

Ohio's State Tests

ITEM RELEASE

SPRING 2018

**GRADE 4
MATHEMATICS**

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Grade 4 Math
Spring 2018 Item Release
Content Summary and Answer Key

| Question No.* | Item Type | Content Cluster | Content Standard | Answer Key | Points |
|---------------|---------------|---|---|------------|---------|
| 7 | Equation Item | Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. | Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. (4.MD.2) | --- | 1 point |
| 11 | Equation Item | Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. | Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. (4.NF.4) b. Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. <i>For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.)</i> | --- | 1 point |
| 12 | Equation Item | Geometric measurement: understand concepts of angle and measure angles. | Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. (4.MD.6) | --- | 1 point |

* The question number matches the item number in the Item Level Report in the Online Reporting System. The items are numbered sequentially in the practice site.

Grade 4 Math
Spring 2018 Item Release
Content Summary and Answer Key

| Question No.* | Item Type | Content Cluster | Content Standard | Answer Key | Points |
|---------------|-----------------|---|--|------------|---------|
| 15 | Table Item | Use the four operations with whole numbers to solve problems. | Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (4.OA.3) | --- | 1 point |
| 16 | Equation Item | Use place value understanding and properties of operations to perform multi-digit arithmetic. | Fluently add and subtract multi-digit whole numbers using the standard algorithm. (4.NBT.4) | --- | 1 point |
| 17 | Multiple Choice | Geometric measurement: understand concepts of angle and measure angles. | Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: (4.MD.5) b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees. | A | 1 point |

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Grade 4 Math
Spring 2018 Item Release
Content Summary and Answer Key

| Question No.* | Item Type | Content Cluster | Content Standard | Answer Key | Points |
|---------------|------------------|---|--|------------|---------|
| 18 | Matching Item | Extend understanding of fraction equivalence and ordering. | Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model. (4.NF.2) | --- | 1 point |
| 24 | Multiple Choice | Understand decimal notation for fractions, and compare decimal fractions. | Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model. (4.NF.7) | D | 1 point |
| 26 | Graphic Response | Understand decimal notation for fractions, and compare decimal fractions. | Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. For example, express $\frac{3}{10}$ as $\frac{30}{100}$, and add $\frac{3}{10} + \frac{4}{100} = \frac{34}{100}$. (4.NF.5) | --- | 1 point |

* The question number matches the item number in the Item Level Report in the Online Reporting System. The items are numbered sequentially in the practice site.

Grade 4 Math
Spring 2018 Item Release
Content Summary and Answer Key

| Question No.* | Item Type | Content Cluster | Content Standard | Answer Key | Points |
|---------------|-----------------|---|--|------------|---------|
| 27 | Equation Item | Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. | Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. <i>For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...</i> (4.MD.1) | --- | 1 point |
| 29 | Multiple Choice | Use the four operations with whole numbers to solve problems. | Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. (4.OA.2) | A | 1 point |
| 30 | Equation Item | Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. | Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. (4.NF.3) d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. | --- | 1 point |

* The question number matches the item number in the Item Level Report in the Online Reporting System. The items are numbered sequentially in the practice site.

Grade 4 Math
Spring 2018 Item Release
Content Summary and Answer Key

| Question No.* | Item Type | Content Cluster | Content Standard | Answer Key | Points |
|---------------|-----------------------|---|--|------------|---------|
| 31 | Multiple Choice | Draw and identify lines and angles, and classify shapes by properties of their lines and angles. | Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. (4.G.2) | D | 1 point |
| 32 | Multi-Select Item | Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. | Apply the area and perimeter formulas for rectangles in real world and mathematical problems. <i>For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.</i> (4.MD.3) | A, C, E | 1 point |
| 34 | Graphic Response Item | Use place value understanding and properties of operations to perform multi-digit arithmetic. | Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (4.NBT.5) | --- | 1 point |
| 37 | Graphic Response Item | Draw and identify lines and angles, and classify shapes by properties of their lines and angles. | Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. (4.G.1) | --- | 1 point |

* The question number matches the item number in the Item Level Report in the Online Reporting System. The items are numbered sequentially in the practice site.

Grade 4 Math
Spring 2018 Item Release
Content Summary and Answer Key

| Question No.* | Item Type | Content Cluster | Content Standard | Answer Key | Points |
|---------------|-------------------|---|---|------------|---------|
| 39 | Equation Item | Generalize place value understanding for multi-digit whole numbers. | Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons. (4.NBT.2) | --- | 1 point |
| 44 | Multi-Select Item | Gain familiarity with factors and multiples. | Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite. (4.OA.4) | A, C, E, F | 1 point |
| 47 | Multiple Choice | Represent and interpret data. | Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. <i>For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.</i> (4.MD.4) | A | 1 point |
| 48 | Equation Item | Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. | Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. (4.NF.3) c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. | --- | 1 point |

* The question number matches the item number in the Item Level Report in the Online Reporting System. The items are numbered sequentially in the practice site.

**Grade 4
Math
Spring 2018 Item Release**

Question 7

Question and Scoring Guidelines

Question 7

Brian arrives at the movie theater at 1:00 p.m. and leaves at 4:18 p.m.

For how many minutes (min) was Brian at the movie theater? Enter the number in the box.

 min

| | | | | |
|---|---|---------------------|---|---|
| ← | → | ↶ | ↷ | ✖ |
| 1 | 2 | 3 | | |
| 4 | 5 | 6 | | |
| 7 | 8 | 9 | | |
| 0 | . | $\frac{\Box}{\Box}$ | | |

Points Possible: 1

Content Cluster: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Content Standard: Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. (4.MD.2)

Scoring Guidelines

Exemplar Response

- 198

Other Correct Responses

- Any equivalent value

For this item, a full-credit response includes:

- A correct value (1 point).

Grade 4
Math
Spring 2018 Item Release

Question 7

Sample Responses

Sample Response: 1 point

Brian arrives at the movie theater at 1:00 p.m. and leaves at 4:18 p.m.

For how many minutes (min) was Brian at the movie theater? Enter the number in the box.

min

←

→

↶

↷

✖

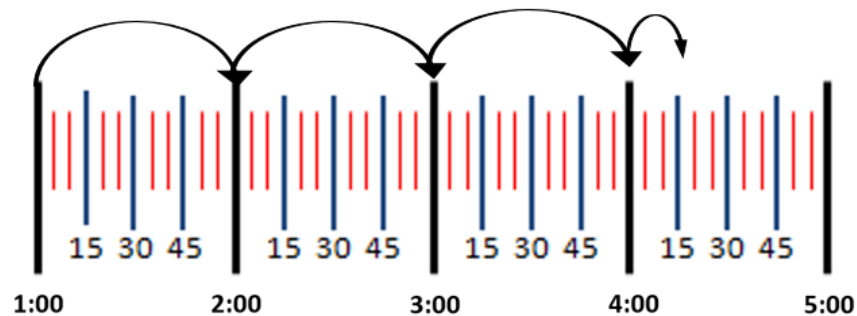
| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns full credit (1 point) because it identifies the correct number of minutes that Brian was at the movie theater.

- The student may draw a number line and use a strategy like counting on to find the total number of minutes.

60 minutes + 60 minutes + 60 minutes + 18 minutes



$$\begin{aligned} &60 + 60 + 60 + 18 \\ &= 120 + 60 + 18 \\ &= 180 + 18 \\ &= 198 \text{ minutes} \end{aligned}$$

Sample Response: 1 point

Brian arrives at the movie theater at 1:00 p.m. and leaves at 4:18 p.m.

For how many minutes (min) was Brian at the movie theater? Enter the number in the box.

min

←

→

↶

↷

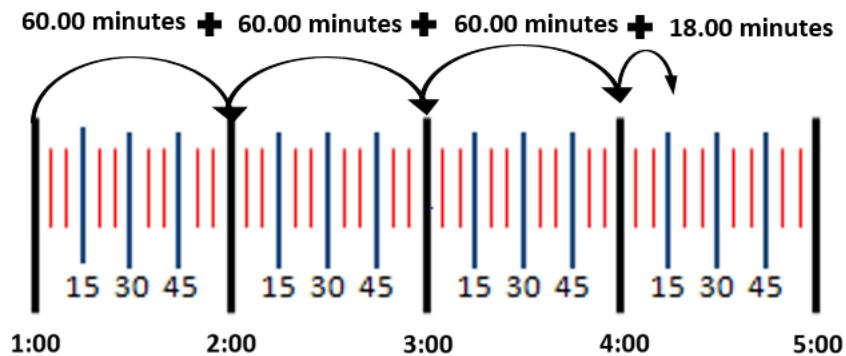
✖

| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns full credit (1 point) because it identifies the correct number of minutes that Brian was at the movie theater.

- The student may draw a number line and use a strategy like counting on to find an equivalent value to the total number of minutes.



$$60.00 + 60.00 + 60.00 + 18.00$$

$$= (3 \times 60.00) + 18.00$$

$$= 180.00 + 18.00$$

$$= 198.00 \text{ minutes}$$

Sample Response: 0 points

Brian arrives at the movie theater at 1:00 p.m. and leaves at 4:18 p.m.

For how many minutes (min) was Brian at the movie theater? Enter the number in the box.

3.18

min

| | | | | |
|---|---|---------------------|---|---|
| ← | → | ↶ | ↷ | ✖ |
| 1 | 2 | 3 | | |
| 4 | 5 | 6 | | |
| 7 | 8 | 9 | | |
| 0 | . | $\frac{\Box}{\Box}$ | | |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect number of minutes that Brian was at the movie theater.

- The student may correctly determine that Brian was at the movie theater for 3 hours and 18 minutes, but incorrectly interprets 3 hours as 3 minutes, and 18 minutes as 0.18 minute.

$$\begin{array}{r} 4:18 \\ - 1:00 \\ \hline 3:18 \end{array}$$

3:18 \neq 3.18 minutes

1:00 p.m. to 4:18 p.m. \neq 3.18 minutes

Sample Response: 0 points

Brian arrives at the movie theater at 1:00 p.m. and leaves at 4:18 p.m.

For how many minutes (min) was Brian at the movie theater? Enter the number in the box.

180 min

← → ↶ ↷ ✕

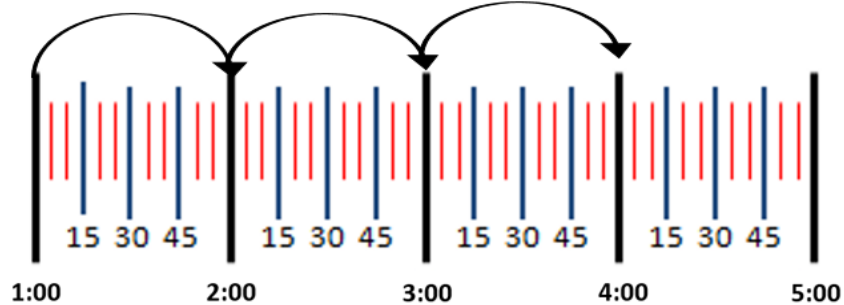
| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect number of minutes that Brian was at the movie theater.

- The student may forget that Brian was still at the movies for 18 minutes after 4:00pm.

60.00 minutes + 60.00 minutes + 60.00 minutes



$$60 + 60 + 60$$

$$= 120 + 60$$

$$= 180 \text{ minutes}$$

1:00 p.m. to 4:18 p.m. \neq 180 minutes

**Grade 4
Math
Spring 2018 Item Release**

Question 11

Question and Scoring Guidelines

Question 11

An equation with a missing value is shown.

$$\frac{4}{5} \times 3 = 12 \times \square$$

What is the missing value? Enter the number in the box.

← → ↶ ↷ ✖

| | | |
|---|---|---------------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\square}{\square}$ |

Points Possible: 1

Content Cluster: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

Content Standard: Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. (4.NF.4) *b.* Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.)*

Scoring Guidelines

Exemplar Response

- $\frac{1}{5}$

Other Correct Responses

- Any equivalent value

For this item, a full-credit response includes:

- A correct value (1 point).

Grade 4
Math
Spring 2018 Item Release

Question 11

Sample Responses

Sample Response: 1 point

An equation with a missing value is shown.

$$\frac{4}{5} \times 3 = 12 \times \square$$

What is the missing value? Enter the number in the box.

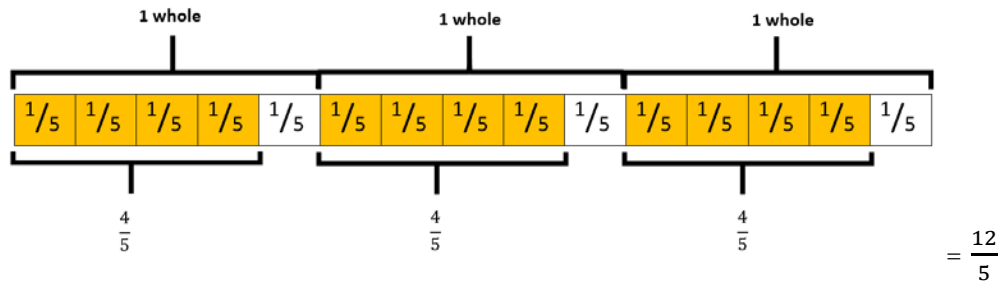
$\frac{1}{5}$

| | | | | |
|---|---|---------------------------|--|--|
| | | | | |
| 1 | 2 | 3 | | |
| 4 | 5 | 6 | | |
| 7 | 8 | 9 | | |
| 0 | . | $\frac{\square}{\square}$ | | |

Notes on Scoring

This response earns full credit (1 point) because it identifies a missing value that correctly completes the equation.

- The student may model the left side of the equation as $\frac{4}{5}$ of 3 whole units shaded, and recognize the product is 12 unit fractions of $\frac{1}{5}$.



$$\frac{4}{5} \times 3 = \frac{12}{5} \quad \text{AND} \quad 12 \times \frac{1}{5} = \frac{12}{5}$$

$$\frac{4}{5} \times 3 = 12 \times \frac{1}{5}$$

Sample Response: 1 point

An equation with a missing value is shown.

$$\frac{4}{5} \times 3 = 12 \times \square$$

What is the missing value? Enter the number in the box.

$\frac{2}{10}$



| | | |
|---|---|---------------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\square}{\square}$ |

Notes on Scoring

This response earns full credit (1 point) because it identifies a missing value that correctly completes the equation.

- The student may use multiplication to find the product of $\frac{4}{5} \times 3$ as $\frac{12}{5}$ and recognize $12 \times \frac{1}{5}$ is equal to $\frac{12}{5}$ before giving their answer as a fraction equivalent to $\frac{1}{5}$.

$$\frac{4}{5} \times 3 = \frac{12}{5} \quad \text{AND} \quad \frac{12}{5} = 12 \times \square$$

$$\square = \frac{1}{5} \quad \text{SINCE} \quad \frac{12}{5} = 12 \times \frac{1}{5}$$

$$\frac{1}{5} \times \frac{2}{2} = \frac{2}{10}$$

Sample Response: 0 points

An equation with a missing value is shown.

$$\frac{4}{5} \times 3 = 12 \times \square$$

What is the missing value? Enter the number in the box.

| | | | | |
|----------------|---------------|---------------------------|-------------------|----------|
| $\frac{1}{15}$ | | | | |
| \leftarrow | \rightarrow | \curvearrowright | \curvearrowleft | \times |
| 1 | 2 | 3 | | |
| 4 | 5 | 6 | | |
| 7 | 8 | 9 | | |
| 0 | . | $\frac{\square}{\square}$ | | |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect missing value in the equation.

- The student may multiply $\frac{4}{5}$ by $\frac{3}{3}$ instead of by $\frac{3}{1}$ and identify an incorrect missing value based on the error.

$$\frac{4}{5} \times \frac{3}{3} = \frac{12}{15} \quad \text{AND} \quad \frac{12}{15} = 12 \times \square$$

$$\square = \frac{1}{15} \quad \text{SINCE} \quad \frac{12}{15} = 12 \times \frac{1}{15} \quad \text{AND} \quad \frac{4}{5} \times \frac{3}{3} = \frac{12}{15}$$

$$\frac{4}{5} \times 3 \neq 12 \times \frac{1}{15}$$

Sample Response: 0 points

An equation with a missing value is shown.

$$\frac{4}{5} \times 3 = 12 \times \square$$

What is the missing value? Enter the number in the box.

$\frac{144}{5}$



| | | |
|---|---|---------------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\square}{\square}$ |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect missing value in the equation.

- The student may correctly calculate the product of $\frac{4}{5} \times 3$ as $\frac{12}{5}$ and then multiply the right side of the equation by $\frac{12}{5}$ instead of using it to identify the missing value.

$$\frac{4}{5} \times 3 = \frac{12}{5}$$

$$12 \times \frac{12}{5} = \frac{144}{5}$$

$$\frac{4}{5} \times 3 \neq 12 \times \frac{144}{5}$$

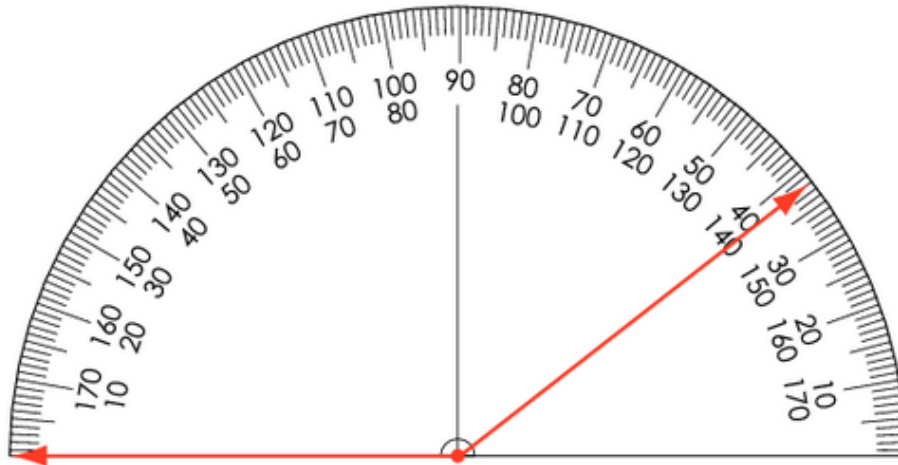
**Grade 4
Math
Spring 2018 Item Release**

Question 12

Question and Scoring Guidelines

Question 12

An angle is shown.



What is the measure of the angle, in degrees? Enter the number in the box.

degrees

| | | | | |
|---|---|---------------------|---|---|
| ← | → | ↶ | ↷ | ✕ |
| 1 | 2 | 3 | | |
| 4 | 5 | 6 | | |
| 7 | 8 | 9 | | |
| 0 | . | $\frac{\Box}{\Box}$ | | |

Points Possible: 1

Content Cluster: Geometric measurement: understand concepts of angle and measure angles.

Content Standard: Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. (4.MD.6)

Scoring Guidelines

Exemplar Response

- 142

Other Correct Responses

- Any equivalent value

For this item, a full-credit response includes:

- The correct number (1 point).

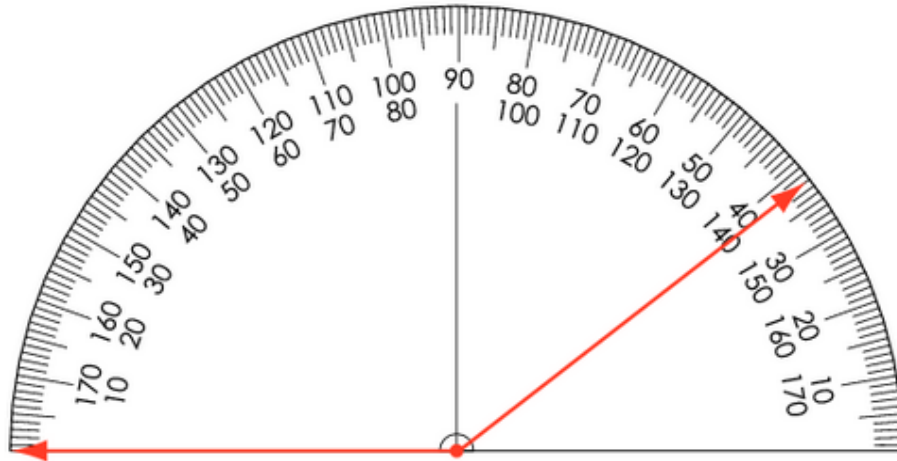
Grade 4
Math
Spring 2018 Item Release

Question 12

Sample Responses

Sample Response: 1 point

An angle is shown.



What is the measure of the angle, in degrees? Enter the number in the box.

142

degrees

| | | | | |
|---|---|---------------------------|---|---|
| ← | → | ↶ | ↷ | ✖ |
| 1 | 2 | 3 | | |
| 4 | 5 | 6 | | |
| 7 | 8 | 9 | | |
| 0 | . | $\frac{\square}{\square}$ | | |

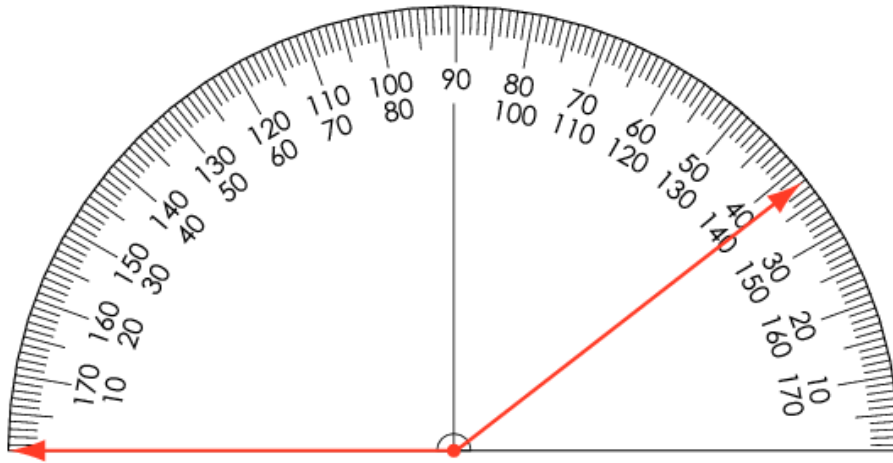
Notes on Scoring

This response earns full credit (1 point) because it identifies the correct measure of the angle, in degrees.

- The student uses the correct scale on the protractor to measure the angle.

Sample Response: 1 point

An angle is shown.



What is the measure of the angle, in degrees? Enter the number in the box.

142.00

degrees

| | | | | |
|---|---|---------------------------|---|---|
| ← | → | ↶ | ↷ | ✖ |
| 1 | 2 | 3 | | |
| 4 | 5 | 6 | | |
| 7 | 8 | 9 | | |
| 0 | . | $\frac{\square}{\square}$ | | |

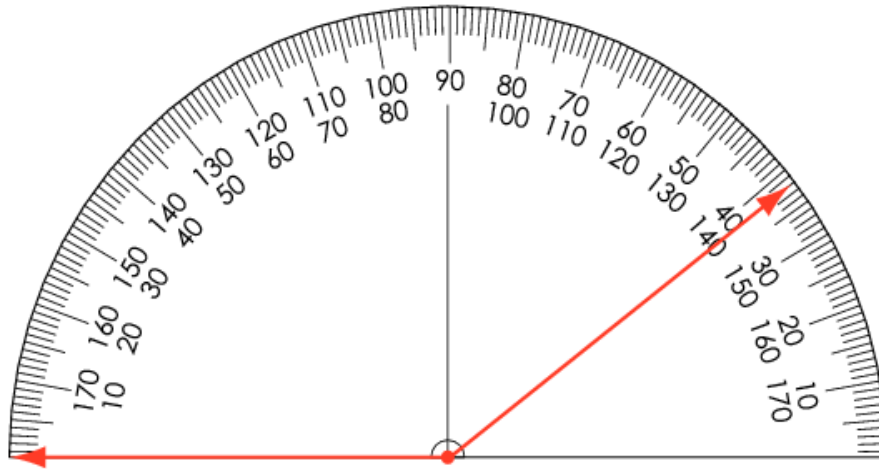
Notes on Scoring

This response earns full credit (1 point) because it identifies the correct measure of the angle, in degrees.

- The student finds a measure equivalent to 142 degrees.

Sample Response: 0 points

An angle is shown.



What is the measure of the angle, in degrees? Enter the number in the box.

140

degrees

| | | | | |
|---|---|---------------------|---|---|
| ← | → | ↶ | ↷ | ✖ |
| 1 | 2 | 3 | | |
| 4 | 5 | 6 | | |
| 7 | 8 | 9 | | |
| 0 | . | $\frac{\Box}{\Box}$ | | |

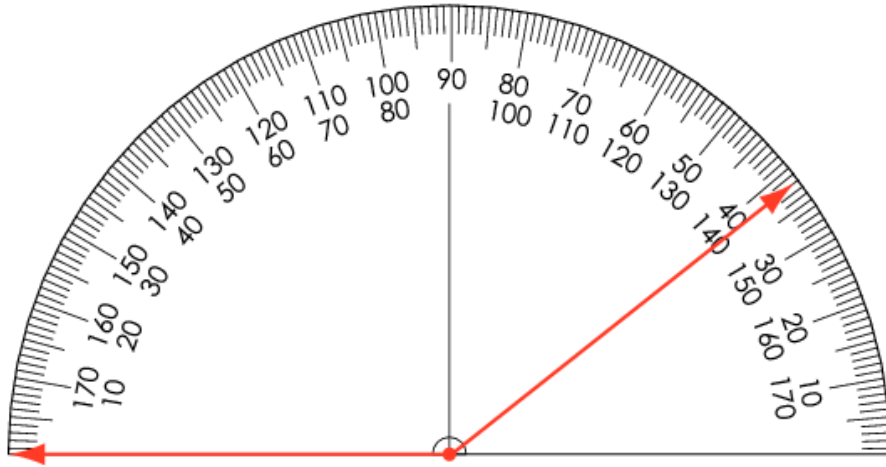
Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect measure of the angle, in degrees.

- The student may round the degree value of the angle to the nearest labeled degree.

Sample Response: 0 points

An angle is shown.



What is the measure of the angle, in degrees? Enter the number in the box.

38

degrees

| | | | | |
|---|---|---------------------------|---|---|
| ← | → | ↶ | ↷ | ✕ |
| 1 | 2 | 3 | | |
| 4 | 5 | 6 | | |
| 7 | 8 | 9 | | |
| 0 | . | $\frac{\square}{\square}$ | | |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect measure of the angle, in degrees.

- The student may use the incorrect scale on the protractor to measure the angle.

**Grade 4
Math
Spring 2018 Item Release**

Question 15

Question and Scoring Guidelines

Question 15

A teacher spends \$100 on posters for his classroom. The price for each size of poster is shown in the table.

Complete the table to show how many posters of each size the teacher could have bought.

| Poster Size | Price | Number of Posters |
|-------------|-------|----------------------|
| Small | \$ 7 | <input type="text"/> |
| Medium | \$11 | <input type="text"/> |
| Large | \$13 | <input type="text"/> |

Points Possible: 1

Content Cluster: Use the four operations with whole numbers to solve problems.

Content Standard: Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (4.OA.3)

Scoring Guidelines

Exemplar Response

| Poster Size | Price | Number of Posters |
|-------------|-------|-------------------|
| Small | \$ 7 | 4 |
| Medium | \$11 | 3 |
| Large | \$13 | 3 |

Other Correct Responses

- Any three integers S , M , L for which $7S + 11M + 13L = 100$

For this item, a full-credit response includes:

- A correct table (1 point).

Grade 4
Math
Spring 2018 Item Release

Question 15

Sample Responses

Sample Response: 1 point

A teacher spends \$100 on posters for his classroom. The price for each size of poster is shown in the table.

Complete the table to show how many posters of each size the teacher could have bought.

| Poster Size | Price | Number of Posters |
|-------------|-------|--------------------------------|
| Small | \$ 7 | <input type="text" value="4"/> |
| Medium | \$11 | <input type="text" value="3"/> |
| Large | \$13 | <input type="text" value="3"/> |

Notes on Scoring

This response earns full credit (1 point) because it identifies a correct combination of posters that the teacher could have bought for \$100.

- The student may use a table to find a combination of \$7, \$11, and \$13 posters that total \$100.

| Poster Size | Price | Number of Posters | Multiples of 7, 11, and 13 | Total Cost |
|-------------|-------|-------------------|----------------------------|------------|
| Small | \$ 7 | 4 | 7, 14, 21, 28, 35, 42, 49 | \$28 |
| Medium | \$11 | 3 | 11, 22, 33, 44, 55 | \$33 |
| Large | \$ 13 | 3 | 13, 26, 39, 52 | \$39 |

$$\begin{aligned} &28 + 33 + 39 \\ &= (28 + 33) + 39 \\ &= (61) + 39 \\ &= 100 \end{aligned}$$

Sample Response: 1 point

A teacher spends \$100 on posters for his classroom. The price for each size of poster is shown in the table.

Complete the table to show how many posters of each size the teacher could have bought.

| Poster Size | Price | Number of Posters |
|-------------|-------|--------------------------------|
| Small | \$ 7 | <input type="text" value="3"/> |
| Medium | \$11 | <input type="text" value="6"/> |
| Large | \$13 | <input type="text" value="1"/> |

Notes on Scoring

This response earns full credit (1 point) because it identifies a correct combination of posters that the teacher could have bought for \$100.

- The student may use a table to find a combination of \$7, \$11, and \$13 posters that total \$100.

| Poster Size | Price | Number of Posters | Multiples of 7, 11, and 13 | Total Cost |
|-------------|-------|-------------------|---------------------------------------|------------|
| Small | \$ 7 | 3 | 7, 14, 21, 28, 35, 42, 49, 56, 63, 70 | \$21 |
| Medium | \$11 | 6 | 11, 22, 33, 44, 55, 66, 77 | \$66 |
| Large | \$ 13 | 1 | 13, 26, 39, 52, 65, 78 | \$13 |

$$\begin{aligned} &21 + 66 + 13 \\ &= 21 + 13 + 66 \\ &= (21 + 13) + 66 \\ &= (34) + 66 \\ &= 100 \end{aligned}$$

Sample Response: 0 points

A teacher spends \$100 on posters for his classroom. The price for each size of poster is shown in the table.

Complete the table to show how many posters of each size the teacher could have bought.

| Poster Size | Price | Number of Posters |
|-------------|-------|-------------------|
| Small | \$ 7 | 10 |
| Medium | \$11 | 1 |
| Large | \$13 | 1 |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect combination of posters that the teacher could have bought for \$100.

- The student may use a table to choose values for the posters that total less than \$100 instead of exactly \$100.

| Poster Size | Price | Number of Posters | Multiples of 7, 11, and 13 | Total Cost |
|-------------|-------|-------------------|---------------------------------------|------------|
| Small | \$ 7 | 10 | 7, 14, 21, 28, 35, 42, 49, 56, 63, 70 | \$70 |
| Medium | \$11 | 1 | 11, 22, 33, 44, 55, 66, 77 | \$11 |
| Large | \$ 13 | 1 | 13, 26, 39, 52, 65, 78 | \$13 |

$$\begin{aligned} &70 + 11 + 13 \\ &= 70 + (11 + 13) \\ &= 70 + (24) \\ &= 94 \end{aligned}$$

$$94 \neq 100$$

Sample Response: 0 points

A teacher spends \$100 on posters for his classroom. The price for each size of poster is shown in the table.

Complete the table to show how many posters of each size the teacher could have bought.

| Poster Size | Price | Number of Posters |
|-------------|-------|--------------------------------|
| Small | \$ 7 | <input type="text" value="0"/> |
| Medium | \$11 | <input type="text" value="3"/> |
| Large | \$13 | <input type="text" value="5"/> |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect combination of posters that the teacher could have bought for \$100.

- The student may use a table to choose values for the posters that total less than \$100 instead of exactly \$100.

| Poster Size | Price | Number of Posters | Multiples of 7, 11, and 13 | Total Cost |
|-------------|-------|-------------------|---------------------------------------|------------|
| Small | \$ 7 | 0 | 7, 14, 21, 28, 35, 42, 49, 56, 63, 70 | \$ 0 |
| Medium | \$11 | 3 | 11, 22, 33, 44, 55, 66, 77 | \$33 |
| Large | \$ 13 | 5 | 13, 26, 39, 52, 65, 78 | \$65 |

$$\begin{aligned}0 &+ 33 + 65 \\&= 33 + 65 \\&= 98\end{aligned}$$

$$98 \neq 100$$

**Grade 4
Math
Spring 2018 Item Release**

Question 16

Question and Scoring Guidelines

Question 16

What is the difference between 34,162 and 12,531? Enter the number in the box.

← → ↶ ↷ ✕

| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Points Possible: 1

Content Cluster: Use place value understanding and properties of operations to perform multi-digit arithmetic.

Content Standard: Fluently add and subtract multi-digit whole numbers using the standard algorithm. (4.NBT.4)

Scoring Guidelines

Exemplar Response

- 21,631

Other Correct Responses

- Any equivalent value

For this item, a full-credit response includes:

- The correct number (1 point).

Grade 4
Math
Spring 2018 Item Release

Question 16

Sample Responses

Sample Response: 1 point

What is the difference between 34,162 and 12,531? Enter the number in the box.

21631

← → ↶ ↷ ✕

| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns full credit (1 point) because it identifies the correct difference between 34,162 and 12,531.

- The student may subtract 12,531 from 34,162.

$$\begin{array}{r} 34,162 \\ - 12,531 \\ \hline 21,631 \end{array}$$

Sample Response: 1 point

What is the difference between 34,162 and 12,531? Enter the number in the box.

21631.00



| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns full credit (1 point) because it identifies the correct difference between 34,162 and 12,531 using an algorithm.

- The student finds a correct equivalent value of 21,631.

$$\begin{array}{r} 34,162.00 \\ - 12,531.00 \\ \hline 21,631.00 \end{array}$$

Sample Response: 0 points

What is the difference between 34,162 and 12,531? Enter the number in the box.

46693



| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect value as the difference between 34,162 and 12,531.

- The student may add the two numbers instead of subtracting them.

$$\begin{array}{r} 34,162 \\ + 12,531 \\ \hline 46,693 \end{array}$$

$$34,162 - 12,531 \neq 46,693$$

Sample Response: 0 points

What is the difference between 34,162 and 12,531? Enter the number in the box.

22431



| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect difference between 34,162 and 12,531.

- The student may subtract the 1 hundred in 34,162 from the 5-hundreds in 12,531 instead of regrouping.

$$\begin{array}{r} 34,162 \\ - 12,531 \\ \hline 22,431 \end{array}$$

$$34,162 - 12,531 \neq 22,431$$

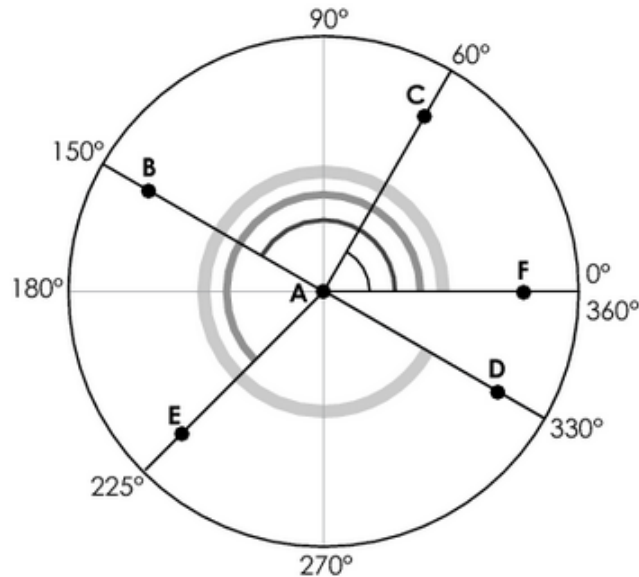
**Grade 4
Math
Spring 2018 Item Release**

Question 17

Question and Scoring Guidelines

Question 17

A circle with some angles is shown. The measures of the angles are shown on the circle.



Which angle is obtuse?

- Ⓐ $\angle FAB$
- Ⓑ $\angle FAC$
- Ⓒ $\angle FAD$
- Ⓓ $\angle FAE$

Points Possible: 1

Content Cluster: Geometric measurement: understand concepts of angle and measure angles.

Content Standard: Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: (4.MD.5)
b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

Scoring Guidelines

Rationale for Option A: **Key** – The student correctly chooses the angle whose measure is between 90 and 180 degrees.

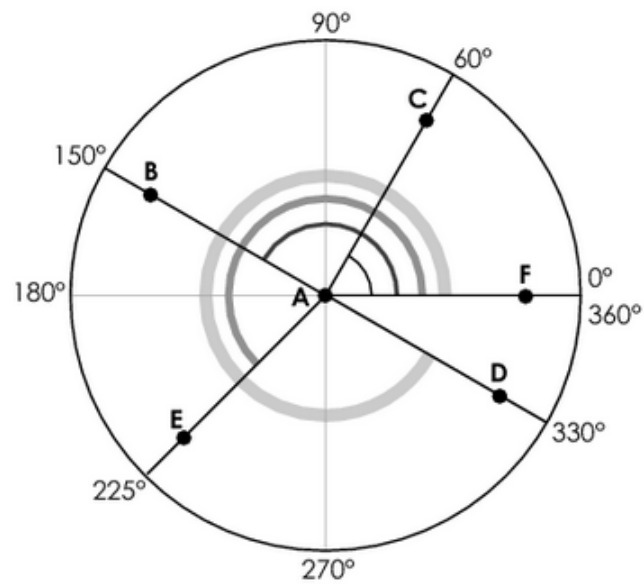
Rationale for Option B: This is incorrect. The student may confuse the definition of acute angles and obtuse angles, thinking that an obtuse angle is an angle whose measure is between 0 and 90 degrees.

Rationale for Option C: This is incorrect. The student may think that an obtuse angle is an angle whose measure is greater than 90 degrees, and choose the largest angle. However, an obtuse angle is an angle whose measure is between 90 and 180 degrees.

Rationale for Option D: This is incorrect. The student may think that an obtuse angle is an angle whose measure is greater than 180 degrees, and choose the smallest angle whose measure matches this definition.

Sample Response: 1 point

A circle with some angles is shown. The measures of the angles are shown on the circle.



Which angle is obtuse?

- ☒ $\angle FAB$
- ☐ $\angle FAC$
- ☐ $\angle FAD$
- ☐ $\angle FAE$

**Grade 4
Math
Spring 2018 Item Release**

Question 18

Question and Scoring Guidelines

Question 18

Select the boxes to show whether each fraction is less than, equal to, or greater than $\frac{3}{4}$.

| | Less Than $\frac{3}{4}$ | Equal to $\frac{3}{4}$ | Greater Than $\frac{3}{4}$ |
|----------------|--------------------------|--------------------------|----------------------------|
| $\frac{6}{10}$ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| $\frac{4}{5}$ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| $\frac{9}{12}$ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Points Possible: 1

Content Cluster: Extend understanding of fraction equivalence and ordering.

Content Standard: Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model. (4.NF.2)

Scoring Guidelines

Exemplar Response

| | Less Than $\frac{3}{4}$ | Equal to $\frac{3}{4}$ | Greater Than $\frac{3}{4}$ |
|----------------|---|--|--|
| $\frac{6}{10}$ | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| $\frac{4}{5}$ | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| $\frac{9}{12}$ | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Other Correct Responses

- N/A

For this item, a full-credit response includes:

- A correct table (1 point).

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Question 18

Sample Responses

Sample Response: 1 point

Select the boxes to show whether each fraction is less than, equal to, or greater than $\frac{3}{4}$.

| | Less Than $\frac{3}{4}$ | Equal to $\frac{3}{4}$ | Greater Than $\frac{3}{4}$ |
|----------------|-------------------------------------|-------------------------------------|-------------------------------------|
| $\frac{6}{10}$ | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| $\frac{4}{5}$ | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| $\frac{9}{12}$ | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Notes on Scoring

This response earns full credit (1 point) because it identifies the correct comparison for each fraction.

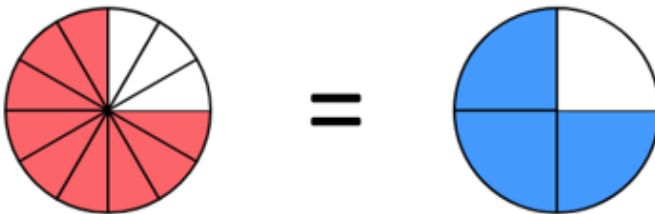
- The student may use a model to compare each fraction to $\frac{3}{4}$.



$$\frac{6}{10} < \frac{3}{4}$$



$$\frac{4}{5} > \frac{3}{4}$$



$$\frac{9}{12} = \frac{3}{4}$$

Sample Response: 0 points

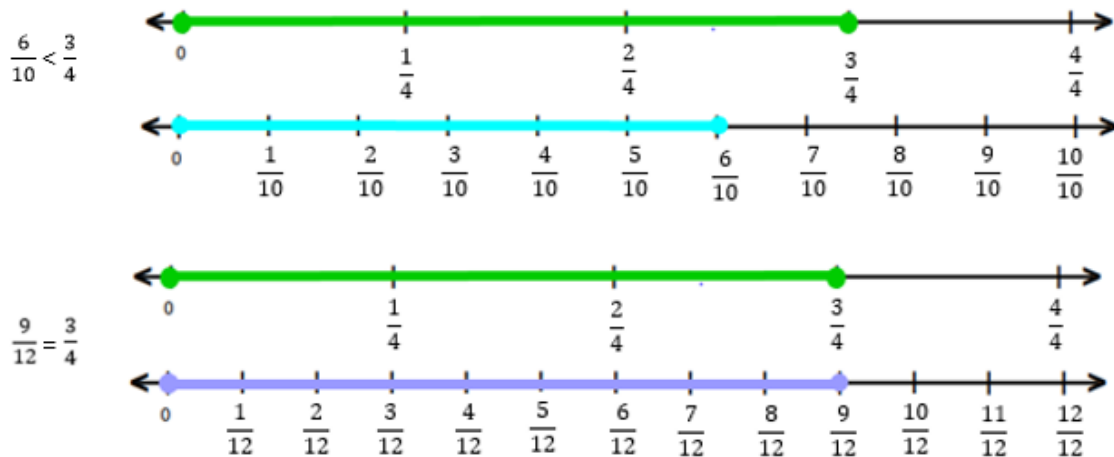
Select the boxes to show whether each fraction is less than, equal to, or greater than $\frac{3}{4}$.

| | Less Than $\frac{3}{4}$ | Equal to $\frac{3}{4}$ | Greater Than $\frac{3}{4}$ |
|----------------|-------------------------------------|-------------------------------------|----------------------------|
| $\frac{6}{10}$ | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| $\frac{4}{5}$ | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| $\frac{9}{12}$ | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

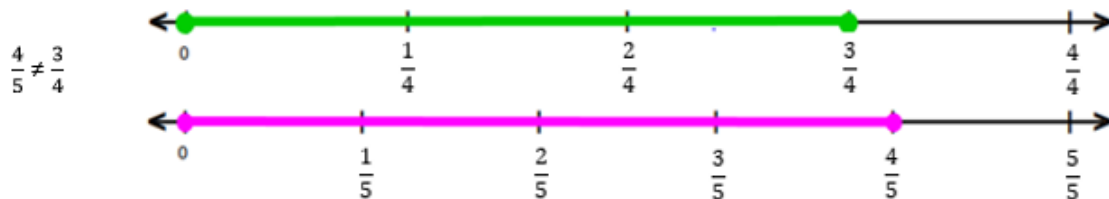
Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect comparison for one of the fractions.

- The student may use a number line to correctly compare $\frac{6}{10}$ and $\frac{9}{12}$ to $\frac{3}{4}$.



- The student may use a number line and incorrectly compare $\frac{4}{5}$ to $\frac{3}{4}$ because they are close together on the number line.



Sample Response: 0 points

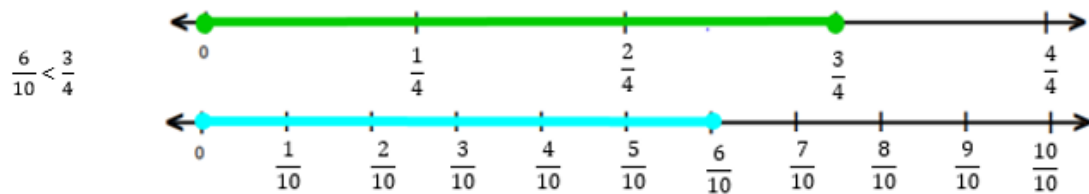
Select the boxes to show whether each fraction is less than, equal to, or greater than $\frac{3}{4}$.

| | Less Than $\frac{3}{4}$ | Equal to $\frac{3}{4}$ | Greater Than $\frac{3}{4}$ |
|----------------|-------------------------------------|--------------------------|----------------------------|
| $\frac{6}{10}$ | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| $\frac{4}{5}$ | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| $\frac{9}{12}$ | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Notes on Scoring

This response earns no credit (0 points) because it identifies incorrect comparisons for two fractions.

- The student may use a number line to correctly compare $\frac{6}{10}$ to $\frac{3}{4}$.



- The student may use a number line and incorrectly compare $\frac{4}{5}$ and $\frac{9}{12}$ to $\frac{3}{4}$.



**Grade 4
Math
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Question 24

Question and Scoring Guidelines

Question 24

Two numbers are being compared as shown.

$$0.8 < \square$$

Which value makes this comparison true?

- Ⓐ 0.08
- Ⓑ 0.09
- Ⓒ 0.8
- Ⓓ 0.9

Points Possible: 1

Content Cluster: Understand decimal notation for fractions, and compare decimal fractions.

Content Standard: Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model. (4.NF.7)

Scoring Guidelines

Rationale for Option A: This is incorrect. The student may think that the inequality symbol was read as “greater than”.

Rationale for Option B: This is incorrect. The student may identify that the value contains a 9, which is larger than 8, but did not consider the place value.

Rationale for Option C: This is incorrect. The student may choose an equivalent value.

Rationale for Option D: **Key** – The student correctly identifies that 0.9 is greater than 0.8.

Sample Response: 1 point

Two numbers are being compared as shown.

$$0.8 < \square$$

Which value makes this comparison true?

- ☐ A 0.08
- ☐ B 0.09
- ☐ C 0.8
- ☒ D 0.9

**Grade 4
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Question 26

Question and Scoring Guidelines

Question 26

A fraction is shown.

$$\frac{4}{10}$$

A. Select boxes on the hundreds grid to model a fraction equivalent to $\frac{4}{10}$.

B. Place numbers in the blank boxes to make the equation true.

- Use only **one** number in each blank box you fill in.

0

1

2

3

4

5

6

7

8

9

Delete

A.

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

B.

$\frac{4}{10} = \frac{\boxed{}}{\boxed{}}$

Points Possible: 1

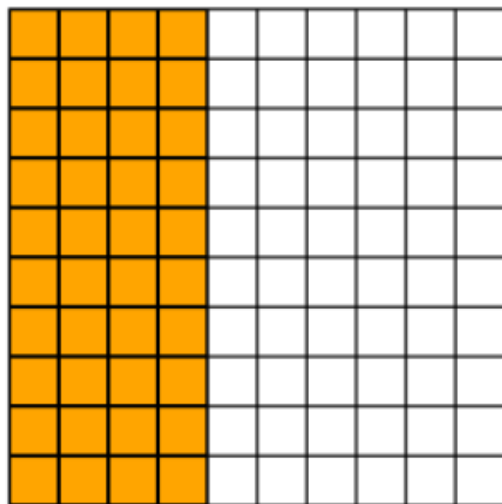
Content Cluster: Understand decimal notation for fractions, and compare decimal fractions.

Content Standard: Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. *For example, express $3/10$ as $30/100$, and add $3/10 + 4/100 = 34/100$.* (4.NF.5)

Scoring Guidelines

Exemplar Response

A.



B.

$$\frac{4}{10} = \frac{40}{100}$$

Other Correct Responses

- Any 40 boxes selected for Part A

For this item, a full-credit response includes:

- A correct model and equation (1 point).

Grade 4
Math
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Question 26

Sample Responses

Sample Response: 1 point

A fraction is shown.

$$\frac{4}{10}$$

A. Select boxes on the hundreds grid to model a fraction equivalent to $\frac{4}{10}$.

B. Place numbers in the blank boxes to make the equation true.

- Use only **one** number in each blank box you fill in.

0

1

2

3

4

5

6

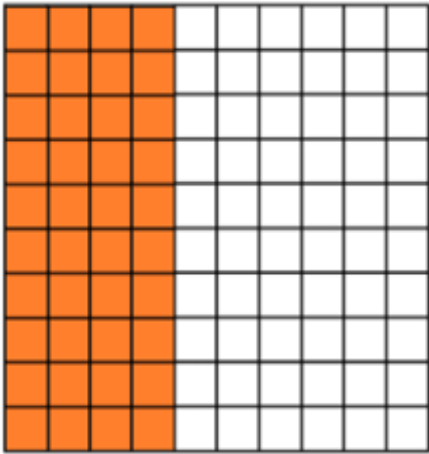
7

8

9

Delete

A.



B.

$$\frac{4}{10} = \frac{\overbrace{40}^{4 \text{ tens}}}{100}$$

Notes on Scoring

This response earns full credit (1 point) because it shows the correct number of boxes on the hundreds grid and identifies the correct fraction that makes the equation true.

Sample Response: 1 point

A fraction is shown.

$$\frac{4}{10}$$

A. Select boxes on the hundreds grid to model a fraction equivalent to $\frac{4}{10}$.

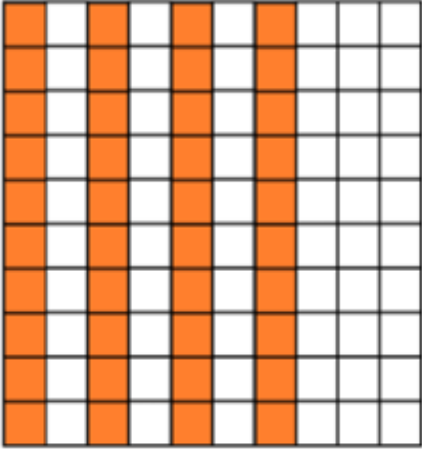
B. Place numbers in the blank boxes to make the equation true.

- Use only **one** number in each blank box you fill in.

0
1
2
3
4
5
6
7
8
9

Delete

A.



B.

$$\frac{4}{10} = \frac{\boxed{4} \boxed{0}}{\boxed{100}}$$

Notes on Scoring

This response earns full credit (1 point) because it shows the correct number of boxes on the hundreds grid and identifies the correct fraction that makes the equation true.

Sample Response: 0 points

A fraction is shown.

$$\frac{4}{10}$$

A. Select boxes on the hundreds grid to model a fraction equivalent to $\frac{4}{10}$.

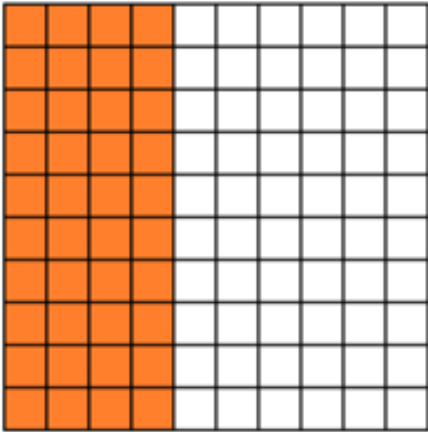
B. Place numbers in the blank boxes to make the equation true.

- Use only **one** number in each blank box you fill in.

0
1
2
3
4
5
6
7
8
9

Delete

A.



B.

$$\frac{4}{10} = \frac{\boxed{4} \boxed{4}}{100}$$

Notes on Scoring

This response earns no credit (0 points) because it shows a fraction that does not make the equation true.

- In **Part B**, the student may think that because the denominator adds another 0 (the digit in the ones place in the denominator) to the end of the number, then the numerator should have another 4 (the digit in the ones place in the numerator) added to the end of the number.

Sample Response: 0 points

A fraction is shown.

$$\frac{4}{10}$$

A. Select boxes on the hundreds grid to model a fraction equivalent to $\frac{4}{10}$.

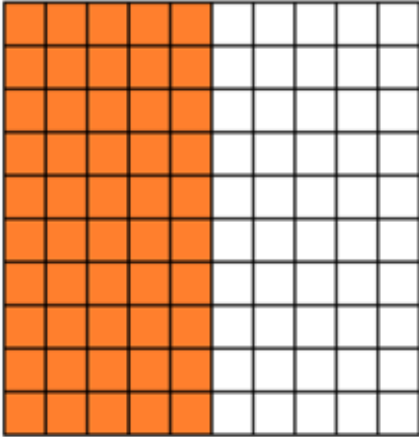
B. Place numbers in the blank boxes to make the equation true.

- Use only **one** number in each blank box you fill in.

0
1
2
3
4
5
6
7
8
9

Delete

A.



B.

$$\frac{4}{10} = \frac{\overline{4 \ 0}}{100}$$

Notes on Scoring

This response earns no credit (0 points) because it shows an incorrect number of boxes on the hundreds grid. In **Part A**, the student selects 5 columns rather than 4.

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Question 27

Question and Scoring Guidelines

Question 27

A student ran 9 kilometers (km).

How many meters (m) did she run? Enter the number in the box.

meters

| | | | | |
|---|---|---------------------|---|---|
| ← | → | ↶ | ↷ | ✕ |
| 1 | 2 | 3 | | |
| 4 | 5 | 6 | | |
| 7 | 8 | 9 | | |
| 0 | . | $\frac{\Box}{\Box}$ | | |

Points Possible: 1

Content Cluster: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Content Standard: Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ... (4.MD.1)*

Scoring Guidelines

Exemplar Response

- 9,000

Other Correct Responses

- Any equivalent value

For this item, a full-credit response includes:

- A correct value (1 point).

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Question 27

Sample Responses

Sample Response: 1 point

A student ran 9 kilometers (km).

How many meters (m) did she run? Enter the number in the box.

9000

meters



| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns full credit (1 point) because it identifies the correct number of meters that the student ran.

- The student may use a table to correctly convert from kilometers to meters.

| Kilometer (km) | km \times 1,000 = m | Meter (m) |
|----------------|-----------------------|-----------|
| 1 | 1 \times 1,000 | 1,000 |
| 2 | 2 \times 1,000 | 2,000 |
| 3 | 3 \times 1,000 | 3,000 |
| 4 | 4 \times 1,000 | 4,000 |
| 5 | 5 \times 1,000 | 5,000 |
| 6 | 6 \times 1,000 | 6,000 |
| 7 | 7 \times 1,000 | 7,000 |
| 8 | 8 \times 1,000 | 8,000 |
| 9 | 9 \times 1,000 | 9,000 |

Sample Response: 1 point

A student ran 9 kilometers (km).

How many meters (m) did she run? Enter the number in the box.

9000.0

meters



1

2

3

4

5

6

7

8

9

0

.

$\frac{\Box}{\Box}$

Notes on Scoring

This response earns full credit (1 point) because it identifies the correct number of meters that the student ran.

- The student may identify that 1 km = 1000 m and multiply 9 by 1,000 to find the number of meters in 9 kilometers.

$$1.0 \text{ km} = 1,000.0 \text{ m}$$

$$1.0 \text{ km} \times 1,000 = 1,000.0 \text{ m}$$

AND

$$9.0 \text{ km} \times 1,000 = 9,000.0 \text{ m}$$

Sample Response: 0 points

A student ran 9 kilometers (km).

How many meters (m) did she run? Enter the number in the box.

0.009

meters



| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect number of meters that the student ran.

- The student may use a table and divide by 1000 instead of multiplying by 1000.

| Kilometer (km) | $\text{km} \div 1,000 \neq \text{m}$ | Meter (m) |
|----------------|--------------------------------------|-----------|
| 1 | $1 \div 1,000$ | 0.001 |
| 2 | $2 \div 1,000$ | 0.002 |
| 3 | $3 \div 1,000$ | 0.003 |
| 4 | $4 \div 1,000$ | 0.004 |
| 5 | $5 \div 1,000$ | 0.005 |
| 6 | $6 \div 1,000$ | 0.006 |
| 7 | $7 \div 1,000$ | 0.007 |
| 8 | $8 \div 1,000$ | 0.008 |
| 9 | $9 \div 1,000$ | 0.009 |

While decimals are introduced in the standards in grade 4, division at this grade is limited to whole number quotients and remainders with up to four-digit dividends and one-digit divisors.

Sample Response: 0 points

A student ran 9 kilometers (km).

How many meters (m) did she run? Enter the number in the box.

900 *meters*

| | | | | |
|---|---|---------------------|---|---|
| ← | → | ↶ | ↷ | ✕ |
| 1 | 2 | 3 | | |
| 4 | 5 | 6 | | |
| 7 | 8 | 9 | | |
| 0 | . | $\frac{\Box}{\Box}$ | | |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect number of meters that the student ran.

- The student may think that there are only 100 meters in 1 kilometer.

1 km \neq 100 m

1 km \times 100 \neq 100 m

AND

km \times 100 \neq 900 m

**Grade 4
Math
Spring 2018 Item Release**

Question 29

Question and Scoring Guidelines

Question 29

A baker makes 30 cupcakes. He makes 3 times as many cupcakes as his friend Sarah.

How many cupcakes does Sarah make?

- Ⓐ 10
- Ⓑ 27
- Ⓒ 33
- Ⓓ 90

Points Possible: 1

Content Cluster: Use the four operations with whole numbers to solve problems.

Content Standard: Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
(4.OA.2)

Scoring Guidelines

Rationale for Option A: **Key** – The student correctly identifies the number of cupcakes that Sarah made.

Rationale for Option B: This is incorrect. The student may think “times as many” represents subtraction.

Rationale for Option C: This is incorrect. The student may think “times as many” represents addition.

Rationale for Option D: This is incorrect. The student may multiply 30 and 3 rather than dividing.

Sample Response: 1 point

A baker makes 30 cupcakes. He makes 3 times as many cupcakes as his friend Sarah.

How many cupcakes does Sarah make?

☒ 10

☐ 27

☐ 33

☐ 90

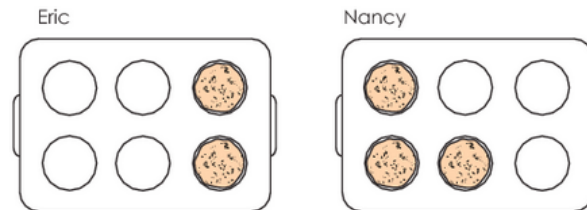
**Grade 4
Math
Spring 2018 Item Release**

Question 30

Question and Scoring Guidelines

Question 30

Eric and Nancy both baked muffins. They each filled a pan of the same size. Eric ate $\frac{4}{6}$ of his muffins and Nancy ate $\frac{3}{6}$ of her muffins. The diagram shows how many muffins they each have left.



What is the difference between the fraction of muffins Eric ate and the fraction of muffins Nancy ate? Enter the number in the box.

← → ↶ ↷ ✖

| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Points Possible: 1

Content Cluster: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

Content Standard: Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. (4.NF.3)

d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

Scoring Guidelines

Exemplar Response

- $\frac{1}{6}$

Other Correct Responses

- Any equivalent value

For this item, a full-credit response includes:

- The correct fraction (1 point).

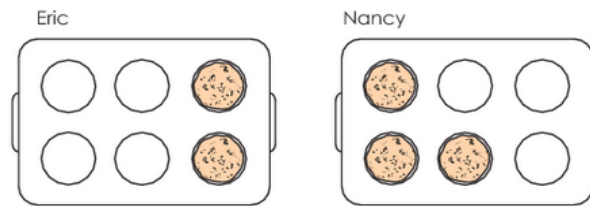
**Grade 4
Math
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Question 30

Sample Responses

Sample Response: 1 point

Eric and Nancy both baked muffins. They each filled a pan of the same size. Eric ate $\frac{4}{6}$ of his muffins and Nancy ate $\frac{3}{6}$ of her muffins. The diagram shows how many muffins they each have left.



What is the difference between the fraction of muffins Eric ate and the fraction of muffins Nancy ate? Enter the number in the box.

$\frac{1}{6}$

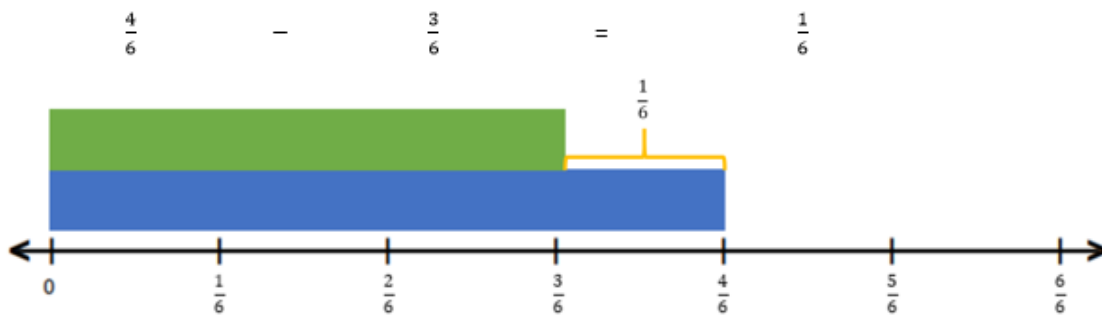


| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

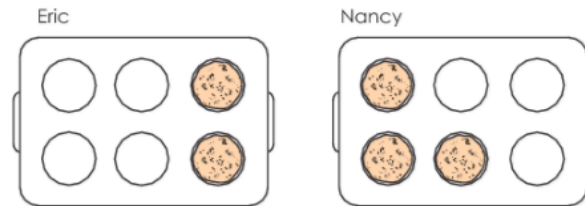
This response earns full credit (1 point) because it identifies the correct difference between the fraction of muffins that Eric ate and the fraction of muffins that Nancy ate.

- The student may use a length model to subtract $\frac{3}{6}$ from $\frac{4}{6}$.



Sample Response: 1 point

Eric and Nancy both baked muffins. They each filled a pan of the same size. Eric ate $\frac{4}{6}$ of his muffins and Nancy ate $\frac{3}{6}$ of her muffins. The diagram shows how many muffins they each have left.



What is the difference between the fraction of muffins Eric ate and the fraction of muffins Nancy ate? Enter the number in the box.

$\frac{2}{12}$

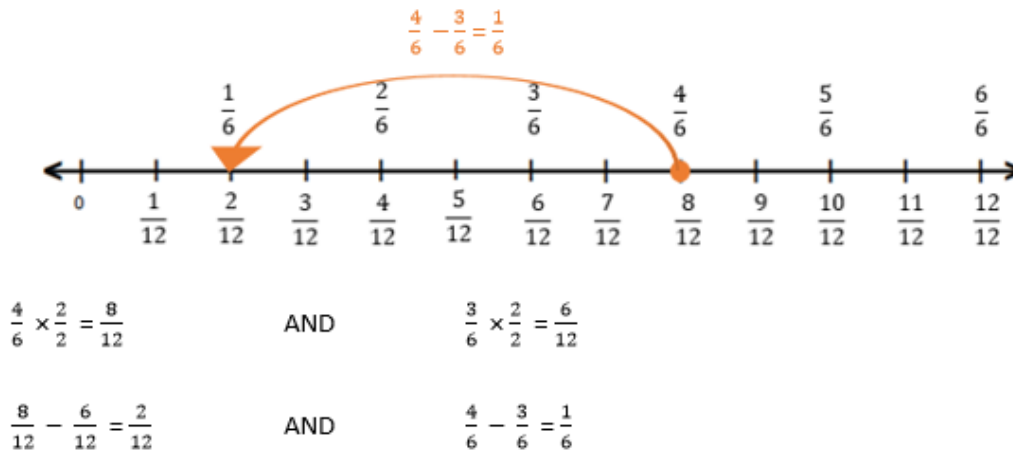


| | | |
|---|---|---------------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\square}{\square}$ |

Notes on Scoring

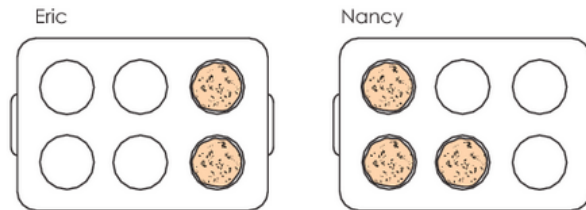
This response earns full credit (1 point) because it identifies the correct difference between the fraction of muffins that Eric ate and the fraction of muffins that Nancy ate.

- The student may use a model to find an equivalent value to $\frac{1}{6}$.



Sample Response: 0 points

Eric and Nancy both baked muffins. They each filled a pan of the same size. Eric ate $\frac{4}{6}$ of his muffins and Nancy ate $\frac{3}{6}$ of her muffins. The diagram shows how many muffins they each have left.



What is the difference between the fraction of muffins Eric ate and the fraction of muffins Nancy ate? Enter the number in the box.

1



| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect difference between the fraction of muffins that Eric ate and the fraction of muffins that Nancy ate.

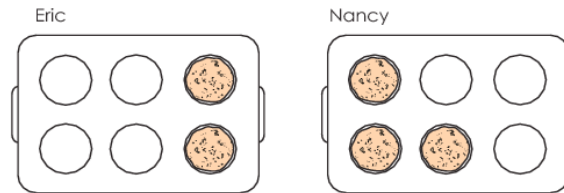
- The student may calculate the difference of the whole number of muffins eaten rather than the fraction (of the pan) of muffins eaten.

$$4 - 3 = 1$$

$$\frac{4}{6} - \frac{3}{6} \neq 1$$

Sample Response: 0 points

Eric and Nancy both baked muffins. They each filled a pan of the same size. Eric ate $\frac{4}{6}$ of his muffins and Nancy ate $\frac{3}{6}$ of her muffins. The diagram shows how many muffins they each have left.



What is the difference between the fraction of muffins Eric ate and the fraction of muffins Nancy ate? Enter the number in the box.

$\frac{7}{12}$



| | | |
|---|---|---------------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\square}{\square}$ |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect difference between the fraction of muffins that Eric ate and the fraction of muffins that Nancy ate.

- The student may think they need to add to find the difference, so they add the numerators together and add the denominators together instead of using subtraction.

$$\frac{3}{6} + \frac{4}{6} \neq \frac{7}{12}$$

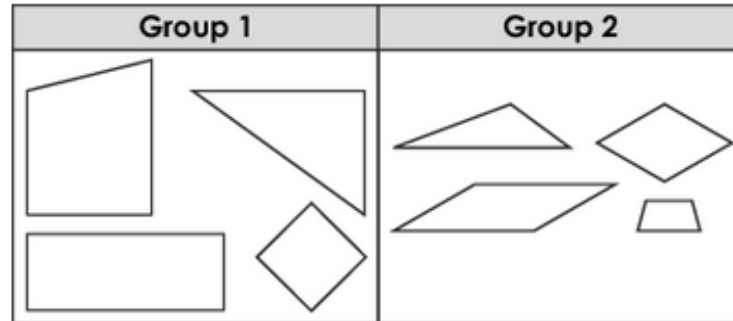
**Grade 4
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Question 31

Question and Scoring Guidelines

Question 31

Two groups of figures are shown.



Which property was used to sort the figures into the two groups?

- ☐ (A) acute angles
- ☐ (B) obtuse angles
- ☐ (C) parallel sides
- ☐ (D) perpendicular sides

Points Possible: 1

Content Cluster: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Content Standard: Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right angles. (4.G.2)

Scoring Guidelines

Rationale for Option A: This is incorrect. The student may think that right angles are also acute angles and thus think all shapes in each group have at least one acute angle.

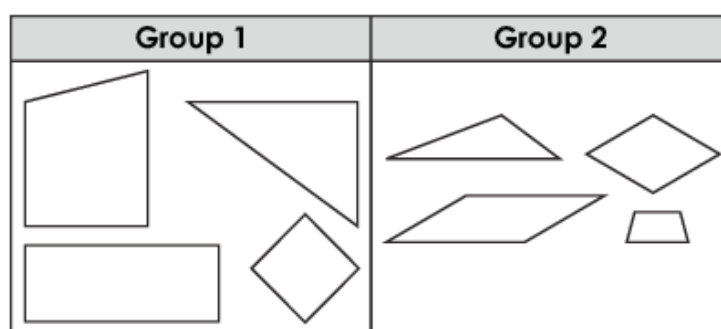
Rationale for Option B: This is incorrect. The student may think right angles are obtuse angles, then see that most of the shapes in Group 2 have obtuse angles, but does not check all of them.

Rationale for Option C: This is incorrect. The student may recognize that all of the figures in Group 1 have at least one pair of parallel sides and that 3 shapes in Group 2 have at least 1 pair of parallel sides but does not check all of the shapes.

Rationale for Option D: **Key** – The student correctly recognizes that the groups are sorted by figures that have perpendicular sides and those that do not.

Sample Response: 1 point

Two groups of figures are shown.



Which property was used to sort the figures into the two groups?

- ☐ (A) acute angles
- ☐ (B) obtuse angles
- ☐ (C) parallel sides
- ☒ (D) perpendicular sides

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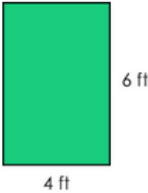
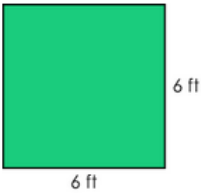

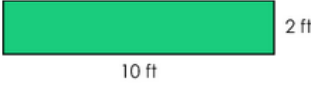

Question 32

Question and Scoring Guidelines

Question 32

A student creates a rectangular garden for 24 tomato plants. Each tomato plant has 1 square foot of space and there is no additional space in the garden.

Select the **three** rectangles that could represent the garden.

- ☐ 
- ☐ 
- ☐ 
- ☐ 
- ☐ 

Points Possible: 1

Content Cluster: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Content Standard: Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor. (4.MD.3)*

Scoring Guidelines

Rationale for First Option: **Key** – The student correctly identifies a model for the garden having an area of 24 square feet.

Rationale for Second Option: This is incorrect. The student may select a model having a perimeter of 24 feet.

Rationale for Third Option: **Key** – The student correctly identifies a model for the garden having an area of 24 square feet.

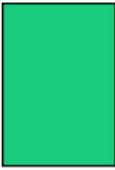
Rationale for Fourth Option: This is incorrect. The student may select a model having a perimeter of 24 feet.

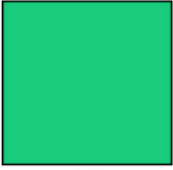
Rationale for Fifth Option: **Key** – The student correctly identifies a model for the garden having an area of 24 square feet.


Sample Response: 1 point


A student creates a rectangular garden for 24 tomato plants. Each tomato plant has 1 square foot of space and there is no additional space in the garden.


Select the **three** rectangles that could represent the garden.

☒  6 ft
4 ft

☐  6 ft
6 ft

☒  3 ft
8 ft

☐  2 ft
10 ft

☒  1 ft
24 ft

**Grade 4
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Question 34

Question and Scoring Guidelines

Question 34

Place models in the blank box to represent the product of 156 and 2.

- There may be more than one way to show a correct answer.

1
10
100

Delete

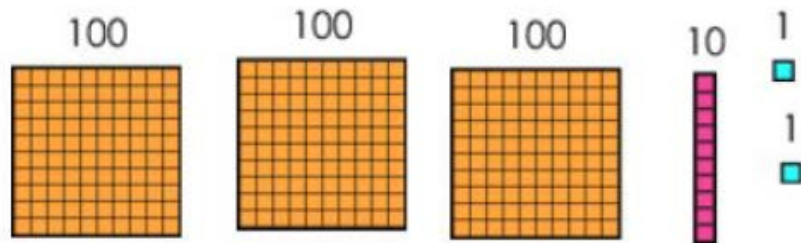
Points Possible: 1

Content Cluster: Use place value understanding and properties of operations to perform multi-digit arithmetic.

Content Standard: Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (4.NBT.5)

Scoring Guidelines

Exemplar Response



Other Correct Responses

- Any correct model that represents 312

For this item, a full-credit response includes:

- A correct model (1 point).

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Question 34


Sample Responses

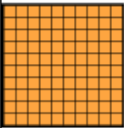
Sample Response: 1 point



Place models in the blank box to represent the product of 156 and 2.

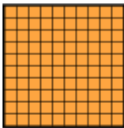
- There may be more than one way to show a correct answer.

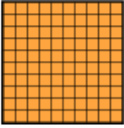
1


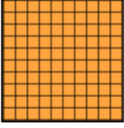
10



100



 Delete 


100


100


100


10


1


1


136 (2018)

Notes on Scoring

This response earns full credit (1 point) because it represents the correct product of 156 and 2.

- The student may multiply 156 by 2 to get 312 and then place models in the blank box that represent 312.

$$156 = 156$$

$$\begin{array}{r} \times 2 \\ \hline \end{array}$$

$$200 = 100 \times 2$$

$$100 = 50 \times 2$$

$$\begin{array}{r} + 12 \\ \hline \end{array} = 6 \times 2$$

$$312$$

Sample Response: 1 point

Place models in the blank box to represent the product of 156 and 2.

- There may be more than one way to show a correct answer.

1000

100

10

1

Delete

100

10

10

10

10

10

1

1

100

10

10

10

10

10

1

1

1

1

Notes on Scoring

This response earns full credit (1 point) because it represents a correct product of 156 and 2.


- The student creates a model of 2 groups of 156, using repeated addition to represent the product of 156 and 2.


$$\begin{array}{r} 156 \times 2 = 156 \\ + 156 \\ \hline 312 \end{array}$$

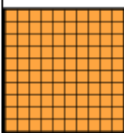
Sample Response: 0 points



Place models in the blank box to represent the product of 156 and 2.

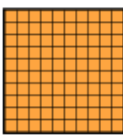
- There may be more than one way to show a correct answer.


1



10



100



 Delete 


100



10



10



10



10



10



1


1


1


1


1


1


140 (2018)

Notes on Scoring

This response earns no credit (0 points) because it represents an incorrect product of 156 and 2.

- The student may misread the question and represent 156 instead of 156×2 .

$$156 \times 2 \neq 156$$

Sample Response: 0 points

Place models in the blank box to represent the product of 156 and 2.

- There may be more than one way to show a correct answer.

1

10

100

1

10

100

Delete

1

10

10

10

10

10

1

1

1

1

1

1

1

100

Notes on Scoring

This response earns no credit (0 points) because it represents an incorrect product of 156 and 2.

- The student may add 2 to 156 instead of multiplying.

$$156 \times 2 \neq 158$$

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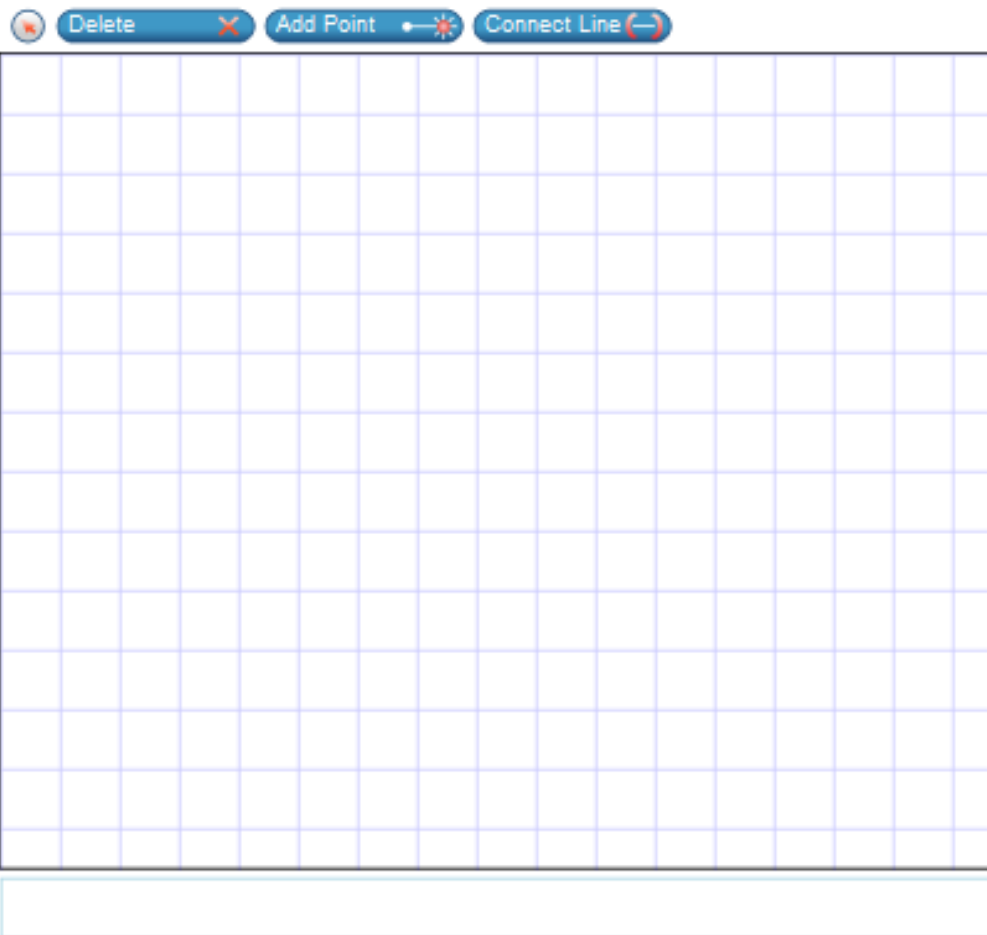
Question 37

Question and Scoring Guidelines

Question 37

Use the Connect Line tool to create a quadrilateral with only one set of parallel sides.

- There may be more than one correct answer.



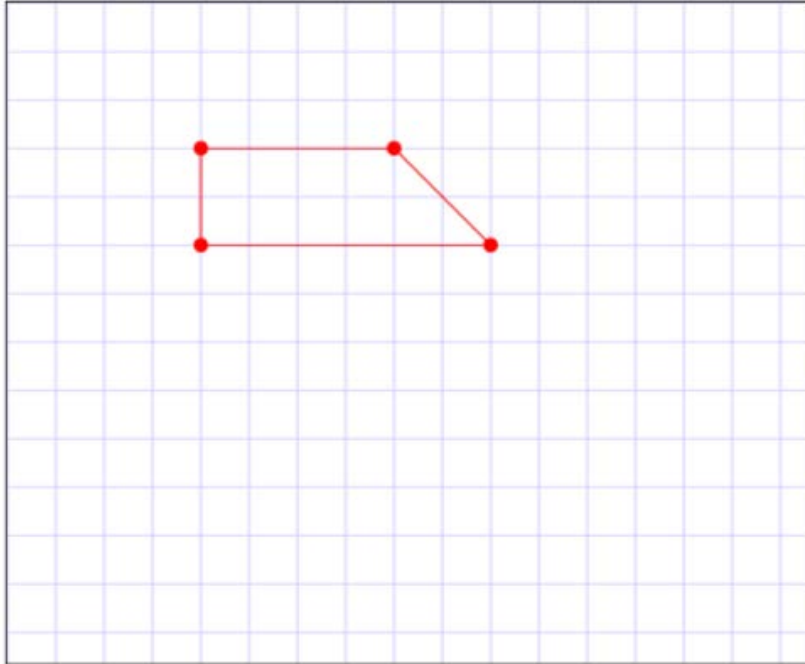
Points Possible: 1

Content Cluster: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Content Standard: Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. (4.G.1)

Scoring Guidelines

Exemplar Response



Other Correct Responses

- Any quadrilateral with only one set of parallel sides

For this item, a full-credit response includes:

- A correct figure (1 point).

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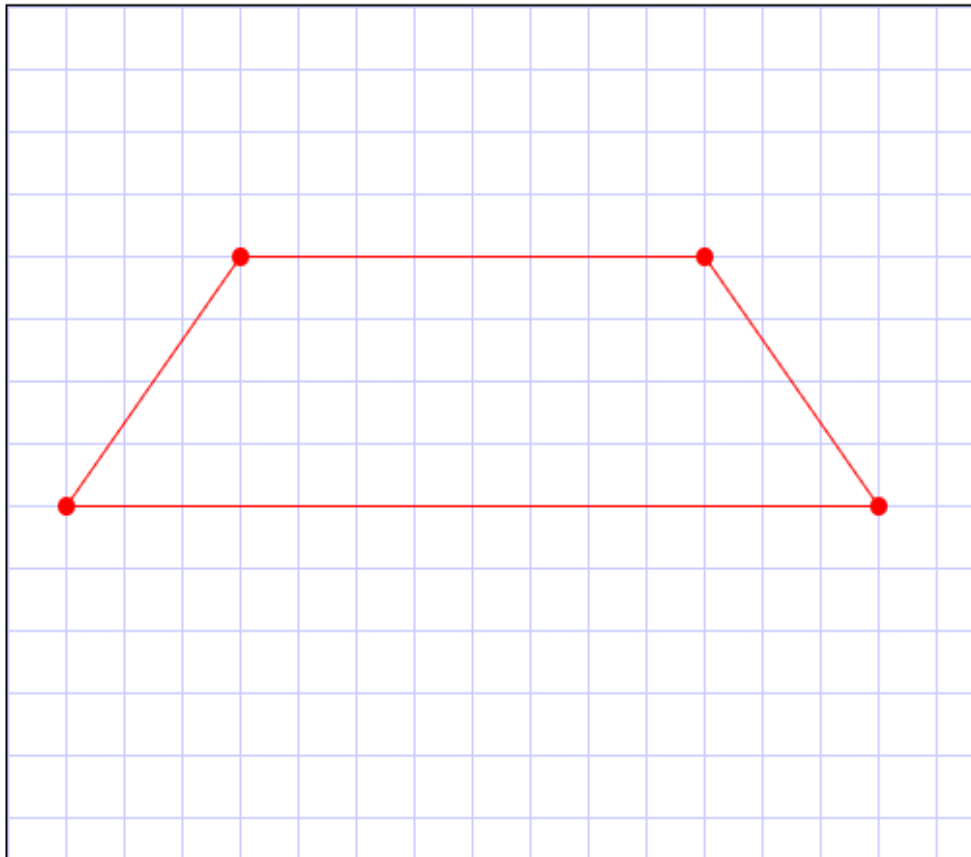
Question 37

Sample Responses

Sample Response: 1 point

Use the Connect Line tool to create a quadrilateral with only one set of parallel sides.

- There may be more than one correct answer.



Select two (2) points to connect or press and drag to create and connect points.

Notes on Scoring

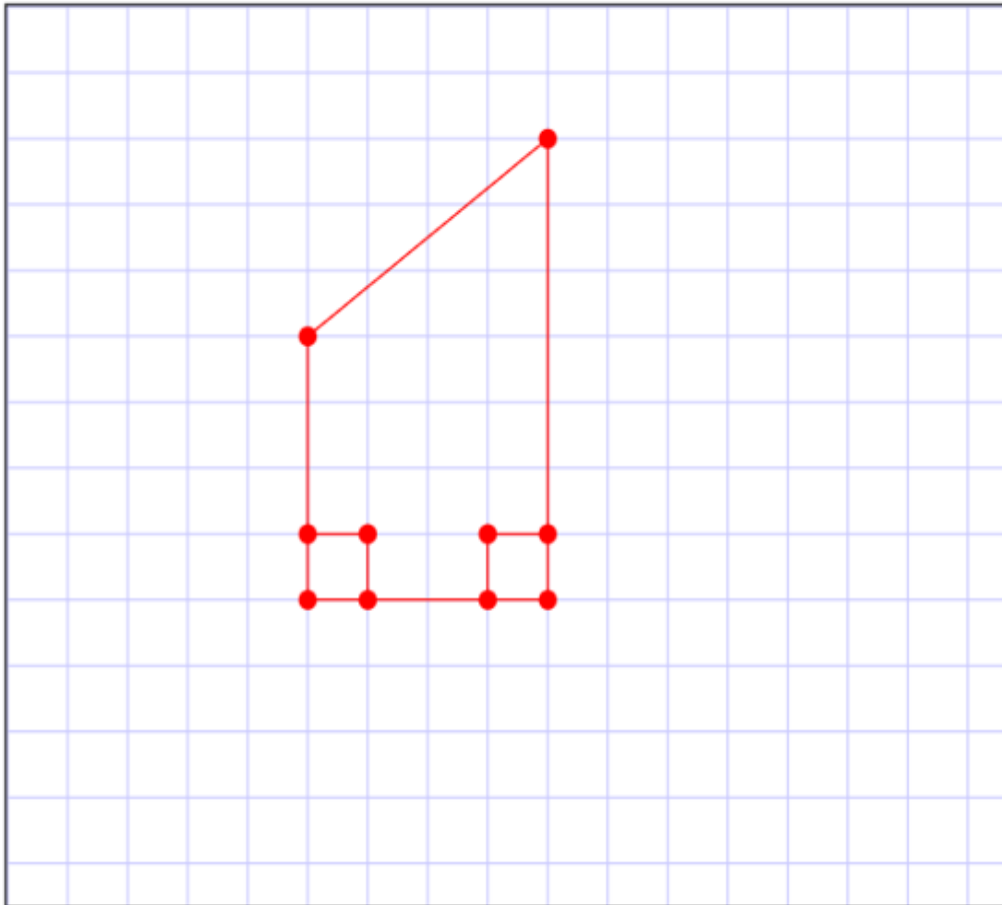
This response earns full credit (1 point) because it identifies a quadrilateral with only one set of parallel sides.

- The student draws a trapezoid that has only one set of parallel sides.

Sample Response: 1 point

Use the Connect Line tool to create a quadrilateral with only one set of parallel sides.

- There may be more than one correct answer.



Notes on Scoring

This response earns full credit (1 point) because it identifies a quadrilateral with only one set of parallel sides.

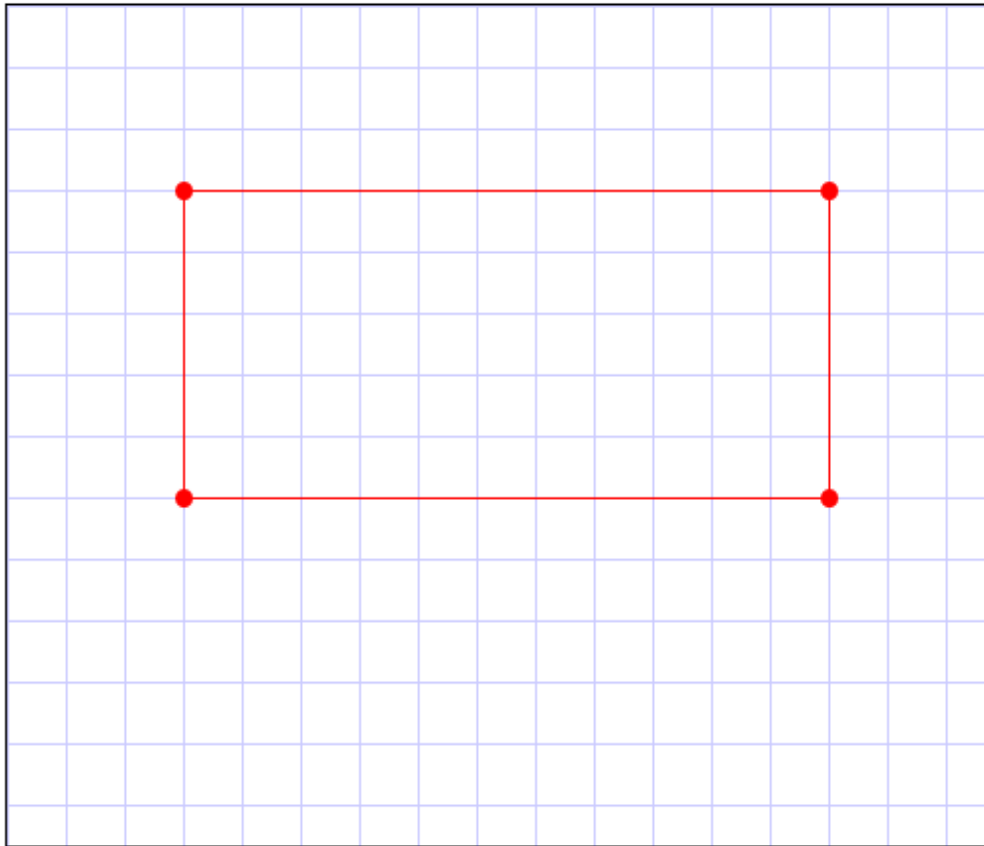
- The student draws a trapezoid that has only one set of parallel sides.

While square corners (right angles) are not required to be drawn as part of a response, students in grades 3–5 can still earn full credit if they include square corners as part of a correct response.

Sample Response: 0 points

Use the Connect Line tool to create a quadrilateral with only one set of parallel sides.

- There may be more than one correct answer.



Notes on Scoring



This response earns no credit (0 points) because it does not identify a quadrilateral with only one set of parallel sides.

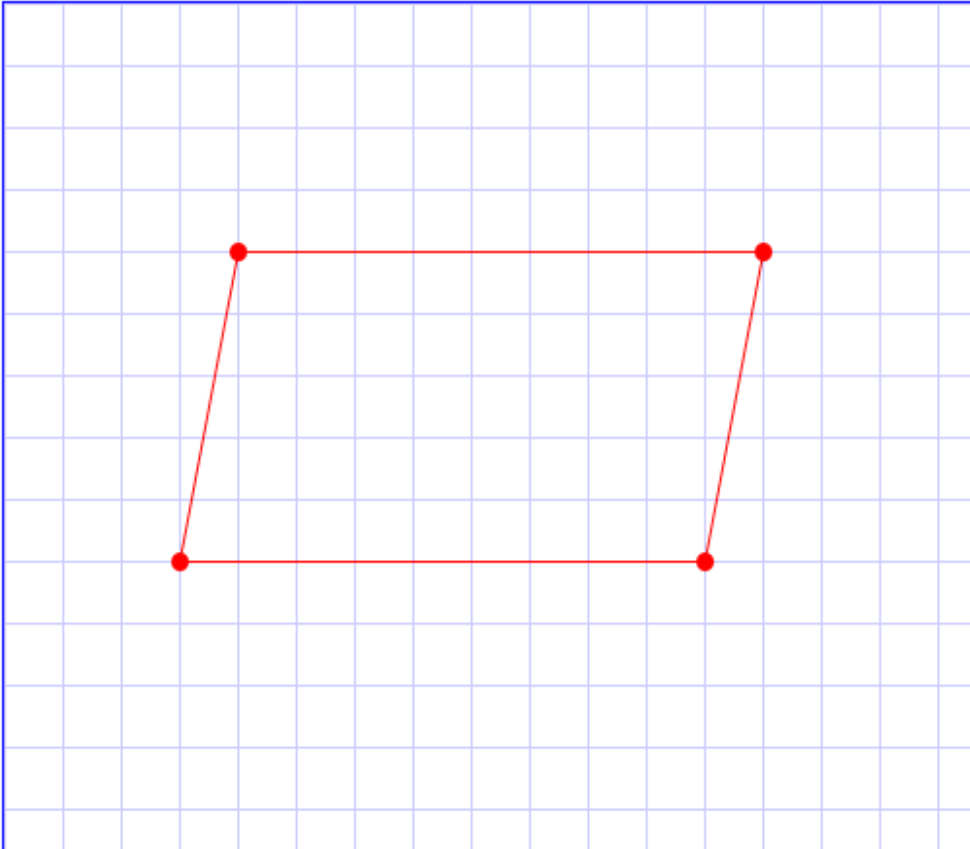
- The student draws a quadrilateral that has more than one pair of parallel sides.

Sample Response: 0 points

Use the Connect Line tool to create a quadrilateral with only one set of parallel sides.

- There may be more than one correct answer.

Delete X Add Point  Connect Line 



Select two (2) points to connect or press and drag to create and connect points.

Notes on Scoring

This response earns no credit (0 points) because it does not identify a quadrilateral with only one set of parallel sides.

- The student draws a quadrilateral that has more than one pair of parallel sides.

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Question 39

Question and Scoring Guidelines

Question 39

Enter the value "two hundred five thousand, three hundred fifty" in the box.

| | | | | | | | | | |
|---|---|---------------------|--|--|--|--|--|--|--|
| | | | | | | | | | |
| <div>← → ↶ ↷ ✕</div> | | | | | | | | | |
| 1 | 2 | 3 | | | | | | | |
| 4 | 5 | 6 | | | | | | | |
| 7 | 8 | 9 | | | | | | | |
| 0 | . | $\frac{\Box}{\Box}$ | | | | | | | |

Points Possible: 1

Content Cluster: Generalize place value understanding for multi-digit whole numbers.

Content Standard: Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons. (4.NBT.2)

Scoring Guidelines

Exemplar Response

- 205,350

Other Correct Responses

- Any equivalent value

For this item, a full-credit response includes:

- The correct number (1 point).

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Question 39

Sample Responses

Sample Response: 1 point

Enter the value "two hundred five thousand, three hundred fifty" in the box.

205350

← → ↶ ↷ ✕

| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns full credit (1 point) because it identifies the correct value of "two hundred five thousand, three hundred fifty".

- The student writes out the number using the correct place values.

Sample Response: 1 point

Enter the value "two hundred five thousand, three hundred fifty" in the box.

205350.00

←

→

↶

↷

✕

| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns full credit (1 point) because it identifies the correct value of "two hundred five thousand, three hundred fifty".

- The student finds a correct equivalent value of 205350.

Sample Response: 0 points

Enter the value "two hundred five thousand, three hundred fifty" in the box.

200500030050

←

→

↶

↷

✕

| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect value of "two hundred five thousand, three hundred fifty".

- The student may write the numbers he or she hears when reading the number in word form.

Sample Response: 0 points

Enter the value "two hundred five thousand, three hundred fifty" in the box.

25350

←

→

↶

↷

✕

| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect value of "two hundred five thousand, three hundred fifty".

- The student may forget to put a 0 as a placeholder in the ten-thousands place.

**Grade 4
Math
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Question 44

Question and Scoring Guidelines

Question 44

Select the **four** numbers that are factors of 84.

- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 9
- ☐ 14
- ☐ 21

Points Possible: 1

Content Cluster: Gain familiarity with factors and multiples.

Content Standard: Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.
(4.OA.4)

Scoring Guidelines

Rationale for First Option: **Key** – The student correctly identifies a factor of 84. 84 divided by 4 equals 21.

Rationale for Second Option: This is incorrect. The student may think 5 is a factor of 84.

Rationale for Third Option: **Key** – The student correctly identifies a factor of 84. 84 divided by 6 equals 14.

Rationale for Fourth Option: This is incorrect. The student may think 9 is a factor of 84.

Rationale for Fifth Option: **Key** – The student correctly identifies a factor of 84. 84 divided by 14 equals 6.

Rationale for Sixth Option: **Key** – The student correctly identifies a factor of 84. 84 divided by 21 equals 4.

Sample Response: 1 point

Select the **four** numbers that are factors of 84.

| | |
|-------------------------------------|----|
| <input checked="" type="checkbox"/> | 4 |
| <input type="checkbox"/> | 5 |
| <input checked="" type="checkbox"/> | 6 |
| <input type="checkbox"/> | 9 |
| <input checked="" type="checkbox"/> | 14 |
| <input checked="" type="checkbox"/> | 21 |

**Grade 4
Math
Spring 2018 Item Release**

Question 47

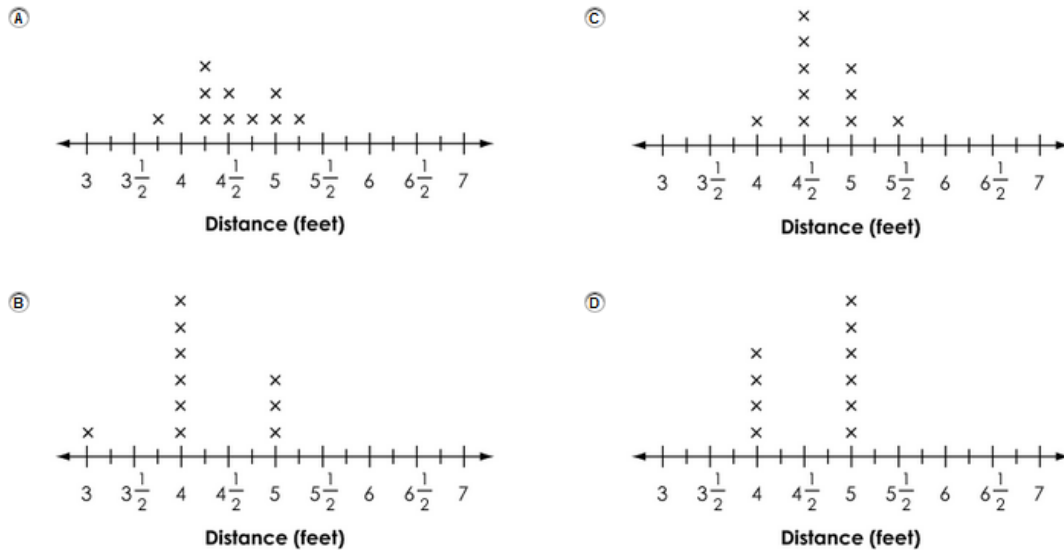
Question and Scoring Guidelines

Question 47

Steven measures how far he can jump. He jumps 10 times and writes down the distance each time in the table shown.

| Distance (feet) | 5 | $4\frac{1}{4}$ | $3\frac{3}{4}$ | $5\frac{1}{4}$ | $4\frac{1}{4}$ | $4\frac{3}{4}$ | 5 | $4\frac{1}{2}$ | $4\frac{1}{4}$ | $4\frac{1}{2}$ |
|-----------------|---|----------------|----------------|----------------|----------------|----------------|---|----------------|----------------|----------------|
|-----------------|---|----------------|----------------|----------------|----------------|----------------|---|----------------|----------------|----------------|

Which line plot shows these data displayed correctly?



Points Possible: 1

Content Cluster: Represent and interpret data.

Content Standard: Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection. (4.MD.4)*

Scoring Guidelines

Rationale for Option A: **Key** – The student identifies the correct line plot by counting the number of times each distance repeats in the table and then matching that amount of x's above the appropriate number on the number line.

Rationale for Option B: This is incorrect. The student may only plot the whole number for each distance, forgetting about the fraction portion of the number.

Rationale for Option C: This is incorrect. The student may round each distance to the nearest half and plot the results since the tick marks are labeled every 0.5 foot.

Rationale for Option D: This is incorrect. The student may round the distances to the nearest whole number and plot those values.

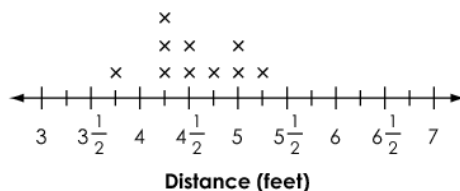
Sample Response: 1 point

Steven measures how far he can jump. He jumps 10 times and writes down the distance each time in the table shown.

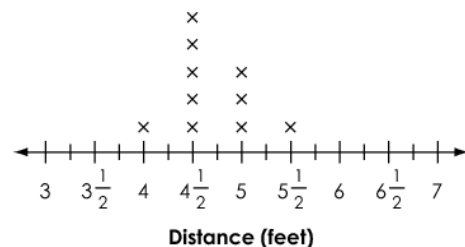
| Distance (feet) | 5 | $4\frac{1}{4}$ | $3\frac{3}{4}$ | $5\frac{1}{4}$ | $4\frac{1}{4}$ | $4\frac{3}{4}$ | 5 | $4\frac{1}{2}$ | $4\frac{1}{4}$ | $4\frac{1}{2}$ |
|-----------------|---|----------------|----------------|----------------|----------------|----------------|---|----------------|----------------|----------------|
|-----------------|---|----------------|----------------|----------------|----------------|----------------|---|----------------|----------------|----------------|

Which line plot shows these data displayed correctly?

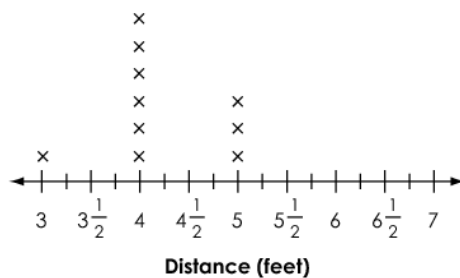
●



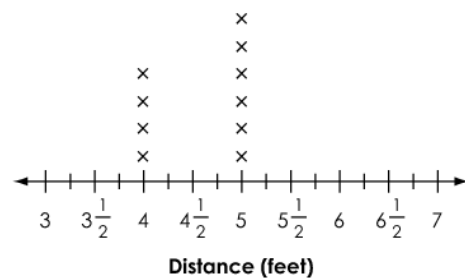
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**Grade 4
Math
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Question 48

Question and Scoring Guidelines

Question 48

An expression is given.

$$1\frac{2}{6} + 2\frac{5}{6}$$

What is the value of the expression? Enter the number in the box.

← → ↶ ↷ ✖

| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Points Possible: 1

Content Cluster: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

Content Standard: Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. (4.NF.3)

c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.

Scoring Guidelines

Exemplar Response

- $4\frac{1}{6}$

Other Correct Responses

- Any equivalent value

For this item, a full-credit response includes:

- The correct value (1 point).

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Question 48

Sample Responses

Sample Response: 1 point

An expression is given.

$$1\frac{2}{6} + 2\frac{5}{6}$$

What is the value of the expression? Enter the number in the box.

$$4\frac{1}{6}$$



| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns full credit (1 point) because it identifies a correct value of the expression.

- The student may add the whole numbers of each addend and the fractions of each addend to find the correct value of $1\frac{2}{6}$ and $2\frac{5}{6}$.

$$1\frac{2}{6} + 2\frac{5}{6}$$

$$= (1 + 2) + \left(\frac{2}{6} + \frac{5}{6}\right)$$

$$= 3 + \frac{7}{6}$$

$$= 3 + 1\frac{1}{6}$$

$$= 4\frac{1}{6}$$

AND

$$\frac{7}{6} = 1\frac{1}{6}$$

Sample Response: 1 point

An expression is given.

$$1\frac{2}{6} + 2\frac{5}{6}$$

What is the value of the expression? Enter the number in the box.

$\frac{25}{6}$

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| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns full credit (1 point) because it identifies a correct value of the expression.

- The student may change the mixed numbers to improper fractions and find a correct value equivalent to $4\frac{1}{6}$.

$$\begin{aligned} 1\frac{2}{6} &= \frac{8}{6} & \text{AND} & & 2\frac{5}{6} &= \frac{17}{6} \\ &= \frac{8}{6} + \frac{17}{6} \\ &= \frac{25}{6} \end{aligned}$$

Sample Response: 0 points

An expression is given.

$$1\frac{2}{6} + 2\frac{5}{6}$$

What is the value of the expression? Enter the number in the box.

$$\frac{7}{6}$$



| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect value of the expression.

- The student may add the fraction parts of each addend without adding the whole numbers.

$$\frac{2}{6} + \frac{5}{6} = \frac{7}{6}$$

$$1\frac{2}{6} + 2\frac{5}{6} \neq \frac{7}{6}$$

Sample Response: 0 points

An expression is given.

$$1\frac{2}{6} + 2\frac{5}{6}$$

What is the value of the expression? Enter the number in the box.

4

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| | | |
|---|---|---------------------|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 0 | . | $\frac{\Box}{\Box}$ |

Notes on Scoring

This response earns no credit (0 points) because it identifies an incorrect value of the expression.

- The student may add $1+2$ to get 3 and $\frac{2}{6} + \frac{5}{6}$ to get $\frac{7}{6}$. The student then may replace $\frac{7}{6}$ with 1 instead of $1\frac{1}{6}$, and add 3 and 1.

$$\begin{aligned} &1\frac{2}{6} + 2\frac{5}{6} \\ &= (1 + 2) + \left(\frac{2}{6} + \frac{5}{6}\right) \\ &= 3 + \frac{7}{6} \quad \text{AND } \frac{7}{6} \neq 1 \\ &= 3 + 1 \\ &= 4 \end{aligned}$$

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