |
|---|---|---|---|---|---|---|---|
| | | | | A (%) | B (%) | C (%) | D (%) |
| *All Students* | **18,754** | 50% | 0.50 | 21% | 50% | 24% | 5% |
| *Gender* | | | | | | | |
| Female | **9,330** | 52% | 0.52 | 20% | 52% | 24% | 4% |
| Male | **9,423** | 48% | 0.48 | 22% | 48% | 25% | 5% |
| *Ethnicity* | | | | | | | |
| African American | **2,046** | 42% | 0.42 | 21% | 42% | 31% | 7% |
| American Indian or Alaska Native | **30** | 47% | 0.47 | 23% | 47% | 23% | 7% |
| Asian | **353** | 64% | 0.64 | 16% | 64% | 18% | 2% |
| Hispanic or Latino | **1,591** | 44% | 0.44 | 22% | 44% | 28% | 6% |
| Native Hawaiian or Pacific Islander | **26** | 50% | 0.50 | 31% | 50% | 15% | 4% |
| White (non-Hispanic) | **13,794** | 51% | 0.51 | 21% | 51% | 23% | 4% |
| Two or more races | **912** | 49% | 0.49 | 21% | 49% | 24% | 6% |
| | | | | | | | |
| Migrant | **70** | 37% | 0.37 | 31% | 37% | 21% | 10% |
| | | | | | | | |
| English Learner | **605** | 36% | 0.36 | 27% | 36% | 30% | 7% |
| | | | | | | | |
| Economically Disadvantaged | **10,382** | 45% | 0.45 | 22% | 45% | 28% | 6% |
| | | | | | | | |
| Students with Disabilities | **1,195** | 37% | 0.37 | 26% | 37% | 30% | 7% |

**3**

MA1020032_3

The coordinate plane shows the relationship between time, in hours, and the total number of bacteria in the population.




What is the average rate of change of the bacteria population over the interval $x = 1$ to $x = 3$?

**A** 25 bacteria per hour

**B** 25 hours per bacteria

**C** 37.5 bacteria per hour

**D** 37.5 hours per bacteria

# Released Item Performance

## Kentucky Summative Assessments

**Spring 2023**
**Grade 10**
**Mathematics**

**Item:** MA1020032*
**Book Question Number:** 3

**Standard:** KY.HS.F.3.b

**Item Type:** MC
**Key:** C

| Student Group | Number of Students | Percent Correct | Average Item Score | Item Breakout Statistics - Answer Choice Options | | | |
|---|---|---|---|---|---|---|---|
| | | | | A (%) | B (%) | C (%) | D (%) |
| *All Students* | **49,140** | 51% | 0.51 | 26% | 17% | 51% | 6% |
| *Gender* | | | | | | | |
| Female | **24,005** | 48% | 0.48 | 27% | 18% | 48% | 7% |
| Male | **25,132** | 53% | 0.53 | 24% | 17% | 53% | 6% |
| *Ethnicity* | | | | | | | |
| African American | **5,299** | 41% | 0.41 | 25% | 25% | 41% | 9% |
| American Indian or Alaska Native | **69** | 52% | 0.52 | 25% | 17% | 52% | 6% |
| Asian | **922** | 62% | 0.62 | 24% | 10% | 62% | 4% |
| Hispanic or Latino | **4,380** | 47% | 0.47 | 26% | 20% | 47% | 7% |
| Native Hawaiian or Pacific Islander | **77** | 43% | 0.43 | 29% | 19% | 43% | 9% |
| White (non-Hispanic) | **36,148** | 53% | 0.53 | 26% | 16% | 53% | 6% |
| Two or more races | **2,240** | 49% | 0.49 | 26% | 19% | 49% | 6% |
| | | | | | | | |
| Migrant | **219** | 38% | 0.38 | 33% | 18% | 38% | 11% |
| | | | | | | | |
| English Learner | **1,945** | 37% | 0.37 | 25% | 28% | 37% | 10% |
| | | | | | | | |
| Economically Disadvantaged | **27,610** | 47% | 0.47 | 26% | 20% | 47% | 7% |
| | | | | | | | |
| Students with Disabilities | **5,039** | 38% | 0.38 | 25% | 27% | 38% | 10% |

* Calculator section

**4**

MA1020045

An educational website offers online tutorial videos on different subjects. The relationship between the number of views and the time, in days, that the videos have been online are shown for two different tutorial videos.

**Science Video**

| Time (days) | Number of Views |
|---|---|
| 0 | 213 |
| 1 | 783 |
| 2 | 1,353 |
| 3 | 1,923 |
| 4 | 2,493 |

**Math Video**

| Time (days) | Number of Views |
|---|---|
| 0 | 67 |
| 1 | 134 |
| 2 | 268 |
| 3 | 536 |
| 4 | 1,072 |

Determine whether each relationship is modeled by a linear function or an exponential function. Justify how you determined your answers using the values given in each table.

Enter your answers and your justifications in the space provided.

# Released Item Performance

## Kentucky Summative Assessments

**Spring 2023**
**Grade 10**
**Mathematics**

**Item:** MA1020045*
**Book Question Number:** 4

**Standard:** KY.HS.F.11.a

**Item Type:** SA
**Key:** Rubric

| Student Group | Number of Students | Percent Correct | Average Item Score | Item Breakout Statistics - Score Percentages | | |
|---|---|---|---|---|---|---|
| | | | | Score 0 (%) | Score 1 (%) | Score 2 (%) |
| *All Students* | **40,385** | 13.7% | 0.27 | 79% | 14% | 6% |
| *Gender* | | | | | | |
| Female | **20,227** | 13.2% | 0.26 | 79% | 15% | 6% |
| Male | **20,155** | 14.2% | 0.28 | 79% | 14% | 7% |
| *Ethnicity* | | | | | | |
| African American | **3,845** | 7.1% | 0.14 | 88% | 10% | 2% |
| American Indian or Alaska Native | **58** | 12.1% | 0.24 | 81% | 14% | 5% |
| Asian | **834** | 29.9% | 0.60 | 58% | 24% | 18% |
| Hispanic or Latino | **3,514** | 9.5% | 0.19 | 85% | 11% | 4% |
| Native Hawaiian or Pacific Islander | **67** | 9.7% | 0.19 | 81% | 19% | 0% |
| White (non-Hispanic) | **30,285** | 14.7% | 0.29 | 78% | 15% | 7% |
| Two or more races | **1,777** | 12.4% | 0.25 | 81% | 13% | 6% |
| | | | | | | |
| Migrant | **163** | 6.1% | 0.12 | 90% | 7% | 2% |
| | | | | | | |
| English Learner | **1,451** | 2.4% | 0.05 | 96% | 3% | 1% |
| | | | | | | |
| Economically Disadvantaged | **21,806** | 9.7% | 0.19 | 84% | 12% | 4% |
| | | | | | | |
| Students with Disabilities | **3,927** | 4.5% | 0.09 | 93% | 6% | 1% |

* Calculator section



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| Rubric | |
|---|---|
| **Score Point 2** | Student demonstrates a complete understanding that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals. |
| **Score Point 1** | Student demonstrates a partial understanding that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals. |
| **Score Point 0** | Student response is completely incorrect or irrelevant. |
| **Blank** | No student response. |
| **Score Points** | • Score 2 points:<br>  ○ Correct identification, using the values in the given tables, that the function modeling the number of views for the Science Video is linear and that the function modeling the number of views for the Math Video is exponential with a valid justification that includes mathematical computations with the values given for each video.<br>• Score 1 point:<br>  ○ A correct identification, using the values in the given tables, of both functions but incomplete or no justification. **OR**<br>  ○ A correct identification, using the values in the given tables, of only one of the functions with a valid justification that includes mathematical computations with the values given for each video. |
| **Correct Answers** | The function that models the Science Video can be represented by a linear function. As the number of days increases by constant value of 1, I noticed that the number of views also increases by constant value of 570 views added each day.<br>783 – 213 = 570<br>1,353 – 783 = 570<br>1,923 – 1,353 = 570<br>2,493 – 1,923 = 570<br>The function that models the Math Video can be represented by an exponential function. As the number of days increases by a constant value of 1, I noticed that the number of views increases by a factor of 2 each day.<br>2,144 ÷ 1,072 = 2<br>1,072 ÷ 536 = 2<br>536 ÷ 268 = 2<br>268 ÷ 134 = 2<br>134 ÷ 67 = 2<br>Note: Other valid explanations using the values given in the table are acceptable. |

# Anchor Set

## A1

The science videos views go up by increasing by 570 each time, making it exponential. The math doubles it's numbers, making in linear.

**Anchor Annotation, Paper 1**
**Score Point 0**

The response receives no credit. It includes none of the two required elements.

The science video is incorrectly identified as exponential. The justification would be valid if it was identified correctly (views go up by increasing by 570 each time, making it exponential).

The math video is incorrectly identified as linear. The justification would be valid if it was identified correctly (The math doubles it's numbers, making in linear).

Both videos are incorrectly identified, and no credit is earned for a justification that would be correct if the function was correctly identified.

## A2

Science videos are an exponential function because it does not increase(or multiply) by the same number after so many days. Math videos, every day the number of views is multiplied by 2 which means it is a linear function.

**Anchor Annotation, Paper 2**
**Score Point 0**

The response receives no credit. It includes none of the two required elements.

The science video is incorrectly identified as exponential. The justification is not valid (exponential function because it does not increase(or multiply) by the same number after so many days).

The math video is incorrectly identified as linear. The justification would be valid if it was identified correctly (every day the number of views is multiplied by 2 which means it is a linear function).

Both videos are incorrectly identified.

# A3

The relationship is exponential because the science videos had more views than the math video did. As the days go by the views for the science videos go up and the math videos had less views per day. For the science videos the views go up by 570 per day and the math videos go up by 67 views per day.

**Anchor Annotation, Paper 3**
**Score Point 0**

The response receives no credit. It includes none of the two required elements.

The science video is incorrectly identified as exponential. The justification is not valid (exponential because the science videos had more views than the math video did... the views go up by 570 per day). Although 570 can be a valid value when justifying a linear function, it is not used in a way that shows understanding of the task.

The math video is incorrectly/unclearly identified. The justification is incorrect (the math videos had less views per day... the math videos go up by 67 views per day).

# A4

The science video relationship increase is modeled by a liner function, whereas, the math video increases exponentially. The science video increases with a steady rate of 570 more views each day. By subtracting the value of the change from 0 days to 1 the change was 570, as was the change between days 1 and 2, 2 and 3, and 3 to 4. The math video not not follow a steady rate of increase.

**Anchor Annotation, Paper 4**
**Score Point 1**

The response receives partial credit. It includes one of the two required elements.

- Correct identification of the function for the science video as linear with valid justification given (increases with a steady rate of 570 more views each day. By subtracting the value of the change from 0 days to 1 the change was 570, as was the change between days 1 and 2, 2 and 3, and 3 to 4).

Correct identification that the function for the math video is exponential, but there is no supporting evidence from the table (math video not not follow a steady rate of increase). The justification needs to state the function grows by factors of 2, doubles daily, shows the division or some sort of evidence of using values from the table.

Both videos are correctly identified but only the science video shows justification using values from the table.

# A5

the amount of science videos views and days is linear because the difference between each number is 570 and the number of math video views per day is also linear because it just doubles each day

**Anchor Annotation, Paper 5**
**Score Point 1**

The response receives partial credit. It includes one of the two required elements.

- Correct identification of the function for the science video as linear with valid justification given (linear because the difference between each number is 570). Evidence from the table supports that the functions grow by equal differences of 570.

The math video is incorrectly identified as linear. The justification would be valid if it was identified correctly (linear because it just doubles each day).

Only the science video is correctly identified with justification using values from the table.

# A6

the science video relationship is modeled by a linear function because the number of views increases by 570 each day. the math video relationship is modeled by a exponential function because each day the views do not increase at the same rate.

**Anchor Annotation, Paper 6**
**Score Point 1**

The response receives partial credit. It includes one of the two required elements.

- Correct identification of the function for the science video as linear with valid justification given (relationship is modeled by a linear function because the number of views increases by 570 each day). The justification shows the functions grow by equal differences of 570. The use of 570 is a result of calculations using values given from the table.

Correct identification that the function for the math video is exponential (relationship is modeled by a exponential function) but there are no values or evidence of values used for the justification (because each day the views do no increase at the same rate). The justification needs to state the function grows by factors of 2, doubles daily, shows the division or some sort of evidence of using values from the table.

Both videos are correctly identified but only the science video shows justification using values from the table.

Science video:
The function is linear, since the differences are the same.
783 – 213 = 570
1353 – 783 = 570
Math video:
The function is exponential, since the ratios are the same.
$\frac{134}{67} = 2$
$\frac{268}{134} = 2$

**Anchor Annotation, Paper 7**
**Score Point 2**

The response receives full credit. It includes each of the two required elements.

- Correct identification of the function for the science video as linear with valid justification given using values from the table (science video: the function is linear, since the differences are the same. 783 - 213 = 570, 1353 - 783 = 570).

- Correct identification that the function for the math video is exponential with valid justification given using values from the table (math video: The function is exponential, since the ratios are the same. $\frac{134}{67}$ = 2, $\frac{268}{134}$ = 2).

Both videos are correctly identified and justified by mathematical computations.

# A8

The Science Video has a linear relationship while the Math Video has an exponential relationship. Firstly, the science video could be represented by a linear function because there is a constant rate of change of 570 views for eery additional day. For this reason, this function can be represented by the linear function $y = 570x + 213$. However, the math function can be represented by an exponential function due to the rate of change increasing by a different value after each additional day. For this reason, the function for the math video can be represented by the exponential function $y = 67(2)^x$.

**Anchor Annotation, Paper 8**
**Score Point 2**

The response receives full credit. It includes each of the two required elements.

- Correct identification of the function for the science video as linear with valid justification given (the science video could be represented by a linear function because there is a constant rate of change of 570 views for eery additional day...can be represented by the linear function $y = 570x + 213$).

- Correct identification that the function for the math video is exponential with valid justification given (the math function can be represented by an exponential function due to the rate of change increasing by a different value after each additional day... can be represented by the exponential function $y = 67(2)^x$).

Both videos are correctly identified and justified with valid equations.

# A9

The math video can be modeled by an exponential function because as the number of days increases, the number of views multiplies by 2.

The science video can be modeled by a linear function because as the number of days increases, the number of views goes up by 570.

**Anchor Annotation, Paper 9**
**Score Point 2**

The response receives full credit. It includes each of the two required elements.

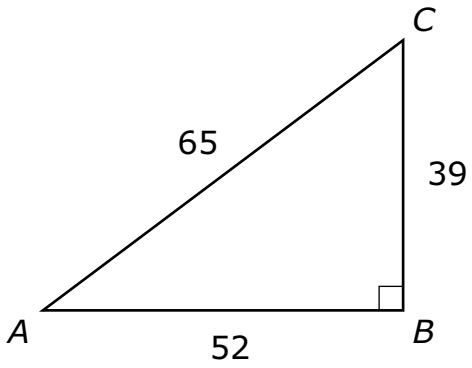
- Correct identification of the function for the science video as linear with valid justification given (The science video can be modeled by a linear function because as the number of days increases, the number of views goes up by 570). The justification shows the functions grow by equal differences of 570.

- Correct identification that the function for the math video is exponential with valid justification given (The math video can be modeled by an exponential function because as the number of days increases, the number of views multiplies by 2). The justification shows the function grows by equal factors of 2.

Both videos are correctly identified and justified by a value that is a result of calculations using values given from each table.

MA1019012_stimulus

The side lengths, in units, of right triangle ABC are shown.




Formula_HS_G_12

| | Formula |
|---|---|
| Sine | $\sin A = \frac{\text{opposite side}}{\text{hypotenuse}}$ |
| Cosine | $\cos A = \frac{\text{adjacent side}}{\text{hypotenuse}}$ |
| Tangent | $\tan A = \frac{\text{opposite side}}{\text{adjacent side}}$ |
| Pythagorean Theorem | $a^2 + b^2 = c^2$ |

**5**

MA1019012_4

Which trigonometric measure of $\angle A$ is equal to $\frac{3}{4}$?

**A** cosine

**B** secant

**C** sine

**D** tangent

# Released Item Performance

## Kentucky Summative Assessments

**Spring 2023**
**Grade 10**
**Mathematics**

**Item:** MA1019012*
**Book Question Number:** 5

**Standard:** KY.HS.G.12.a

**Item Type:** MC
**Key:** D

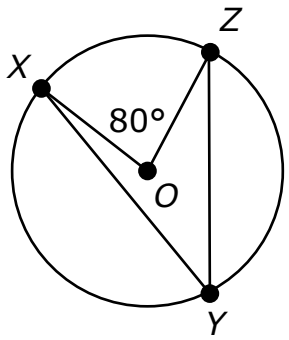
| Student Group | Number of Students | Percent Correct | Average Item Score | Item Breakout Statistics - Answer Choice Options | | | |
|---|---|---|---|---|---|---|---|
| | | | | A (%) | B (%) | C (%) | D (%) |
| *All Students* | **35,213** | 39% | 0.39 | 21% | 16% | 24% | 39% |
| *Gender* | | | | | | | |
| Female | **17,146** | 41% | 0.41 | 21% | 14% | 24% | 41% |
| Male | **18,064** | 38% | 0.38 | 22% | 17% | 24% | 38% |
| *Ethnicity* | | | | | | | |
| African American | **3,881** | 32% | 0.32 | 23% | 20% | 26% | 32% |
| American Indian or Alaska Native | **50** | 44% | 0.44 | 18% | 22% | 16% | 44% |
| Asian | **646** | 56% | 0.56 | 18% | 10% | 16% | 56% |
| Hispanic or Latino | **3,124** | 34% | 0.34 | 23% | 18% | 25% | 34% |
| Native Hawaiian or Pacific Islander | **53** | 25% | 0.25 | 26% | 17% | 32% | 25% |
| White (non-Hispanic) | **25,827** | 41% | 0.41 | 21% | 15% | 23% | 41% |
| Two or more races | **1,628** | 37% | 0.37 | 21% | 16% | 25% | 37% |
| | | | | | | | |
| Migrant | **168** | 34% | 0.34 | 23% | 20% | 24% | 34% |
| | | | | | | | |
| English Learner | **1,483** | 28% | 0.28 | 23% | 22% | 27% | 28% |
| | | | | | | | |
| Economically Disadvantaged | **19,946** | 35% | 0.35 | 22% | 18% | 25% | 35% |
| | | | | | | | |
| Students with Disabilities | **4,288** | 30% | 0.30 | 20% | 24% | 26% | 30% |

* Calculator section

**6**

MA1020060_1

Circle $O$ is shown, with points $X$, $Y$, and $Z$ on the circle. The measure of $\angle XOZ$ is 80°.




What is the measure, in degrees, of $\angle XYZ$?

**A** 40
**B** 50
**C** 60
**D** 100

# Released Item Performance

## Kentucky Summative Assessments

**Spring 2023**
**Grade 10**
**Mathematics**

**Item:** MA1020060*
**Book Question Number:** 6

**Standard:** KY.HS.G.16.a

**Item Type:** MC
**Key:** A

| Student Group | Number of Students | Percent Correct | Average Item Score | Item Breakout Statistics - Answer Choice Options | | | |
|---|---|---|---|---|---|---|---|
| | | | | A (%) | B (%) | C (%) | D (%) |
| *All Students* | **25,829** | 37% | 0.37 | 37% | 17% | 25% | 21% |
| *Gender* | | | | | | | |
| Female | **12,470** | 38% | 0.38 | 38% | 15% | 25% | 22% |
| Male | **13,356** | 37% | 0.37 | 37% | 18% | 25% | 20% |
| *Ethnicity* | | | | | | | |
| African American | **2,849** | 29% | 0.29 | 29% | 16% | 28% | 27% |
| American Indian or Alaska Native | **37** | 22% | 0.22 | 22% | 27% | 27% | 24% |
| Asian | **476** | 46% | 0.46 | 46% | 14% | 19% | 21% |
| Hispanic or Latino | **2,328** | 37% | 0.37 | 37% | 15% | 27% | 21% |
| Native Hawaiian or Pacific Islander | **42** | 40% | 0.40 | 40% | 12% | 21% | 26% |
| White (non-Hispanic) | **18,909** | 38% | 0.38 | 38% | 17% | 25% | 20% |
| Two or more races | **1,185** | 38% | 0.38 | 38% | 15% | 28% | 20% |
| | | | | | | | |
| Migrant | **128** | 31% | 0.31 | 31% | 13% | 27% | 29% |
| | | | | | | | |
| English Learner | **1,195** | 36% | 0.36 | 36% | 15% | 26% | 23% |
| | | | | | | | |
| Economically Disadvantaged | **14,742** | 34% | 0.34 | 34% | 17% | 27% | 22% |
| | | | | | | | |
| Students with Disabilities | **3,698** | 28% | 0.28 | 28% | 21% | 29% | 23% |

* Calculator section

**7**

MA1020002_2

Jackson's car uses approximately 1 gallon of gas for every 35 miles traveled on a highway. He filled his car's gas tank for $2.54 per gallon before a trip. What is the approximate cost, in dollars, of gas for a 45-minute trip where Jackson traveled at a constant speed of 65 mph on the highway?

**A** 2.12

**B** 3.54

**C** 4.72

**D** 6.29

# Released Item Performance

## Kentucky Summative Assessments

**Spring 2023**
**Grade 10**
**Mathematics**

**Item:** MA1020002*
**Book Question Number:** 7

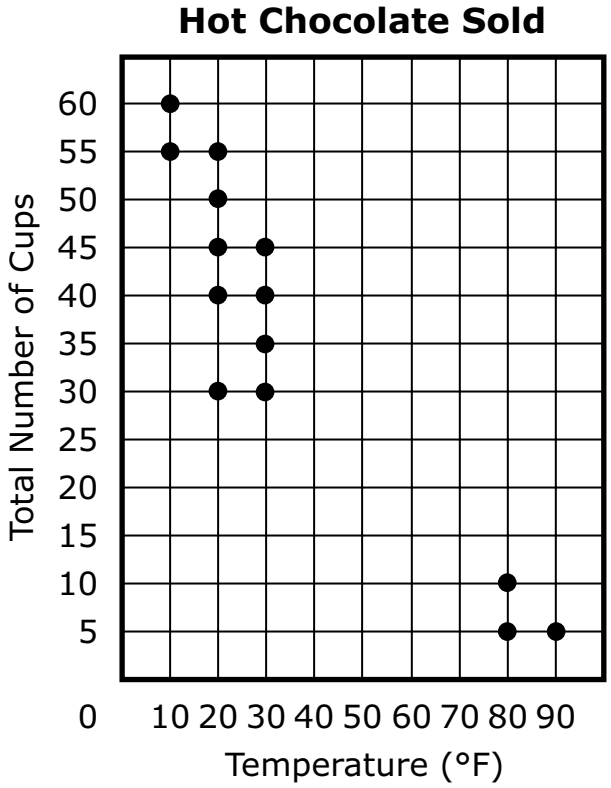
**Standard:** KY.HS.N.4.a

**Item Type:** MC
**Key:** B

| Student Group | Number of Students | Percent Correct | Average Item Score | Item Breakout Statistics - Answer Choice Options | | | |
|---|---|---|---|---|---|---|---|
| | | | | A (%) | B (%) | C (%) | D (%) |
| *All Students* | **30,427** | 43% | 0.43 | 10% | 43% | 35% | 11% |
| *Gender* | | | | | | | |
| Female | **14,678** | 39% | 0.39 | 9% | 39% | 38% | 13% |
| Male | **15,747** | 46% | 0.46 | 12% | 46% | 33% | 9% |
| *Ethnicity* | | | | | | | |
| African American | **3,265** | 37% | 0.37 | 10% | 37% | 39% | 14% |
| American Indian or Alaska Native | **39** | 36% | 0.36 | 5% | 36% | 54% | 5% |
| Asian | **568** | 48% | 0.48 | 9% | 48% | 34% | 9% |
| Hispanic or Latino | **2,797** | 39% | 0.39 | 10% | 39% | 38% | 13% |
| Native Hawaiian or Pacific Islander | **51** | 35% | 0.35 | 8% | 35% | 49% | 8% |
| White (non-Hispanic) | **22,369** | 45% | 0.45 | 10% | 45% | 35% | 11% |
| Two or more races | **1,335** | 39% | 0.39 | 11% | 39% | 38% | 12% |
| | | | | | | | |
| Migrant | **150** | 37% | 0.37 | 15% | 37% | 31% | 17% |
| | | | | | | | |
| English Learner | **1,346** | 34% | 0.34 | 11% | 34% | 36% | 19% |
| | | | | | | | |
| Economically Disadvantaged | **17,260** | 39% | 0.39 | 11% | 39% | 37% | 13% |
| | | | | | | | |
| Students with Disabilities | **3,851** | 35% | 0.35 | 12% | 35% | 34% | 18% |

* Calculator section

The relationship between $x$, the daily temperature, in degrees Fahrenheit, and $y$, the number of cups of hot chocolate sold at a restaurant is shown in the coordinate plane. The manager of the restaurant uses the equation $y = 57.9693 - 0.6257x$ to model this data.



**8** MA1020C3_01

Complete the statement to interpret the slope of the linear equation that models the data.

Select from the drop-down menus to correctly complete the statement.

The number of cups of hot chocolate that are sold [Choose...] by [Choose...] for every [Choose...] in temperature of 1 degree.

## Item Drop Down Options:

Complete the statement to interpret the slope of the linear equation that models the data.

Select from the drop-down menus to correctly complete the statement.

- ✓ Choose...
- increases
- decreases

of hot chocolate that are sold by

- ✓ Choose...
- 0.6257
- 57.9693

for every

- ✓ Choose...
- increase
- decrease

in t ree.

## Correct Answer:

Complete the statement to interpret the slope of the linear equation that models the data.

Select from the drop-down menus to correctly complete the statement.

The number of cups of hot chocolate that are sold [decreases] by [0.6257] for every [increase] in temperature of 1 degree.



STOP

# Released Item Performance

## Kentucky Summative Assessments

**Spring 2023**
**Grade 10**
**Mathematics**

**Item:** MA1020C3_01*
**Book Question Number:** 8

**Standard:** KY.HS.SP.7

**Item Type:** TE
**Key:** see below

| Student Group | Number of Students | Percent Correct | Average Item Score | Item Breakout Statistics - Score Percentages | |
|---|---|---|---|---|---|
| | | | | Score 0 (%) | Score 1 (%) |
| *All Students* | **23,261** | 42.5% | 0.43 | 57% | 43% |
| *Gender* | | | | | |
| Female | **11,514** | 43.0% | 0.43 | 57% | 43% |
| Male | **11,747** | 42.0% | 0.42 | 58% | 42% |
| *Ethnicity* | | | | | |
| African American | **2,436** | 29.8% | 0.30 | 70% | 30% |
| American Indian or Alaska Native | **32** | 50.0% | 0.50 | 50% | 50% |
| Asian | **445** | 57.1% | 0.57 | 43% | 57% |
| Hispanic or Latino | **2,050** | 34.2% | 0.34 | 66% | 34% |
| Native Hawaiian or Pacific Islander | **35** | 48.6% | 0.49 | 51% | 49% |
| White (non-Hispanic) | **17,205** | 45.0% | 0.45 | 55% | 45% |
| Two or more races | **1,056** | 41.1% | 0.41 | 59% | 41% |
| | | | | | |
| Migrant | **92** | 28.3% | 0.28 | 72% | 28% |
| | | | | | |
| English Learner | **748** | 20.1% | 0.20 | 80% | 20% |
| | | | | | |
| Economically Disadvantaged | **12,837** | 36.7% | 0.37 | 63% | 37% |
| | | | | | |
| Students with Disabilities | **1,341** | 25.3% | 0.25 | 75% | 25% |

**Key:** Drop Down 1: should have option 2 chosen. Drop Down 2: should have option 1 chosen. Drop Down 3: should have option 1 chosen.

* Calculator section


*Investing in Kentucky's Future, One Student at a Time*