



Checkpoint Results Interpretation Guide

Grade 7 Mathematics

Tennessee Department of Education | August 2020

The Checkpoint

The Checkpoint can be used at the beginning of the school year to measure retention on **key standard-aligned skills that are most essential** for students to be able to **access, and engage in, on-grade-level content** for the current year. Because of this, the Checkpoints are smaller than a summative TCAP assessment and do not cover all the standards from the previous year. Instead, as recommended by experts¹, they focus on fewer, **prioritized vertically-aligned standards**, with the intent of providing educators more meaningful and actionable information about student needs so you can support your students' ability to access grade-level learning throughout the year.

The Grade 7 Math Checkpoint should be given to incoming eighth grade students to help plan for students learning grade 8 math content this year.

To help students in their learning and teachers with their planning, Checkpoints come with fully **annotated questions** that help to understand trends and pinpoint misconceptions that may inhibit student progress. ***Using this Checkpoint Results Interpretation Guide (the Guide) and your student results data found in the Schoolnet platform, you and your students can plan for great academic success this year.***

It is best to use these results to identify any needed pre-requisite learning and incorporate it throughout the year to ensure students can access grade-level content or can build upon their current strengths. After you administer the Checkpoint and use this Guide to better meet student needs at the beginning of the year, **continue monitoring** your students' progress on **grade-appropriate assignments** for the rest of the year to ensure that these core foundations are continually strengthened.

The Checkpoint IS:

- an investigative tool to determine student readiness for the major work of the current grade
- aligned to the Tennessee State Academic Standards, using TN-educator reviewed questions from previous TCAP exams
- designed to identify student misconceptions and learning needs
- providing actionable next steps for informing instructional decisions

The Checkpoint IS NOT:

- a replacement for the performance level determinations a student would have received on the TCAP assessment
- predictive of, or comparable to, summative TCAP results
- a replacement for RTI² diagnostics or universal screeners
- used to evaluate teacher, school, or district performance
- a tool to change student placement decisions (e.g. retake a course, advance to honors)

¹ https://tntp.org/assets/covid-19-toolkit-resources/TNTP_Learning_Acceleration_Guide.pdf

Contents of this Guide

THE CHECKPOINT 2
 CHECKPOINT DESIGN 4
INTERPRETING AND USING RESULTS 4
 AUTOMATIC REPORTING IN SCHOOLNET 4
 OVERALL SCORES 5
ACTIONABLE INSIGHTS: ANNOTATED QUESTIONS AND REPORTING TOOLS 6
 ANSWER CHOICE RATIONALES IN EACH QUESTION ANNOTATION..... 6
 ITEM ANNOTATIONS AND PLANNING FOR INSTRUCTION 7
 SAMPLE SET OF RATIONALES 7
GRADE 7 MATH CHECKPOINT ITEM ANNOTATIONS 8
ADDITIONAL RESOURCES 50

“When the COVID-19 pandemic forced prolonged school building closures and canceled spring assessments, it became even more important that districts and schools can reliably gather student data and understand student readiness for the next school year. These free and optional tools are one way the department can support the needs of our district partners in serving all students”

-Commissioner Penny Schwinn

Checkpoint Design

The Checkpoint assessments were designed using **real TCAP questions** from previous summative exams. This ensured each question was aligned to Tennessee state standards and had been reviewed by **Tennessee educators**. The Checkpoint was designed to be quick to access and administer, not requiring complicated adjustments to existing school schedules; with **flexibility for online or paper administration** based on school/district need.

The Math Checkpoint assessments:

1. **are quick easy to administer:** contain two subparts (separated by a section break and new instructions screen) in one short (less than 30 questions) assessment in Schoolnet
2. **include prioritized content:** standards, concepts, and skills from the designated grade-level/course that are considered essential pre-requisite content for accessing the next grade-level's work

Less than 60 minutes

Less than 30 questions

Two subparts: Calculator
& Non-Calculator

Interpreting and Using Results

Automatic Reporting in Schoolnet

In order to support teachers in using these assessments, students who take the assessment online in the Schoolnet platform will have their Checkpoints scored automatically. Teachers have multiple scoring options for students who take the Checkpoints on paper, and you can find how-to documents and videos at <https://tn.mypearsonsupport.com/schoolnet/>. **Checkpoint assessment scoring in Schoolnet requires all answers to be submitted by the student for results to be produced.** The following automated reports can be found in [Schoolnet](#):

- Individual student results
- Classroom level reports
- Standards analysis reports
- Item analysis
- Test comparison reports (e.g., student, class, school, district, and state)
- Shared reporting (e.g., district to school admin, school admin to educators in same content/grade-level)
- Aggregate and disaggregation of demographics

Overall Scores

The score groups on the checkpoint assessment are ***not meant to represent performance levels or the blueprints of the TCAP summative assessments*** (e.g., below, approaching, on track, and mastered). The score groups were designed to **share student preparedness for next grade level content** and provide guidance around the **level of support** students may need to access that content.

Score Group	% Correct	Results	Recommended Next Steps
Orange	0 – 51%	Likely Needs More Targeted Support	Use other sources of data for deeper insight; use identified misconceptions to offer targeted re-teaching, plan differentiation and intervention as needed as grade-level concepts are introduced.
Yellow	52 – 68%	Likely Able to Engage in Grade Level Content with Some Support	Investigate trends in student responses using the most important errors, to support differentiation on grade-level assignments and scaffolding when introducing new content; provide opportunities to check for understanding throughout the lesson to determine differentiation needs.
Green	69 – 99%	Likely Ready for Grade Level Content	Move directly into grade-level content.
Blue	100%	Ready for Grade Level Content	

Overall scoring is automatically available in the Schoolnet platform. This may help with you use the results of the student and class level reports to develop an overall summary and conclusion about your students' readiness for grade-level content. In responding to the Checkpoint assessments, we recommend addressing the learning needs of students **while engaging with on grade-level content**. For more information and tools for using assessment data to drive instructional decision making, review the [Assessing Learning Toolkit](#), pages 18-21, and the [Learning Loss PLC Guide](#).

While overall scoring is provided and can be helpful in planning for group instruction, the most actionable information in these Checkpoints can be found by analyzing at the question-level results.

Actionable Insights: Annotated Questions and Reporting Tools

Each question on the Checkpoint is fully annotated with information that describes the questions as they were used on previous TCAP tests, and automated scoring tools in Schoolnet that make getting that information easier. The most helpful and actionable information is in the **Item Annotations in this Guide** when combined with the **Item Analysis reports in Schoolnet**.

***When we need more time** in the school year, the best way to get it is to spend less time on things they've already mastered and more time on the specific gaps that students need.*

Answer Choice Rationales in each Question Annotation

It is possible that we have multiple students who may not have mastered some of the foundational content required to fully engage in this year's content. We are most effective at addressing these needs when we can pinpoint, as specifically as possible, the conceptual understanding that would most efficiently close this gap. That way we spend less time on previous content by focusing just on the piece that they need to be successful with this concept during the year. The Question Annotations are designed to help with that process.

To help teachers be more efficient in planning for the year, each question on the Checkpoint is accompanied by a set of answer choice rationales **which offers an explanation for each choice**. These annotations are not definitive: we know there may be many reasons for why students might select different answer choices. However, each rationale listed provides an explanation for why students may have selected a given answer choice, including what mis-steps may have caused them to select an incorrect answer (a "distractor"). These distractor rationales provide an instructional target to improve student understanding by breaking down and diagnosing the likely conceptual mistake, allowing you to **follow up with targeted instruction based on the most common mathematical errors you identify** for your specific group of students. These annotations assume that students tried their best and cannot provide information about whether students selected an option at random.

Item Annotations and Planning for Instruction

The department recommends in using this guide that educators look for trends in incorrect answers using the Item Analysis reporting on Schoolnet and then use the annotations using this process:

1. Find the highest-leverage error trend,
 - A. This can mean comparing the frequency of each student error or understanding the group of students represented by that trend.
2. Unpack the conceptual misunderstanding that led to the most important error, and then use the annotations to support analyzing the incorrect answer by thinking through these questions in order:
 - A. What DO these students understand?
 - B. Based on what students do understand, why might a student think their error was a reasonable choice?
 - C. What specific concept, if they had understood it clearly, would have made them recognize that the error was not a reasonable approach?
3. Put it all together to check your thinking by restating the answers to each of the three questions to articulate this sentence stem:

"Students understood [question A] but made the error of [student error], because they thought [question B] made sense. If they had understood [question C], they would have avoided the error."

This practice of pinpointing misconceptions and target understandings can help with long term planning to support students in accessing year-long content and making the most of the start of year Checkpoint.

Sample Set of Rationales

Rationales	
Incorrect – 1	Students choosing this answer likely skipped a step in multiplying (7×10). Students choosing this answer may need additional support in setting up the multiplication algorithm and tracking that they multiply each multiplicand by the multiplier.
Incorrect – 2	Students choosing this answer likely skipped multiplying 7 by the tens place, instead adding the regrouped 30 to the ten in the multiplicand. Students choosing this answer may need additional support in multiplying with regrouping.
Correct – 3	This problem requires students to understand the process involved to multiply a whole number of four digits by a one-digit whole number and using strategies based on place value and the properties of operations. To determine the correct product, students should have multiplied the multiplicand (2,815) by the multiplier (7) while remembering to regroup correctly.
Incorrect – 4	Students choosing this answer likely added the regrouped tens (30) before multiplying by 7. Students choosing this answer may need additional support or practice in the order of operations while multiplying a whole number of four digits by a one-digit whole.

Grade 7 Math Checkpoint Item Annotations

Item Information

Item Code: TN855964

Grade Level: 7

Standard Code: 7.NS.A.1.b

Position No: 1

Standard Text: Understand $p + q$ as the number located a distance the absolute value of q from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.

Reporting Category: 1: Number Relationships

Calculator: N

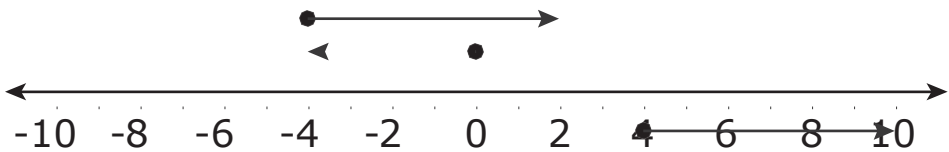
Correct Answer: D

DOK Level: 1

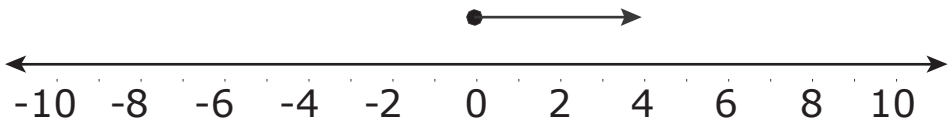
Item Type: O

Which number line represents $4 + -6$?

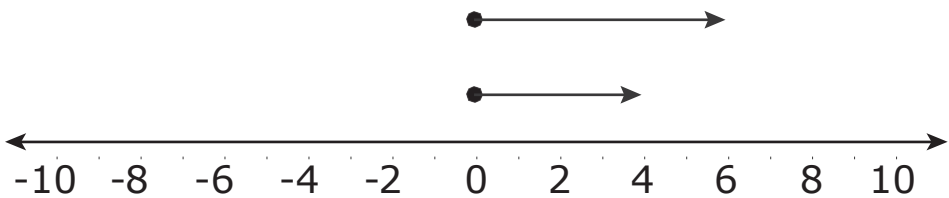
A.



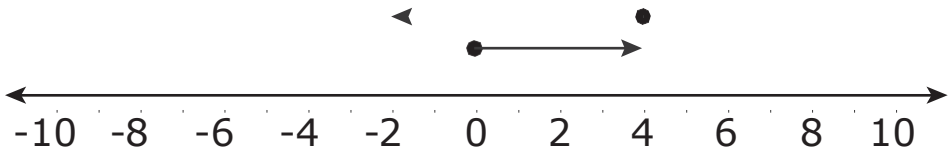
B.



C.



D.



Rationales	
Incorrect – 1	Students may have chosen this option if they know that the procedure for determining $p + q$ on the number line involves the idea of distance, but likely thought that this procedure always involved “first left and then right” movements, determining $- p + q $ instead. These students may need support on understanding how to interpret the signs given in an expression involving the addition of rational numbers.
Incorrect – 2	Students may have chosen this option if they know that the procedure for determining $p + q$ on the number line involves the idea of distance, but likely thought that addition always involved “right only” movements, determining $p + q $ instead. These students may need support on understanding how to interpret the signs given in an expression involving the addition of rational numbers.
Incorrect – 3	Students likely represented $p + q$ on the number line by representing p and $ q $ individually. These students may need support on understanding how to interpret the signs given in an expression involving the addition of rational numbers and how to link addition to the idea of distance.
Correct – 4	Students understand that $p + q$ is the number located $ q $ units from p in the positive direction (to the right) or negative direction (to the left) depending on the sign of q . Students should also understand how to represent $p + q$ on a horizontal number line diagram using rays.

Item Information

Item Code: TN526155

Grade Level: 7

Standard Code: 7.RP.A.2.d

Position No: 2

Standard Text: Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.

Reporting Category: 3: Proportional Reasoning

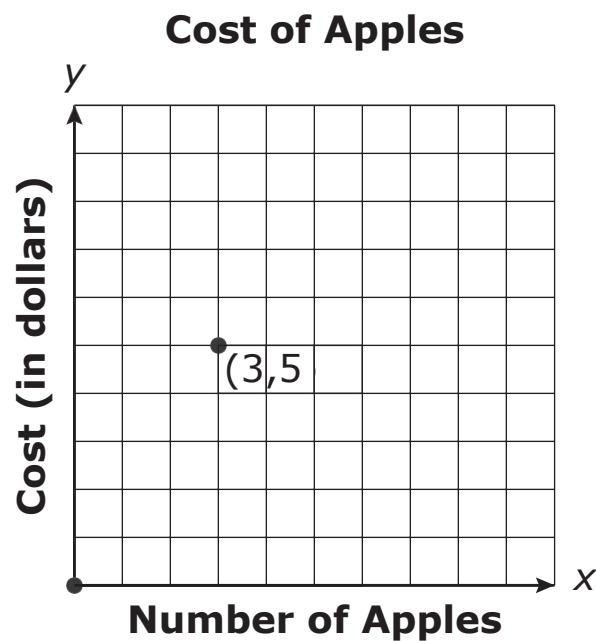
Calculator: N

Correct Answer: C

DOK Level: 2

Item Type: O

The graph shows the relationship between the number of apples and their cost.



For the point $(1, r)$, what is the value of r ?

- A.** 1
- B.** $\frac{3}{5}$
- C.** $\frac{5}{3}$
- D.** 2

Rationales	
Incorrect – 1	Students likely identified the value of r as being equal to the x -coordinate of the point $(1, r)$, with r being equal to 1. These students may need support on understanding how to determine the value of r in the point $(1, r)$ from a graph representing a proportional relationship and a given point on the graph.
Incorrect – 2	Students understood that the value of r in the point $(1, r)$ represented a ratio of the coordinates in the point $(3, 5)$ but likely identified the inverse of the ratio. Students divided the x -coordinate by the y -coordinate, resulting in $3/5$. These students may need support on understanding how to determine the ratio of the coordinates in a given point when determining the value of r in the point $(1, r)$ from a graph representing a proportional relationship.
Correct – 3	Students understand how to determine the value of r in the point $(1, r)$ from a graph representing a proportional relationship. Specifically, students should have understood that for any point (x, y) in such a graph, the proportion $r/1 = y/x$ should be satisfied.
Incorrect – 4	Students likely identified the value of r as being equal to the difference of the x -coordinate and y -coordinate in the point $(3, 5)$. Students subtracted the x -coordinate from the y -coordinate, resulting in $5-3=2$. These students may need support on understanding how to determine the value of r in the point $(1, r)$ from a graph representing a proportional relationship and a given point on the graph.

Item Information

Item Code: TN167139

Grade Level: 7

Standard Code: 7.NS.A.2.a

Position No: 3

Standard Text: Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.

Reporting Category: 1: Number Relationships

Calculator: N

Correct Answer: D

DOK Level: 2

Item Type: O

What is the value of the expression $-2(-3 + -1)$?

- A.** -8
- B.** -7
- C.** 5
- D.** 8

Rationales	
Incorrect – 1	Students understood the rule for adding negative rational numbers but likely identified the multiplying of two negative rational numbers as resulting in a negative rational number. These students may need support on understanding how to multiply negative rational numbers.
Incorrect – 2	Students understood the rule for adding negative rational numbers but likely distributed -2 to only -3 in the parentheses and identified the multiplying of two negative rational numbers as resulting in a negative rational number. These students may need support on understanding how to apply the distributive property and how to multiply negative rational numbers.
Incorrect – 3	Students understood the rules for adding and multiplying negative rational numbers but likely distributed -2 to only -3 in the parentheses. These students may need support on understanding how to apply the distributive property.
Correct – 4	Students understand how to apply the order of operations and the rules for adding and multiplying negative rational numbers. To determine the correct value of the expression, students should have first added -3 and -1 , resulting in $-2(-4)$. Students should have then multiplied -2 by -4 , resulting in 8 .

Item Information

Item Code: TN577103

Grade Level: 7

Standard Code: 7.EE.B.3.b

Position No: 4

Standard Text: Assess the reasonableness of answers using mental computation and estimation strategies.

Reporting Category: 2: Expressions and Equations

Calculator: N

Correct Answer: B

DOK Level: 2

Item Type: O

Ezra and Sophie are planning a picnic for a group of friends.

- They have \$100 to spend.
- They will buy one large salad for \$28.50.
- They will also buy some sandwiches for \$4.85 each.

Ezra thinks they can buy at least 20 sandwiches, but Sophie thinks they can buy no more than 14 sandwiches.

Which estimation strategy will show who is correct?

- A.** Each sandwich costs about \$5, so 20 sandwiches cost about \$100, so Ezra is right.
- B.** Each sandwich costs about \$5, so 14 sandwiches cost about \$70, so Sophie is right.
- C.** Each sandwich costs about \$4, so 20 sandwiches cost about \$80, so Ezra is right.
- D.** Each sandwich costs about \$4, so 14 sandwiches cost about \$55, so Sophie is right.

Rationales	
Incorrect – 1	Students understood how to determine the estimated cost of each sandwich but likely did not consider the estimated cost of one large salad when determining how much money Ezra and Sophie had to spend on sandwiches. Students therefore identified Ezra as being right in his thinking that they could buy at least 20 sandwiches because the sentence states that the estimated cost of each sandwich is \$5 and the amount of money available to purchase sandwiches is \$100. These students may need support on understanding the numbers and details presented in the problem to make sure that all the relevant information is used.
Correct – 2	Students understand how to use estimations and mental computation of dollar amounts in order to determine the reasonableness of how many sandwiches Ezra and Sophie can buy for a picnic. Sophie is right in her thinking that they could buy no more than 14 sandwiches since the best estimated cost of each sandwich is \$5 and the best estimated amount of money left after buying one large salad is \$70.
Incorrect – 3	Students likely underestimated the cost of one large salad and each sandwich, representing the cost of one large salad as \$20 and the cost of each sandwich as \$4. Students therefore identified Ezra as being right in his thinking that they could buy at least 20 sandwiches because the sentence states that the estimated cost of each sandwich is \$4 and the amount of money available to purchase sandwiches is \$80. These students may need support on understanding how to best estimate values given in a real-world problem.
Incorrect – 4	Students likely overestimated the cost of one large salad and underestimated the cost of each sandwich, representing the cost of one large salad as \$45 and the cost of each sandwich as \$4. Students therefore identified Sophie as being right in her thinking that they could buy no more than 14 sandwiches because the sentence states that the estimated cost of each sandwich is \$4 and the amount of money available to purchase sandwiches is \$55. These students may need support on understanding how to best estimate values given in a real-world problem.

Item Information

Item Code: TN296195

Grade Level: 7

Standard Code: 7.RP.A.2.c

Position No: 5

Standard Text: Represent proportional relationships by equations.

Reporting Category: 3: Proportional Reasoning

Calculator: N

Correct Answer: D

DOK Level: 1

Item Type: O

Which equation represents a proportional relationship?

A. $y = 5x - 2$

B. $y = \frac{3}{4}x - \frac{3}{4}$

C. $y = x^2$

D. $y = 7.8x$

Rationales	
Incorrect – 1	Students likely recognized that a proportional relationship is defined by a multiplicative constant of proportionality, but they may have failed to recognize that, in addition to this relationship, there is also an added constant relationship as well (making it a linear relationship). They may need additional support interpreting a proportional relationships and how they are represented in various contexts.
Incorrect – 2	Students likely recognized that a proportional relationship is defined by a multiplicative constant of proportionality, but they may have failed to recognize that, in addition to this relationship, there is also an added constant relationship as well (making it a linear relationship). Students selecting this option may have selected this because they associate “proportion” with “fraction” rather than a constant of proportionality. They may need additional support interpreting a proportional relationships and how they are represented in various contexts.
Incorrect – 3	Students likely identified the equation of a proportional relationship as being represented by $y = x^2$, students who selected this option may need support on understanding what is means by constant of proportionality.
Correct – 4	Students likely recognize that a proportional relationship is defined by a constant of proportionality. To get this item correct, students would need to recognize that the first two expression options have proportional relationships within them, but also have other mathematical relationships as well.

Item Information

Item Code: TN327149

Grade Level: 7

Standard Code: 7.NS.A.2.a

Position No: 6

Standard Text: Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.

Reporting Category: 1: Number Relationships

Calculator: N

Correct Answer: D

DOK Level: 2

Item Type: O

Which situation can **best** be modeled by the expression $10(-4)$?

- A.** A store has 10 hats. Then they sell 4 hats. How many hats remain?
- B.** A babysitter earns \$10 per hour working for 4 hours. How much does the babysitter earn?
- C.** A library has 10 computers. Then they buy 4 more computers. How many computers in all does the library have?
- D.** A scuba diver swims down 4 feet per minute for 10 minutes. In feet, where is the scuba diver compared to the surface of the water?

Rationales	
Incorrect – 1	Students likely interpreted the expression $10(-4)$ as representing a difference instead of a product. Students identified from the situation that 10 represents the number of hats the store has and -4 represents the number of hats sold, identifying the difference representing the number of hats remaining at the store with the expression $10(-4)$. These students may need support on understanding how to determine what operations should be used when describing a real-world situation.
Incorrect – 2	Students understood that the real-world situation represented the product of rational numbers but likely identified “working for 4 hours” in the situation as being represented by -4 instead of 4. Students identified from the situation that 10 represents the amount, in dollars, the babysitter earns per hour, representing the money the babysitter earned in 4 hours with the expression $10(-4)$. These students may need support on understanding when to use negative rational numbers to represent components of a real-world situation.
Incorrect – 3	Students likely interpreted the expression $10(-4)$ as representing a sum instead of a product. Students identified from the situation that 10 represents the number of computers the library has and -4 represents the computers the library bought, identifying the sum representing the number of computers in all with the expression $10(-4)$. These students may need support on understanding how to determine what operations should be used when describing a real-world situation.
Correct – 4	Students understand how to multiply rational numbers and how to interpret the product of rational numbers in a real-world situation. Students should have multiplied -4 by 10. Therefore, this situation of the scuba diver swimming down from the surface of the water best models the expression $10(-4)$.

Item Information

Item Code: TN358375

Grade Level: 7

Standard Code: 7.SP.A.2

Position No: 7

Standard Text: Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.

Reporting Category: 4: Geometry and Data

Calculator: N

Correct Answer: C,E

DOK Level: 2

Item Type: O

The manager of a toy store needs to determine what types of items his customers are most interested in buying. The manager conducted two random surveys. The survey results are shown in the table.

	Sample 1	Sample 2
Board Games	22	28
Toy Cars and Trucks	30	20
Balls and Sporting Equipment	48	52
Total	100	100

Select the **two** inferences that can be made based on the given data.

- A.** The store manager should order more board games than both of the other types of items combined.
- B.** The store manager should order more toy cars and trucks than either of the other types of items.
- C.** The store manager should order more balls and sporting equipment than either of the other types of items.
- D.** The store manager should order approximately half as many balls and sporting equipment as toy cars and trucks.
- E.** The store manager should order approximately twice as many balls and sporting equipment as toy cars and trucks.

Rationales	
Incorrect – 1	Students likely identified the types of items from the table with the least number of customers who were most interested in buying them as being the items that the toy store manager should order more of. Therefore, the inference that the store manager should order more board games than both of the other types of items combined was made because from the comparisons applied to the samples, board games had the least number of customers most interested in buying them when compared to the combined number of customers most interested in buying toy cars and trucks or balls and sporting equipment. These students may need support on understanding how to compare sample numbers and combined values when making inferences about a population represented by multiple samples.
Incorrect – 2	Students likely identified the types of items from the table representing multiples of 10 in both samples as being the types of items customers were most interested in buying. Therefore, the inference that the store manager should order more toy cars and trucks than either of the other types of items was made because only the number of customers most interested in buying toy cars and trucks represented multiples of 10. These students may need support on understanding how to interpret and compare sample numbers when making inferences about a population represented by multiple samples.
Correct – 3	Students understand how to draw inferences about what types of items the store manager of a toy store should order for its customers from two random samples of toy store customers. Students should have reviewed the table containing the types of items and sample numbers to compare the number of customers who are most interested in buying balls and sporting equipment to the number of customers who are most interested in buying the other types of items (board games, toy cars, and trucks). The inference that the store manager should order more balls and sporting equipment than either of the other types of items can be made because the items with the greatest number of customers in both samples are balls and sporting equipment.
Incorrect – 4	Students likely reversed the ratio in both samples, representing the relationship between the approximate number of customers most interested in buying toy cars and trucks to the approximate number of customers most interested in buying balls and sporting equipment. These students may need support on understanding how to determine the ratio representing the relationship between sample numbers and how to make inferences about a population represented by multiple samples.
Correct – 5	Students understand how to draw inferences about what types of items the store manager of a toy store should order for its customers from two random samples of toy store customers. The inference that the store manager should order approximately twice as many balls and sporting equipment as toy cars and trucks can be made because the ratio in both samples between balls and sporting equipment to toy cars and trucks is approximately 2 to 1.

Item Information

Item Code: TN636203

Grade Level: 7

Standard Code: 7.RP.A.2.d

Position No: 8

Standard Text: Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.

Reporting Category: 3: Proportional Reasoning

Calculator: N

Correct Answer: D

DOK Level: 2

Item Type: O

The point $(10, 4)$ is located on a line that shows a proportional relationship.

Which of the following points must also be located on the line?

- A.** $(8, 2)$
- B.** $(2.5, 0)$
- C.** $(8, 20)$
- D.** $(1, 0.4)$

Rationales	
Incorrect – 1	Students likely observed that the points (10, 4) and (8, 2) both satisfy the relationship $x - y = 6$, because $10 - 4 = 6$ and $8 - 2 = 6$. These students may need support on understanding how to determine if a point is located on a line that represents a proportional relationship when given another point located on the line.
Incorrect – 2	Students likely identified a point on the line that represents a proportional relationship as having an x-coordinate equal to the quotient of the coordinates of the given point (10, 4) and a y-coordinate equal to 0. Students determined the x-coordinate by dividing 10 by 4, resulting in $10/4 = 2.5$. Students identified the point (2.5, 0) as also being located on the line. These students may need support on understanding how to determine if a point is located on a line that represents a proportional relationship when given another point located on the line.
Incorrect – 3	Students likely observed that the point (8, 20) represents $(4 \times 2, 10 \times 2)$. Since the coordinates of the given point (10, 4) represent the two numbers that were multiplied by 2, students assumed that the value of 2 represented the constant of proportionality and that the point (8, 20) was located on the line. These students may need support on understanding how to identify the constant of proportionality when given a point on a line that shows a proportional relationship.
Correct – 4	Students understand how to determine if a point is located on a line that represents a proportional relationship when given another point located on the line. Students should have understood that the value of r in the point (1, r) represents the unit rate of the proportional relationship. To determine the value of r , students should have divided the y-coordinate by the x-coordinate of the given point (10, 4), resulting in $4/10 = 0.4$. Therefore, the point (1, 0.4) is located on the line representing a proportional relationship that includes the point (10, 4).

Item Information

Item Code: TN427127

Grade Level: 7

Standard Code: 7.NS.A.1.c

Position No: 9

Standard Text: Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.

Reporting Category: 1: Number Relationships

Calculator: N

Correct Answer: C

DOK Level: 1

Item Type: O

An expression is shown.

$$-20.75 + 14.5$$

What is the value of the expression?

- A.** 35.25
- B.** 6.25
- C.** -6.25
- D.** -35.25

Rationales	
Incorrect – 1	Students likely identified the additive inverse as switching any negative sign to a positive sign. Students identified the expression as $20.75 + 14.5$, resulting in 35.25. These students may need support on understanding how to identify the additive inverse of a negative rational number in an expression representing the subtraction of rational numbers.
Incorrect – 2	Students understood how to subtract rational numbers but likely identified the additive inverse as switching the signs of the rational numbers in the expression. Students identified the expression as $20.75 - 14.5$, resulting in 6.25. These students may need support on understanding how to identify the additive inverse in an expression representing the subtraction of rational numbers.
Correct – 3	Students understand how to subtract rational numbers using the additive inverse. To determine the correct value of the expression, students identified the expression as $14.5 + (-20.75)$, resulting in -6.25.
Incorrect – 4	Students likely identified the additive inverse as changing the sign of the second number in the expression. Students identified the expression as $-20.75 + (-14.5)$, resulting in -35.25. These students may need support on understanding where the additive inverse is applied in an expression representing the subtraction of rational numbers.

Item Information

Item Code: TN727097

Grade Level: 7

Standard Code: 7.EE.B.3.b

Position No: 10

Standard Text: Assess the reasonableness of answers using mental computation and estimation strategies.

Reporting Category: 2: Expressions and Equations

Calculator: N

Correct Answer: B

DOK Level: 2

Item Type: O

Beth used her calculator to multiply 19 by 0.2, and her answer was 38.

What mental check can Beth use to test whether her answer makes sense?

- A.** Multiplying by 0.2 is the same as multiplying by 5, so her answer should be close to 20 times 5.
- B.** Multiplying by 0.2 is the same as dividing by 5, so her answer should be close to 20 divided by 5.
- C.** Multiplying by 0.2 is the same as multiplying by 2, so her answer should be close to 20 times 2.
- D.** Multiplying by 0.2 is the same as dividing by 2, so her answer should be close to 20 divided by 2.

Rationales	
Incorrect – 1	Students understood how to round a number to the nearest multiple of 10 and how to find a fraction equivalent to a decimal, but likely calculated the product of these two numbers by multiplying the rounded number by only the denominator of the fraction. Students therefore concluded that Beth should use the mental check of 20 times 5 because multiplying by 0.2 is the same as multiplying by 5. These students may need support on understanding how to multiply a whole number by a fraction when assessing the reasonableness of the product.
Correct – 2	Students understand how to use estimations and mental computation of numbers in order to determine the reasonableness of Beth's work on her calculator. Beth should use the mental check of dividing 20 by 5 to test whether her answer of 38 makes sense because it is true that multiplying by 0.2 is the same as dividing by 5.
Incorrect – 3	Students understood how to round a whole number to the nearest multiple of 10 but likely thought that a decimal number of the form $0.b$ is equivalent to b . Students therefore concluded that Beth should use the mental check of 20 times 2 because multiplying by 0.2 is the same as multiplying by 2. These students may need support on understanding how to determine the fraction representing a decimal value when assessing the reasonableness of a product.
Incorrect – 4	Students understood how to round a whole number to the nearest multiple of 10 but likely thought that a decimal number of the form $0.b$ is equivalent to $1/b$. Students therefore concluded that Beth should use the mental check of 20 divided by 2 because multiplying by 0.2 is the same as dividing by 2. These students may need support on understanding how to determine the fraction representing a decimal value when assessing the reasonableness of a product.

Item Information

Item Code: TN320586

Grade Level: 7

Standard Code: 7.NS.A.1.b

Position No: 11

Standard Text: Understand $p + q$ as the number located a distance the absolute value of q from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.

Reporting Category: 1: Number Relationships

Calculator: N

Correct Answer: A,D

DOK Level: 2

Item Type: O

Cierra is playing a game on a number line. Her game piece is on the number 3. She picks a card that says “move 8 spaces.”

Select **all** the numbers that are 8 spaces from Cierra’s current position.

- A.** 11
- B.** 8
- C.** -4
- D.** -5
- E.** -8

Rationales	
Correct – 1	Students understand how the addition of two numbers, $p+q$, represents the distance of the absolute value of q from p on a number line, either in the positive or negative direction depending on whether q is positive or negative. Students should have determined that if Cierra chooses to move her game piece to the right 8 units, the new position of her game piece on the number line would be represented by the expression $3 + 8$, which equals 11.
Incorrect – 2	Students understood that the addition of two numbers, $p+q$, represents the distance of the absolute value of q from p on a number line, either in the positive or negative direction depending on whether q is positive or negative. However, students likely identified Cierra's current position of her game piece at the number 0 instead of the number 3. Students therefore concluded that the number 8 represents one of the numbers that is 8 spaces from Cierra's identified current position of the number 0. These students may need support on understanding the numbers presented in the problem and how they relate to the sum of rational numbers describing a real-world situation.
Incorrect – 3	Students likely included the starting number 3 when counting 8 units to the left of 3 on the number line. Students therefore concluded that the number -4 represents one of the numbers that is 8 spaces from Cierra's identified current position of the number 3. These students may need support on how to represent the distance on a number line that is presented in the sum of rational numbers describing a real-world situation.
Correct – 4	Students understand how the addition of two numbers, $p+q$, represents the distance of the absolute value of q from p on a number line, either in the positive or negative direction depending on whether q is positive or negative. Students should have determined that if Cierra chooses to move her game piece to the left 8 units, the new position of her game piece on the number line would be represented by the expression $3 + (-8)$, which equals -5.
Incorrect – 5	Students understood that the addition of two numbers, $p+q$, represents the distance of the absolute value of q from p on a number line, either in the positive or negative direction depending on whether q is positive or negative. However, students likely identified Cierra's current position of her game piece at the number 0 instead of the number 3. Students therefore concluded that the number -8 represents one of the numbers that is 8 spaces from Cierra's identified current position of the number 0. These students may need support on understanding the numbers presented in the problem and how they relate to the sum of rational numbers describing a real-world situation.

Item Information

Item Code: TN576184

Grade Level: 7

Standard Code: 7.RP.A.2.c

Position No: 12

Standard Text: Represent proportional relationships by equations.

Reporting Category: 3: Proportional Reasoning

Calculator: Y

Correct Answer: C

DOK Level: 2

Item Type: O

The table shows a proportional relationship between x and y .

x	y
2	3.6
5	9
6	10.8
10	18

Which equation could be used to represent the relationship shown in the table?

- A.** $y = \frac{1}{8}x$
- B.** $y = \frac{5}{9}x$
- C.** $y = 1.8x$
- D.** $y = 3.6x$

Rationales	
Incorrect – 1	Students understood that the equation of a proportional relationship is represented by $y = kx$, with x and y representing variables and k representing a rational number. Students also understood that the value of k is determined by dividing the y -coordinate by the x -coordinate of one of the ordered pairs presented in the table, resulting in a decimal value of 1.8. However, students likely change the decimal value to a fraction by using the ones digit in the numerator and the tenths digit in the denominator, resulting in $1/8$. These students may need support on understanding how to convert a decimal value to a fraction representing the value of k in the equation $y=kx$.
Incorrect – 2	Students understood that the equation of a proportional relationship is represented by $y=kx$, with x and y representing variables and k representing a rational number. However, students likely determined the value of k by dividing the x -coordinate by the y -coordinate of the ordered pair (5, 9), resulting in $5/9$. These students may need support on understanding how to determine the value of k in the equation $y=kx$ when given a table representing a proportional relationship between x and y .
Correct – 3	Students understand how to determine the equation representing a proportional relationship between x and y that is shown in a table. Using the ordered pair (5, 9), students should have divided 9 by 5, resulting in $9/5=1.8$. Lastly, students should have substituted 1.8 for the value of k in the equation $y=kx$, resulting in $y=1.8x$.
Incorrect – 4	Students understood that the equation of a proportional relationship is represented by $y=kx$, with x and y representing variables and k representing a rational number. However, students likely identified the first y -value in the table, 3.6, as representing the value of k , not taking into account that the first x -value in the table should be 1 for the first y -value in the table to represent the value of k . These students may need support on understanding how to determine the value of k in the equation $y=kx$ when given a table representing a proportional relationship between x and y .

Item Information

Item Code: TN758175

Grade Level: 7

Standard Code: 7.SP.C.7.b

Position No: 13

Standard Text: Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.

Reporting Category: 4: Geometry and Data

Calculator: Y

Correct Answer: C

DOK Level: 2

Item Type: O

A box contains 4 colors of buttons. Karen randomly selected a button from the box, recorded the color, and then put the button back in the box. She selected a button 80 times. Karen forgot to record the number of times she selected a red button.

BUTTON COUNTS

Color	Number of Times Selected
Red	?
Green	12
Blue	15
Orange	23

What is the probability of selecting a red button from the box?

- A.** 0.275
- B.** 0.325
- C.** 0.375
- D.** 0.625

Rationales	
Incorrect – 1	Students understood how to determine the number of times Karen selected a red button from the box. However, students likely subtracted twice the number of button colors from the number of times Karen selected a red button when determining the probability of selecting a red button from the box. These students may need support on understanding how to determine the numerator of a fraction representing the probability of an identified event.
Incorrect – 2	Students understood how to determine the number of times Karen selected a red button from the box. However, students likely subtracted the number of button colors from the number of times Karen selected a red button when determining the probability of selecting a red button from the box. These students may need support on understanding how to determine the numerator of a fraction representing the probability of an identified event.
Correct – 3	Students understand how to construct a frequency table and use it to find the probability of an event. In this case, an incomplete frequency table was generated from repeatedly selecting a button, at random and with replacement, from a box containing 4 colors of buttons. To determine the probability of selecting a red button from the box, students should have divided the number of times Karen selected a red button by the total number of times Karen selected a button, resulting in $30/80=0.375$.
Incorrect – 4	Students likely determined the probability of <u>not</u> selecting a red button from the box. To determine the probability of <u>not</u> selecting a red button from the box, students divided the total number of times Karen selected a green, blue, or orange button by the total number of times Karen selected a button, resulting in $50/80=0.625$. These students may need support on understanding how to determine the probability of an event identified in the question of the problem.

Item Information

Item Code: TN620576

Grade Level: 7

Standard Code: 7.NS.A.1.c

Position No: 14

Standard Text: Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.

Reporting Category: 1: Number Relationships

Calculator: Y

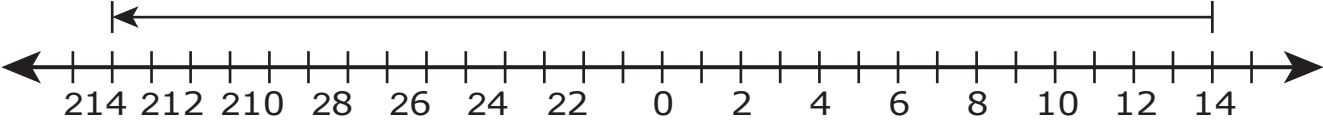
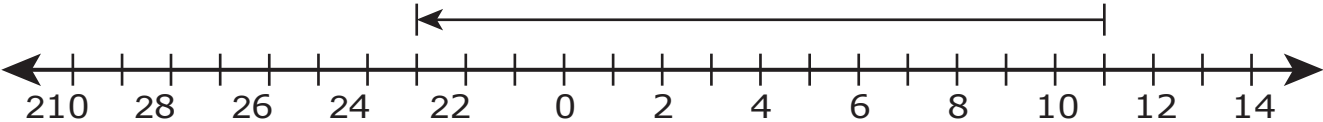
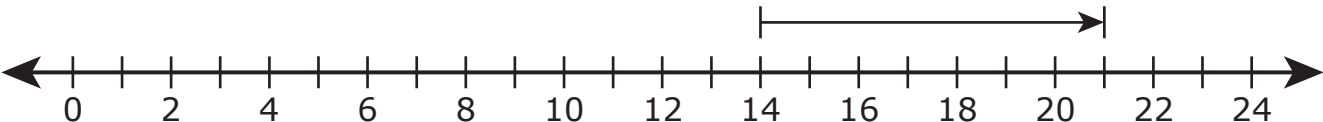
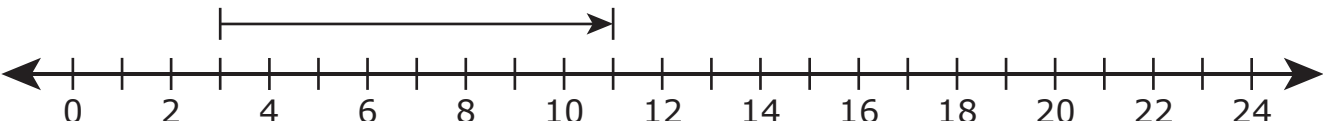
Correct Answer: B

DOK Level: 2

Item Type: O

The temperature in Nome, Alaska, dropped 14°F during one day.

Which number line shows this change in temperature?

- A.** 
- B.** 
- C.** 
- D.** 

Rationales	
Incorrect – 1	Students understood that the ray should go to the left from its starting location on the number line. However, students likely identified a ray representing a distance of 14 units as having a starting location and stop location whose absolute values both equal to 14. These students may need support on understanding how to represent the distance between two rational numbers on a horizontal number line using a ray when given a difference in a real-world situation.
Correct – 2	Students understand how to represent the distance between two rational numbers on a horizontal number line using a ray. Therefore, the number line and given ray show the change in temperature in Nome, Alaska, because the ray goes to the left from its starting location and the distance between the starting location and where the ray stops is equal to 14.
Incorrect – 3	Students likely identified a ray that has a starting location representing the distance value of 14. Students also likely identified the scale on the number line as going in increments of 2 instead of 1, identifying the distance between the starting location and stop location as $7 \times 2 = 14$. These students may need support on understanding how to interpret the scale on a number line and what direction a ray should go when representing a negative rational number.
Incorrect – 4	Students likely identified a ray that has a starting location and stop location whose values add up to 14. These students may need support on understanding how to represent the distance between two rational numbers on a horizontal number line using a ray when given a difference in a real-world situation, and what direction a ray should go when representing a negative rational number.

Item Information

Item Code: TN558337

Grade Level: 7

Standard Code: 7.G.A.1

Position No: 15

Standard Text: Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

Reporting Category: 4: Geometry and Data

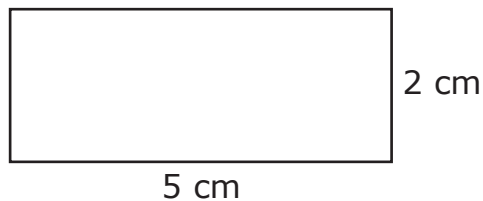
Calculator: Y

Correct Answer: C

DOK Level: 2

Item Type: O

A rectangle is shown. The rectangle will be enlarged by a scale factor of 1.5.



What will be the perimeter of the enlarged rectangle?

- A.** 10.5 cm
- B.** 14 cm
- C.** 21 cm
- D.** 22.5 cm

Rationales	
Incorrect – 1	Students understood how to determine the length and width of the enlarged rectangle but likely identified the perimeter of the enlarged rectangle as representing the sum of only its length and width. These students may need support on understanding how to identify the formula for the perimeter of a rectangle.
Incorrect – 2	Students understood how to determine the perimeter of a rectangle but likely determined the perimeter of the scale drawing of a rectangle instead of the perimeter of the enlarged rectangle. These students may need support on understanding how to determine the dimensions and perimeter of an enlarged rectangle created from a scale drawing of a rectangle and a given scale factor.
Correct – 3	Students understand how to determine the perimeter of an enlarged rectangle created from a scale drawing of another rectangle by using a given scale factor. Students should have substituted the dimensions of the enlarged rectangle into the formula for the perimeter of a rectangle, $P=2l+2w$, resulting in $P=2(7.5)+2(3)=15+6=21$ cm.
Incorrect – 4	Students understood how to determine the length and width of the enlarged rectangle but likely identified the perimeter of the enlarged rectangle as representing the sum of all the sides and the given scale factor. These students may need support on understanding how to identify the formula for the perimeter of a rectangle.

Item Information

Item Code: TN646005

Grade Level: 7

Standard Code: 7.RP.A.2.b

Position No: 16

Standard Text: Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

Reporting Category: 3: Proportional Reasoning

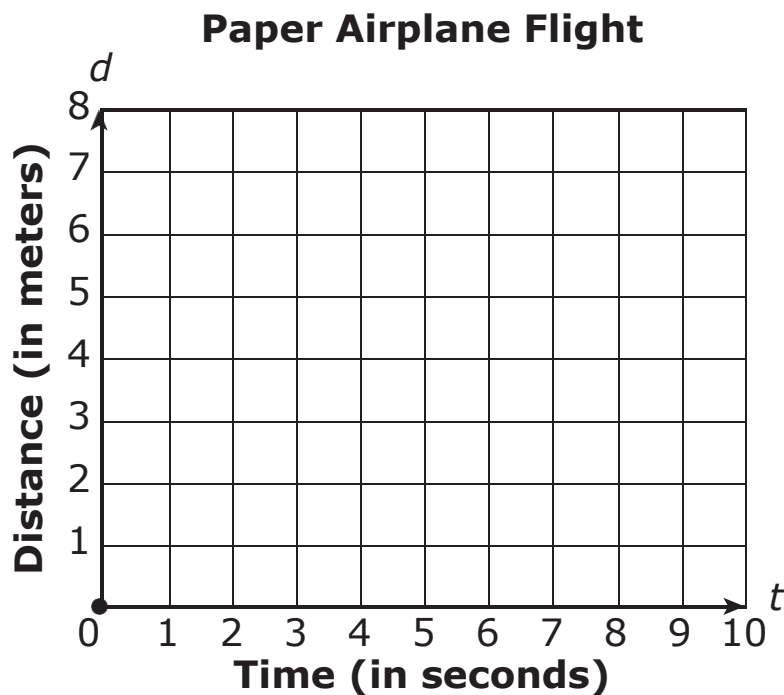
Calculator: Y

Correct Answer: B

DOK Level: 2

Item Type: O

The graph shows the distance that a paper airplane flew compared to how long it was in the air.



What is the constant of proportionality?

- A.** 1 meter for every 1 second
- B.** 1 meter for every $\frac{4}{3}$ of a second
- C.** 1 meter for every $\frac{3}{4}$ of a second
- D.** 1 meter for every $1\frac{1}{2}$ seconds

Rationales	
Incorrect – 1	Students understood that to determine the constant of proportionality, the distance must be equal to 1 meter. However, students likely identified the point (1, 1) as being included in every graph that represents a proportional relationship. These students may need support on understanding how to identify and interpret the point on a line that represents the constant of proportionality.
Correct – 2	Students understand how to identify the constant of proportionality in a graph showing the distance, in meters, that a paper airplane flew with respect to time, in seconds. Students should have first identified a point on the line such as (4, 3), which represents a distance of 3 meters in 4 seconds. Students should have then divided the values of 3 meters and 4 seconds by 3, resulting in $3/3=1$ meter and $4/3$ seconds.
Incorrect – 3	Students understood that to determine the constant of proportionality, a point should be identified on the line and the distance must be equal to 1 meter. However, students likely reversed the coordinates of the point (4, 3) on the line, identifying the point as (3, 4). These students may need support on understanding how to correctly identify a point on a line representing a proportional relationship.
Incorrect – 4	Students understood that to determine the constant of proportionality, a point should be identified on the line and the distance must be equal to 1 meter. However, students likely analyzed the graph and estimated where the distance of 1 meter crosses the line. These students may need support on understanding how to identify and interpret the point on a line that represents the constant of proportionality.

Item Information

Item Code: TN662771

Grade Level: 7

Standard Code: 7.SP.D.8.a

Position No: 17

Standard Text: Give quantitative measures of center (median and/or mean) and variability (range and/or interquartile range), as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

Reporting Category: 4: Geometry and Data

Calculator: Y

Correct Answer: A

DOK Level: 2

Item Type: O

In an experiment, researchers record the amount of time it takes for a dog to navigate through a maze and find a treat. The observed times, in seconds, are: 57, 57, 68, 72, 74, 77, 80, 88, 96, 105.

What is the interquartile range of the observed times?

- A.** 20 seconds
- B.** 48 seconds
- C.** 68 seconds
- D.** 75.5 seconds

Rationales	
Correct – 1	Students understand how to determine a statistical five-number summary of observed times, in seconds, of an experiment and how to calculate the interquartile range of the observed times. To determine the interquartile range (IQR), students should have subtracted the lower quartile from the upper quartile, resulting in $88 - 68 = 20$ seconds.
Incorrect – 2	Students likely calculated the range of the observed times. These students may need support on understanding how to determine a statistical five-number summary to calculate the interquartile range of a set of data.
Incorrect – 3	Students understood how to determine a statistical five-number summary of the observed times but likely identified the lower quartile (Q1) of 68 seconds as representing the interquartile range. These students may need support on understanding how to calculate the interquartile range of a set of data from a statistical five-number summary.
Incorrect – 4	Students likely calculated the median of the observed times. These students may need support on understanding how to determine a statistical five-number summary to calculate the interquartile range of a set of data.

Item Information

Item Code: TN967048

Grade Level: 7

Standard Code: 7.EE.B.3.a

Position No: 18

Standard Text: Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate.

Reporting Category: 2: Expressions and Equations

Calculator: Y

Correct Answer: B

DOK Level: 2

Item Type: O

Jim works 34 hours and earns \$9.25 per hour. He spends \$120.75 on a skateboard.

How much does Jim have left from his earnings after buying his skateboard?

- A.** \$164.00
- B.** \$193.75
- C.** \$228.50
- D.** \$435.25

Rationales	
Incorrect – 1	Students likely added all the given values together and identified the sum as a dollar amount, resulting in $34 + 9.25 + 120.75 = \$164.00$. These students may need support on understanding how to solve a real-world scenario when multiplying and subtracting numbers in different forms.
Correct – 2	Students understand how to solve a real-world scenario involving the multiplication and subtraction of a number and dollar amounts. Students should have subtracted the amount of money Jim spent on the skateboard from the total amount of money he earned, resulting in $\$314.50 - \$120.75 = \$193.75$.
Incorrect – 3	Students understood how to subtract dollar amounts but likely put together the digits from 34 hours and \$9.25 per hour when multiplying those two values, identifying the product as \$349.25. These students may need support on understanding how to multiply numbers in different forms.
Incorrect – 4	Students understood how to multiply numbers in different forms but likely added instead of subtracted the amount of money Jim spent on the skateboard. These students may need support on understanding when to subtract a value while solving a real-world scenario.

Item Information

Item Code: TN620559

Grade Level: 7

Standard Code: 7.NS.A.2.b

Position No: 19

Standard Text: Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.

Reporting Category: 1: Number Relationships

Calculator: Y

Correct Answer: A

DOK Level: 2

Item Type: O

Which is always true about the quotient of two integers, x and y , expressed as $\frac{x}{y}$?

- A.** It is positive if both x and y are negative.
- B.** It is negative if both x and y are negative.
- C.** It is positive if y is greater than x
- D.** It is negative if y is greater than x

Rationales	
Correct – 1	Students understand how to determine the sign of a quotient representing the division of two integers. Students should have reviewed the option statement and concluded that it is always true because if the integers x and y are both negative, then the quotient of the two integers, x/y , must be positive since the two integers have the same sign.
Incorrect – 2	Students likely identified the sign of a quotient as being the same sign of the two integers. These students may need support on understanding how to determine the sign of a quotient representing the division of two negative integers.
Incorrect – 3	Students likely identified the comparison of an integer in the denominator to an integer in the numerator as determining the sign of the quotient. These students may need support on understanding how to determine the sign of a quotient representing the division of two integers.
Incorrect – 4	Students likely identified the comparison of an integer in the denominator to an integer in the numerator as determining the sign of the quotient. These students may need support on understanding how to determine the sign of a quotient representing the division of two integers.

Item Information

Item Code: TN677053

Grade Level: 7

Standard Code: 7.EE.B.3.a

Position No: 20

Standard Text: Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate.

Reporting Category: 2: Expressions and Equations

Calculator: Y

Correct Answer: A

DOK Level: 2

Item Type: O

Caitlin is making oatmeal cookies.

- She wants to make $1\frac{1}{2}$ batches.
- Each batch of cookies requires $2\frac{1}{2}$ cups of oatmeal.
- She has $3\frac{1}{4}$ cups of oatmeal.

How many more cups of oatmeal does Caitlin need?

- A.** $\frac{1}{2}$ cup
- B.** $\frac{3}{4}$ cup
- C.** $1\frac{1}{4}$ cups
- D.** $3\frac{3}{4}$ cups

Rationales	
Correct – 1	Students understand how to solve a real-world scenario involving the multiplication and subtraction of mixed numbers. Students should have multiplied the number of batches Caitlin wants to make by the amount, in cups, of oatmeal needed to make each batch of cookies, resulting in $1\frac{1}{2} \times 2\frac{1}{2} = 3\frac{3}{4}$ cups. Students should have then subtracted the amount of oatmeal Caitlin has from the total amount of oatmeal needed to make Caitlin's batches of cookies, resulting in $3\frac{3}{4} - 3\frac{1}{4} = \frac{2}{4} = \frac{1}{2}$ cup.
Incorrect – 2	Students understood how to subtract a mixed number from a whole number but likely added the number of batches Caitlin wants to make to the amount, in cups, of oatmeal needed to make each batch of cookies. These students may need support on understanding when to multiply mixed numbers while solving a real-world scenario.
Incorrect – 3	Students understood how to multiply and subtract mixed numbers. However, students likely calculated how much more oatmeal is needed for $1\frac{1}{2}$ batches of cookies than 1 batch of cookies. These students may need support on understanding how to solve a real-world scenario when multiplying and subtracting mixed numbers.
Incorrect – 4	Students understood how to multiply mixed numbers but likely calculated only the total amount of oatmeal needed to make Caitlin's batches of cookies. These students may need support on understanding how to complete the solving of a real-word scenario that includes the multiplying and subtracting of mixed numbers.

Item Information

Item Code: TN667604

Grade Level: 7

Standard Code: 7.RP.A.3

Position No: 21

Standard Text: Use proportional relationships to solve multi-step ratio and percent problems.

Reporting Category: 3: Proportional Reasoning

Calculator: Y

Correct Answer: A

DOK Level: 2

Item Type: O

On a school field trip there are 36 boys and a number of girls.

If 40% of the students are girls, how many girls are on the field trip?

- A.** 24
- B.** 32
- C.** 40
- D.** 60

Rationales	
Correct – 1	Students understand how to solve a real-world scenario using percentages, fractions, and proportions. Since 40% of the students on the field trip are girls, the relationship of girls to boys on the field trip can be represented by $\frac{4}{6} = \frac{x}{36}$, with x representing the number of girls on the field trip. To solve for x , students should have divided both sides of $6x=144$ by 6, resulting in $x=24$.
Incorrect – 2	Students likely identified the percentage of 40% as being equal to the number 4. To determine how many girls are on the field trip, students subtracted the number 4 from the number of boys on the field trip, resulting in $36-4=32$. These students may need support on understanding how to solve a real-world scenario when given numbers and percentages.
Incorrect – 3	Students likely identified the percentage of students on the field trip that were girls as being equal to the number of girls on the field trip. Since the percentage of students on the field trip that were girls is 40%, students identified the number of girls on the field trip as being equal to 40. These students may need support on understanding how to solve a real-world scenario when given numbers and percentages.
Incorrect – 4	Students understood how to set up a proportion from given numbers and percentages but likely determined the total number of students on the field trip. Students identified the 36 boys as representing 60% of the students on the field trip. Since 60% of the students on the field trip are boys, the relationship of boys to the total number of students on the field trip can be represented by $\frac{6}{10} = \frac{36}{x}$, with x representing the total number of students on the field trip. To solve for x , students divided both sides of $6x=360$ by 6, resulting in $x=60$. These students may need support on understanding the details presented in the problem in order to correctly solve the real-world scenario.

Additional Resources

- [Information on Tennessee's Assessment Program](#)
- [Tennessee Academic Standards for Mathematics](#)
- [The eight Standards for Mathematical Practice](#)
- [Best for All Central](#)
- [Assessing Student Learning Reopening Toolkit](#)
- [Assessment Development LiveBinder Resource Site](#)

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