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<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Equation Item</td>
<td>Use the four operations with whole numbers to solve problems.</td>
<td>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)</td>
<td>---</td>
<td>1 point</td>
</tr>
<tr>
<td>2</td>
<td>Multiple Choice</td>
<td>Draw and identify lines and angles, and classify shapes by properties of their lines and angles.</td>
<td>Draw points, lines, line segments, rays, angles (right, acute, and obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. (4.G.1)</td>
<td>B</td>
<td>1 point</td>
</tr>
<tr>
<td>3</td>
<td>Graphic Response Item</td>
<td>Understand decimal notation for fractions, and compare decimal fractions limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.</td>
<td>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 $&gt;$, $=$, or $&lt;$, and justify the conclusions, e.g., by using a visual model. (4.NF.7)</td>
<td>---</td>
<td>2 points</td>
</tr>
<tr>
<td>4</td>
<td>Equation Item</td>
<td>Generalize place value understanding for multi-digit whole numbers less than or equal to 1,000,000.</td>
<td>Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right by applying concepts of place value, multiplication, or division. (4.NBT.1)</td>
<td>---</td>
<td>1 point</td>
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<tr>
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<tr>
<td>5</td>
<td>Multi-Select Item</td>
<td>Generalize place value understanding for multi-digit whole numbers less than or equal to 1,000,000.</td>
<td>Read and write multi-digit whole numbers using standard form, word form, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using &gt;, =, and &lt; symbols to record the results of comparisons. (4.NBT.2)</td>
<td>A, D</td>
<td>1 point</td>
</tr>
<tr>
<td>6</td>
<td>Graphic Response Item</td>
<td>Extend understanding of fraction equivalence and ordering limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.</td>
<td>Explain why a fraction $\frac{a}{b}$ is equivalent to a fraction $\frac{(n \times a)}{(n \times b)}$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. (4.NF.1)</td>
<td>---</td>
<td>1 point</td>
</tr>
<tr>
<td>7</td>
<td>Equation Item</td>
<td>Use the four operations with whole numbers to solve problems.</td>
<td>Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. (4.OA.1)</td>
<td>---</td>
<td>1 point</td>
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<tr>
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<tr>
<td>8</td>
<td>Multi-Select Item</td>
<td>Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. (Fractions need not be simplified).</td>
<td>Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. b. Understand a multiple of $\frac{a}{b}$ as a multiple of $\frac{1}{b}$, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express $3 \times (\frac{2}{5})$ as $6 \times (\frac{1}{5})$, recognizing this product as $\frac{6}{5}$. (In general, $n \times (\frac{a}{b}) = \frac{(n \times a)}{b}$. (4.NF.4b)</td>
<td>B, D, F</td>
<td>1 point</td>
</tr>
<tr>
<td>9</td>
<td>Equation Item</td>
<td>Geometric measurement: understand concepts of angle and measure angles.</td>
<td>Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure. (4.MD.7)</td>
<td>---</td>
<td>2 points</td>
</tr>
<tr>
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<tr>
<td>10</td>
<td>Equation Item</td>
<td>Use place value understanding and properties of operations to perform multi-digit arithmetic with whole numbers less than or equal to 1,000,000.</td>
<td>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)</td>
<td>---</td>
<td>1 point</td>
</tr>
<tr>
<td>11</td>
<td>Equation Item</td>
<td>Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. (Fractions need not be simplified).</td>
<td>Understand a fraction $\frac{a}{b}$ with $a &gt; 1$ as a sum of fractions $\frac{1}{b}$. 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. (4.NF.3c)</td>
<td>---</td>
<td>1 point</td>
</tr>
<tr>
<td>12</td>
<td>Table Item</td>
<td>Use the four operations with whole numbers to solve problems.</td>
<td>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)</td>
<td>---</td>
<td>1 point</td>
</tr>
<tr>
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<tr>
<td>13</td>
<td>Graphic Response Item</td>
<td>Extend understanding of fraction equivalence and ordering limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.</td>
<td>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 &gt;, =, or &lt;, and justify the conclusions, e.g., by using a visual fraction model. (4.NF.2)</td>
<td>---</td>
<td>2 points</td>
</tr>
<tr>
<td>14</td>
<td>Equation Item</td>
<td>Use place value understanding and properties of operations to perform multi-digit arithmetic with whole numbers less than or equal to 1,000,000.</td>
<td>Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (4.NBT.6)</td>
<td>---</td>
<td>2 points</td>
</tr>
<tr>
<td>15</td>
<td>Multiple Choice</td>
<td>Generate and analyze patterns.</td>
<td>Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way. (4.OA.5)</td>
<td>C</td>
<td>1 point</td>
</tr>
</tbody>
</table>
## Grade 4 Math Practice Test

### Content Summary and Answer Key

<table>
<thead>
<tr>
<th>Question No.</th>
<th>Item Type</th>
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<th>Answer Key</th>
<th>Points</th>
</tr>
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<tbody>
<tr>
<td>16</td>
<td>Equation Item</td>
<td>Understand decimal notation for fractions, and compare decimal fractions limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.</td>
<td>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)</td>
<td>---</td>
<td>1 point</td>
</tr>
<tr>
<td>17</td>
<td>Equation Item</td>
<td>Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.</td>
<td>Know relative sizes of the metric measurement units within one system of units. Metric units include kilometer, meter, centimeter, and millimeter; kilogram and gram; and liter and milliliter. Express a larger measurement unit in terms of a smaller unit. Record measurement conversions in a two-column table. For example, express the length of a 4-meter rope in centimeters. Because 1 meter is 100 times as long as a 1 centimeter, a two-column table of meters and centimeters includes the number pairs 1 and 100, 2 and 200, 3 and 300,... (4.MD.1)</td>
<td>---</td>
<td>1 point</td>
</tr>
<tr>
<td>18</td>
<td>Multiple Choice</td>
<td>Draw and identify lines and angles, and classify shapes by properties of their lines and angles.</td>
<td>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. (4.G.2)</td>
<td>D</td>
<td>1 point</td>
</tr>
<tr>
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<tr>
<td>19</td>
<td>Equation Item</td>
<td>Understand decimal notation for fractions, and compare decimal fractions limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.</td>
<td>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 $&gt;$, $=$, or $&lt;$, and justify the conclusions, e.g., by using a visual model. (4.NF.7)</td>
<td>---</td>
<td>1 point</td>
</tr>
<tr>
<td>20</td>
<td>Graphic Response Item</td>
<td>Geometric measurement: understand concepts of angle and measure angles.</td>
<td>Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. (4.MD.6)</td>
<td>---</td>
<td>1 point</td>
</tr>
<tr>
<td>21</td>
<td>Equation Item</td>
<td>Generalize place value understanding for multi-digit whole numbers less than or equal to 1,000,000.</td>
<td>Use place value understanding to round multi-digit whole numbers to any place through 1,000,000. (4.NBT.3)</td>
<td>---</td>
<td>1 point</td>
</tr>
<tr>
<td>22</td>
<td>Graphic Response Item</td>
<td>Draw and identify lines and angles, and classify shapes by properties of their lines and angles.</td>
<td>Draw points, lines, line segments, rays, angles (right, acute, and obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. (4.G.1)</td>
<td>---</td>
<td>1 point</td>
</tr>
<tr>
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</tr>
<tr>
<td>23</td>
<td>Inline Choice Item</td>
<td>Extend understanding of fraction equivalence and ordering limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.</td>
<td>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 $&gt;$, $=,$ or $&lt;$ and justify the conclusions, e.g., by using a visual fraction model. (4.NF.2)</td>
<td>---</td>
<td>1 point</td>
</tr>
<tr>
<td>24</td>
<td>Gap Match Item</td>
<td>Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.</td>
<td>Know relative sizes of the metric measurement units within one system of units. Metric units include kilometer, meter, centimeter, and millimeter; kilogram and gram; and liter and milliliter. Express a larger measurement unit in terms of a smaller unit. Record measurement conversions in a two-column table. For example, express the length of a 4-meter rope in centimeters. Because 1 meter is 100 times as long as 1 centimeter, a two-column table of meters and centimeters includes the number pairs 1 and 100, 2 and 200, 3 and 300, ... (4.MD.1)</td>
<td>---</td>
<td>1 point</td>
</tr>
</tbody>
</table>
Grade 4
Math
Practice Test

Question 1

Question and Scoring Guidelines
**Question 1**

Jayla has 15 stickers. Kiara has 3 times as many stickers as Jayla.

How many stickers does Kiara have? Enter the number in the box.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
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<td>7</td>
<td>8</td>
<td>9</td>
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<tr>
<td>0</td>
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</tbody>
</table>

**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**

**Exemplar Response**
- 45

**Other Correct Responses**
- Any equivalent value

For this item, a full-credit response includes:
- The correct value (1 point).
Grade 4
Math
Practice Test

Question 1

Sample Responses
Sample Response: 1 point

Jayla has 15 stickers. Kiara has 3 times as many stickers as Jayla.

How many stickers does Kiara have? Enter the number in the box.

45

Notes on Scoring

This response earns full credit (1 point) because the student correctly identified the number of stickers Kiara has.
- The student may have used repeated addition or multiplication.
  \[15 + 15 + 15 = 45\]
  \[3 \times 15 = 45\]
Sample Response: 1 point

Jayla has 15 stickers. Kiara has 3 times as many stickers as Jayla.

How many stickers does Kiara have? Enter the number in the box.

45.0

Notes on Scoring

This response earns full credit (1 point) because the student correctly identified the number of stickers Kiara has.

- The student may have used repeated addition or multiplication.
  \[15.0 + 15.0 + 15.0 = 45.0\]
  \[3 \times 15.0 = 45.0\]

While decimals are introduced in the standards in grade 4, students are not expected to be able to perform calculations using the four operations until grade 5. A student can earn credit in grade 4 by identifying an equivalent value to a correct response.
Sample Response: 0 points

Jayla has 15 stickers. Kiara has 3 times as many stickers as Jayla.

How many stickers does Kiara have? Enter the number in the box.

15

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly identify the number of stickers Kiara has.

- The student may have misread the number of stickers Jayla has as 5 and used the incorrect number when he/she multiplied.
  \[3 \times 5 = 15\]
Sample Response: 0 points

Jayla has 15 stickers. Kiara has 3 times as many stickers as Jayla.

How many stickers does Kiara have? Enter the number in the box.

5

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<tr>
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<td>9</td>
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</tbody>
</table>

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly identify the number of stickers Kiara has.

- The student may have thought Jayla’s 15 stickers were 3 times the number of stickers Kiara has and incorrectly set up the multiplication problem.

  \[
  3 \times \square = 15 \\
  15 \div 3 = \square \\
  15 \div 3 = 5
  \]
Grade 4
Math
Practice Test

Question 2

Question and Scoring Guidelines
Question 2

Which figure represents a line segment?

A. ●
B. ●●
C. ● →
D. ← →

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, and obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. (4.G.1)
Scoring Guidelines

Rationale for Option A: This is incorrect. The student may have thought that a line segment is an exact location in space.

Rationale for Option B: Key – The student identified that a line segment is part of a line with two endpoints.

Rationale for Option C: This is incorrect. The student may have thought that a line segment is a line with one endpoint that continues indefinitely in the other direction.

Rationale for Option D: This is incorrect. The student may have thought that a line segment is a straight path of points that has no endpoints.

Sample Response: 1 point

Which figure represents a line segment?

A

B

C

D
Grade 4 Math Practice Test

Question 3

Question and Scoring Guidelines
**Question 3**

Natalie and Wyatt are hiking. Natalie hikes for 1.5 miles and Wyatt hikes for 1.3 miles.

A. Select a mark on each number line to show the distances, in miles, that Natalie and Wyatt hike.

B. Select the symbol that completes the comparison for Natalie’s and Wyatt’s hikes.

**Points Possible: 2**

**Content Cluster:** Understand decimal notation for fractions, and compare decimal fractions limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.

**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

Exemplar Response

A.

Natalie

Wyatt

B.

Distance Natalie Hikes > Distance Wyatt Hikes

Other Correct Responses

- N/A

For this item, a full-credit (2 point) response includes:

- Two correct number lines in Part A (1 point);

AND

- The correct symbol in Part B (1 point).
Grade 4
Math
Practice Test

Question 3

Sample Responses
Sample Response: 2 points

Natalie and Wyatt are hiking. Natalie hikes for 1.5 miles and Wyatt hikes for 1.3 miles.

A. Select a mark on each number line to show the distances, in miles, that Natalie and Wyatt hike.

B. Select the symbol that completes the comparison for Natalie’s and Wyatt’s hikes.

Notes on Scoring

This response earns full credit (2 points) because it created a correct number line to represent the distance, in miles, that Wyatt and Natalie hiked in Part A, and it selected the correct symbol to use to create a correct comparison in Part B.
Sample Response: 1 point

Natalie and Wyatt are hiking. Natalie hikes for 1.5 miles and Wyatt hikes for 1.3 miles.

A. Select a mark on each number line to show the distances, in miles, that Natalie and Wyatt hike.

B. Select the symbol that completes the comparison for Natalie’s and Wyatt’s hikes.

Notes on Scoring

This response earns partial credit (1 point) because it created a correct number line to represent the distance, in miles, that Wyatt and Natalie hiked in Part A, but it selected an incorrect symbol to use and thus created an incorrect comparison in Part B.

- The student may have thought that Wyatt hiked more miles because Wyatt’s number line is closer to 1 mile than Natalie’s.
Sample Response: 1 point

Natalie and Wyatt are hiking. Natalie hikes for 1.5 miles and Wyatt hikes for 1.3 miles.

A. Select a mark on each number line to show the distances, in miles, that Natalie and Wyatt hike.

B. Select the symbol that completes the comparison for Natalie’s and Wyatt’s hikes.

Notes on Scoring

This response earns partial credit (1 point) because it created an incorrect number line to represent the distance, in miles, that Wyatt and Natalie hiked in Part A, but it used the correct symbol to use to create a correct comparison in Part B.

- The student may have thought that Wyatt hiked 1.2 miles instead of 1.3 miles.
Sample Response: 0 points

Natalie and Wyatt are hiking. Natalie hikes for 1.5 miles and Wyatt hikes for 1.3 miles.

A. Select a mark on each number line to show the distances, in miles, that Natalie and Wyatt hike.

B. Select the symbol that completes the comparison for Natalie’s and Wyatt’s hikes.

A.

Natalie’s Hike (miles)

Wyatt’s Hike (miles)

B.

Distance Natalie Hikes \(<\) Distance Wyatt Hikes

Notes on Scoring

This response earns no credit (0 points) because it created an incorrect number line to represent the distance, in miles, that Wyatt and Natalie hiked in Part A, and it selected an incorrect symbol to use and thus created an incorrect comparison in Part B.

- The student created both number lines incorrectly by switching the distances that Wyatt and Natalie hiked.
- The student may have created an incorrect comparison based on the distances that Wyatt and Natalie hiked being switched on the number lines.
Sample Response: 0 points

Natalie and Wyatt are hiking. Natalie hikes for 1.5 miles and Wyatt hikes for 1.3 miles.

A. Select a mark on each number line to show the distances, in miles, that Natalie and Wyatt hike.

B. Select the symbol that completes the comparison for Natalie’s and Wyatt’s hikes.

---

Notes on Scoring

This response earns no credit (0 points) because it created an incorrect number line to represent the distance, in miles, that Wyatt and Natalie hiked in Part A, and it selected an incorrect symbol to use and thus created an incorrect comparison in Part B.

- The student created an incorrect number line that showed Wyatt hiking 1.2 miles instead of 1.3 miles.
- The student may have thought that Wyatt hiked more miles because Wyatt’s number line was closer to 1 mile than Natalie’s.
Grade 4
Math
Practice Test

Question 4

Question and Scoring Guidelines
Question 4

Abby writes the number 5,368 on her paper.

Camilla also writes a number, as follows:

- It is bigger than 1,000 and smaller than 10,000.
- Only one digit is a 6.
- The value of the 6 is 10 times the value of the 6 in Abby’s number.

Enter a whole number that Camilla could have written.

Points Possible: 1

Content Cluster: Generalize place value understanding for multi-digit whole numbers less than or equal to 1,000,000.

Content Standard: Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right by applying concepts of place value, multiplication, or division. (4.NBT.1)
Scoring Guidelines

Exemplar Response
- 3,695

Other Correct Responses
- Any whole number between 1,000 and 10,000 where one digit is 6, and the 6 is in the hundreds place

For this item, a full-credit response includes:
- A correct value (1 point).
Grade 4
Math
Practice Test

Question 4

Sample Responses
Sample Response: 1 point

Abby writes the number 5,368 on her paper.

Camilla also writes a number, as follows:

- It is bigger than 1,000 and smaller than 10,000.
- Only one digit is a 6.
- The value of the 6 is 10 times the value of the 6 in Abby’s number.

Enter a whole number that Camilla could have written.

9650

Notes on Scoring

This response earns full credit (1 point) because the student correctly identified a number Camilla could have written.
Sample Response: 1 point

Abby writes the number 5,368 on her paper.

Camilla also writes a number, as follows:

- It is bigger than 1,000 and smaller than 10,000.
- Only one digit is a 6.
- The value of the 6 is 10 times the value of the 6 in Abby’s number.

Enter a whole number that Camilla could have written.

1600

Notes on Scoring

This response earns full credit (1 point) because the student correctly identified a number Camilla could have written.
Sample Response: 0 points

Abby writes the number 5,368 on her paper.

Camilla also writes a number, as follows:

• It is bigger than 1,000 and smaller than 10,000.
• Only one digit is a 6.
• The value of the 6 is 10 times the value of the 6 in Abby’s number.

Enter a whole number that Camilla could have written.

6605

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly identify a number Camilla could have written.

• The student may have thought that there could be more than one 6 in the number.
Sample Response: 0 points

Abby writes the number 5,368 on her paper.

Camilla also writes a number, as follows:

- It is bigger than 1,000 and smaller than 10,000.
- Only one digit is a 6.
- The value of the 6 is 10 times the value of the 6 in Abby’s number.

Enter a whole number that Camilla could have written.

5386

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly identify a number Camilla could have written.

- The student may have thought that the 6 in Abby’s number was supposed to be 10 times the value of the 6 in Camilla’s number.
Grade 4
Math
Practice Test

Question 5

Question and Scoring Guidelines
Question 5

Select the two correct representations of the number “one thousand, twenty five.”

☐ $1,000 + 20 + 5$
☐ $1,000 \times 20 \times 5$
☐ $1,000 + 200 + 5$
☐ $1,025$
☐ $1,205$
☐ $1,250$

Points Possible: 1

Content Strand: Generalize place value understanding for multi-digit whole numbers less than or equal to 1,000,000.

Content Standard: Read and write multi-digit whole numbers using standard form, word form, 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

Rationale for First Option: Key – The student correctly identified the number in expanded form.

Rationale for Second Option: This is incorrect. The student may have confused addition and multiplication when working on expanded form.

Rationale for Third Option: This is incorrect. The student may have mistaken the place value of the middle number.

Rationale for Fourth Option: Key – The student correctly identified the number in numerical form.

Rationale for Fifth Option: This is incorrect. The student may have confused the place values in numeric form.

Rationale for Sixth Option: This is incorrect. The student may have confused the place values in numeric form.

Sample Response: 1 point

Select the two correct representations of the number “one thousand, twenty five.”

- 1,000 + 20 + 5
- 1,000 × 20 × 5
- 1,000 + 200 + 5
- 1,025
- 1,205
- 1,250
Question 6

Question and Scoring Guidelines
Question 6

An unshaded fraction model is shown.
Select sections of the model to represent a fraction equivalent to 10/12.

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

Points Possible: 1

Content Cluster: Extend understanding of fraction equivalence and ordering limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.

Content Standard: Explain why a fraction \( \frac{a}{b} \) is equivalent to a fraction \( \frac{(n \times a)}{(n \times b)} \) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. (4.NF.1)
Scoring Guidelines

Exemplar Response

Other Correct Responses
- Any equivalent model

For this item, a full-credit response includes:
- A correct model (1 point).
Grade 4
Math
Practice Test

Question 6

Sample Responses
Sample Response: 1 point

An unshaded fraction model is shown.
Select sections of the model to represent a fraction equivalent to \( \frac{10}{12} \).
- There may be more than one way to show a correct answer.

Notes on Scoring

This response earns full credit (1 point) because the student correctly shaded a fraction model that represents a fraction equivalent to \( \frac{10}{12} \).
- The student may have divided \( \frac{10}{12} \) by \( \frac{2}{2} \) to find an equivalent fraction to \( \frac{10}{12} \).
  \[
  \frac{10}{12} = \frac{10 \div 2}{12 \div 2} = \frac{5}{6}
  \]
- The student may have created equivalent fraction models.

While the example shows the lower right tile unshaded, the student could have shaded any 5 out of the 6 tiles.
Sample Response: 1 point

An unshaded fraction model is shown. Select sections of the model to represent a fraction equivalent to $\frac{10}{12}$.

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

Notes on Scoring

This response earns full credit (1 point) because the student correctly shaded a fraction model that represents a fraction equivalent to $\frac{10}{12}$.

- The student may have divided $\frac{10}{12}$ by $\frac{2}{2}$ to find an equivalent fraction to $\frac{10}{12}$.

\[
\frac{10}{12} \div \frac{2}{2} = \frac{5}{6}
\]

- The student may have created equivalent fraction models.

While the example shows the bottom middle tile unshaded, the student could have shaded any 5 out of the 6 tiles.
Sample Response: 0 points

An unshaded fraction model is shown.

Select sections of the model to represent a fraction equivalent to \( \frac{10}{12} \).

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

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly shade the fraction model to represent a fraction equivalent to \( \frac{10}{12} \).

• The student may have thought that the fraction model shown represented a portion of a whole model of \( \frac{12}{12} \) instead of a whole model of \( \frac{6}{6} \). The student may have labeled all 6 squares or \( \frac{6}{12} \) of an incomplete model because he/she thought there was another part of the model not being shown.
Sample Response: 0 points

An unshaded fraction model is shown.
Select sections of the model to represent a fraction equivalent to \(\frac{10}{12}\).

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

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly shade the fraction model to represent a fraction equivalent to \(\frac{10}{12}\).

- The student may have thought that the fraction model shown was supposed to represent \(\frac{5}{6}\) unshaded.
Grade 4 Math Practice Test

Question 7

Question and Scoring Guidelines
This year, a school collected 1,160 donations for a local charity. Last year, the school collected \( d \) donations. This year’s donations are 8 times as many as last year’s.

Create a multiplication equation, using \( d \), that can be used to find how many donations the school collected last year. Enter the multiplication equation in the box.

**Points Possible:** 1

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

**Content Standard:** Interpret a multiplication equation as a comparison, e.g., interpret \( 35 = 5 \times 7 \) as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. (4.OA.1)
Scoring Guidelines

Exemplar Response
- \( 1160 = 8 \times d \)

Other Correct Responses
- Any equivalent multiplication equation

For this item, a full-credit response includes:
- A correct equation (1 point).
Grade 4
Math
Practice Test

Question 7

Sample Responses
Sample Response: 1 point

This year, a school collected 1,160 donations for a local charity. Last year, the school collected $d$ donations. This year’s donations are 8 times as many as last year’s.

Create a multiplication equation, using $d$, that can be used to find how many donations the school collected last year. Enter the multiplication equation in the box.

$8d = 1160$

Notes on Scoring

This response earns full credit (1 point) because the student created a correct multiplication equation that can be used to find out how many donations the school collected last year.
Sample Response: 1 point

This year, a school collected 1,160 donations for a local charity. Last year, the school collected $d$ donations. This year’s donations are 8 times as many as last year’s.

Create a multiplication equation, using $d$, that can be used to find how many donations the school collected last year. Enter the multiplication equation in the box.

$$1160 = 8 \times d$$

Notes on Scoring

This response earns full credit (1 point) because the student created a correct multiplication equation that can be used to find out how many donations the school collected last year.
Sample Response: 0 points

This year, a school collected 1,160 donations for a local charity. Last year, the school collected \( d \) donations. This year's donations are 8 times as many as last year's.

Create a multiplication equation, using \( d \), that can be used to find how many donations the school collected last year. Enter the multiplication equation in the box.

145

Notes on Scoring

This response earns no credit (0 points) because the student did not provide a multiplication equation that can be used to find out how many donations the school collected last year.

- The student may have thought that he/she was supposed to solve for the unknown value instead of to provide the multiplication equation.

\[
8 \times d = 1160 \\
1160 \div 8 = \square \\
1160 \div 8 = 145
\]
Sample Response: 0 points

This year, a school collected 1,160 donations for a local charity. Last year, the school collected $d$ donations. This year’s donations are 8 times as many as last year’s. Create a multiplication equation, using $d$, that can be used to find how many donations the school collected last year. Enter the multiplication equation in the box.

\[
\frac{1160}{d} = 8
\]

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>+</th>
<th>-</th>
<th>×</th>
<th>÷</th>
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<td>8</td>
<td>9</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>0</td>
<td>.</td>
<td>÷</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes on Scoring

This response earns no credit (0 points) because the student did not provide a multiplication equation that can be used to find out how many donations the school collected last year.

- The student may have thought that he/she was supposed to set up a division equation to find out how many donations the school collected last year.
Grade 4
Math
Practice Test

Question 8

Question and Scoring Guidelines
Question 8

Select the three expressions that have a product of $\frac{6}{12}$.

- $3 \times \frac{2}{4}$
- $3 \times \frac{2}{12}$
- $\frac{5 \times 1}{12}$
- $6 \times \frac{1}{12}$
- $6 \times \frac{1}{2}$
- $6 \times \frac{1}{12}$

Points Possible: 1

Content Cluster: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. (Fractions need not be simplified).

Content Standard: Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

b. Understand a multiple of $\frac{a}{b}$ as a multiple of $\frac{1}{b}$, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express $3 \times \left(\frac{2}{5}\right)$ as $6 \times \left(\frac{1}{5}\right)$, recognizing this product as $\frac{6}{5}$. (In general, $n \times \left(\frac{a}{b}\right) = \left(\frac{n \times a}{b}\right)$.) (4.NF.4b)
Scoring Guidelines

Rationale for First Option: This is incorrect. The student may have thought that both the numerator and the denominator should be multiplied by the whole number.

Rationale for Second Option: Key - The student correctly identified an expression with the given product.

Rationale for Third Option: This is incorrect. The student may have thought that the expression in the numerator represented addition instead of multiplication.

Rationale for Fourth Option: Key - The student correctly identified an expression with the given product.

Rationale for Fifth Option: This is incorrect. The student may have thought that both the numerator and the denominator should be multiplied by the whole number.

Rationale for Sixth Option: Key - The student correctly identified an expression with the given product.

Sample Response: 1 point

Select the three expressions that have a product of $\frac{6}{12}$.

- $3 \times \frac{2}{4}$
- $3 \times \frac{2}{12}$
- $\frac{5}{12}$
- $6 \times \frac{1}{12}$
- $6 \times \frac{1}{2}$
- $6 \times \frac{1}{12}$
Question 9

Some angles are shown along line QRS.

A. What is the sum, in degrees, of the measures of $\angle QRT$ and $\angle URS$? Enter the number in the first box.

B. What is the measure, in degrees, of $\angle TRU$? Enter the number in the second box.

A. [ ] degrees

B. [ ] degrees

Points Possible: 2

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

**Content Standard:** Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure. (4.MD.7)
Scoring Guidelines

Exemplar Response

- A. 155 degrees
- B. 25 degrees

Other Correct Responses

- Any equivalent values
- Partial credit is given for a correct Part B based on an incorrect Part A, i.e. Part B = 180 – (Part A)

For this item, a full-credit response includes:

- One correct value (1 point);
  AND
- Another correct value (1 point).
Grade 4
Math
Practice Test

Question 9

Sample Responses
Sample Response: 2 points

Some angles are shown along line QRS.

A. What is the sum, in degrees, of the measures of $\angle QRT$ and $\angle URS$? Enter the number in the first box.

B. What is the measure, in degrees, of $\angle TRU$? Enter the number in the second box.

$A. \ 155 \ degrees$

$B. \ 25 \ degrees$
Notes on Scoring

This response earns full credit (2 points) because the student correctly identified the sum of $\angle QRT$ and $\angle URS$ and the measure of $\angle TRU$.

- The student may have found the sum of $\angle QRT$ and $\angle URS$ using addition.
  \[
  \angle QRT = 20^\circ \text{ and } \angle URS = 135^\circ \\
  20^\circ + 135^\circ = 155^\circ
  \]

- The student may have used mathematical reasoning about lines to figure out the measure of $\angle QRS$ and then set up a multi-step equation to find the measure of $\angle TRU$.

A line is $180^\circ$. The first sentence states, $\angle QRS$ is a line; therefore, the measure of $\angle QRS = 180^\circ$.

\[
\begin{align*}
\angle QRS &= 180^\circ \\
\angle QRT &= 20^\circ \\
\angle URS &= 135^\circ \\
\angle TRU &= \square \\
20^\circ + \square + 135^\circ &= 180^\circ \\
20^\circ + 135^\circ + \square &= 180^\circ \\
155^\circ + \square &= 180^\circ \\
\square &= 180^\circ - 155^\circ \\
\square &= 25^\circ \\
\text{Measure of } \angle TRU &= 25^\circ
\end{align*}
\]
Sample Response: 1 point

Some angles are shown along line QRS.

A. What is the sum, in degrees, of the measures of \( \angle QRT \) and \( \angle URS \)? Enter the number in the first box.

B. What is the measure, in degrees, of \( \angle TRU \)? Enter the number in the second box.

A. 155 degrees
B. 180 degrees
Notes on Scoring

This response earns partial credit (1 point) because the student correctly identified the sum of \( \angle QRT \) and \( \angle URS \) but not the measure of \( \angle TRU \).

- The student may have found the sum of \( \angle QRT \) and \( \angle URS \) using addition.
  \[ \angle QRT = 20^\circ \text{ and } \angle URS = 135^\circ \]
  \[ 20^\circ + 135^\circ = 155^\circ \]

- The student may have used incorrect reasoning to determine that the measure of \( \angle QRS \) was equal to the measure of \( \angle TRU \).
  A line is 180°. The first sentence states, \( \angle QRS \) is a line; therefore, the measure of \( \angle QRS = 180^\circ \).
  \[ \angle QRS \neq \angle TRU \]
  \[ 180^\circ = \square \]
  \[ 180^\circ = 180^\circ \]

Measure of \( \angle TRU \neq 180^\circ \)
Sample Response: 1 point

A. What is the sum, in degrees, of the measures of $\angle QRT$ and $\angle URS$? Enter the number in the first box.

B. What is the measure, in degrees, of $\angle TRU$? Enter the number in the second box.

A. $\boxed{180}$ degrees
B. $\boxed{25}$ degrees
Notes on Scoring

This response earns partial credit (1 point) because the student did not correctly identify the sum of $\angle QRT$ and $\angle URS$ but correctly identified the measure of $\angle TRU$.

- The student may have used mathematical reasoning about lines to figure out the measure of $\angle QRS$ but used incorrect reasoning to determine that the measure of $\angle QRS$ was equal to the sum of $\angle QRT$ and $\angle URS$.
A line is 180°. The first sentence states, $\angle QRS$ is a line; therefore, the measure of $\angle QRS = 180°$.

$\angle QRS \neq \angle QRT + \angle URS$

$180° = \square$

$180° = 180°$

$\angle QRT + \angle URS \neq 180°$

- The student may have used mathematical reasoning about lines to figure out the measure of $\angle QRS$ and then set up a multi-step equation to find the measure of $\angle TRU$.

$\angle QRS = 180°; \angle QRT = 20°; \angle URS = 135°; \angle TRU = \square$

$20° + \square + 135° = 180°$

$20° + 135° + \square = 180°$

$155° + \square = 180°$

$\square = 180° - 155°$

$\square = 25°$

Measure of $\angle TRU = 25°$
Sample Response: 1 point

Some angles are shown along line QRS.

A. What is the sum, in degrees, of the measures of $\angle QRT$ and $\angle URS$? Enter the number in the first box.

B. What is the measure, in degrees, of $\angle TRU$? Enter the number in the second box.

A. 145 degrees

B. 35 degrees
Notes on Scoring

This response earns partial credit (1 point) because the student did not correctly identify the sum of $\angle QRT$ and $\angle URS$ but correctly identified the measure of $\angle TRU$ based on the error carried through from Part A.

- The student may have found the incorrect sum of $\angle QRT$ and $\angle URS$ using addition.
  
  \[
  \angle QRT \neq 10^\circ \text{ and } \angle URS = 135^\circ \\
  10^\circ + 135^\circ = 145^\circ \\
  \angle QRT + \angle URS \neq 145^\circ
  \]

- The student may have used mathematical reasoning about lines to figure out the measure of $\angle QRS$ and then set up a multi-step equation to find the measure of $\angle TRU$, using a value based on an error carried through from Part A.
  
  \[
  \angle QRS = 180^\circ ; \angle QRT \neq 10^\circ ; \angle URS = 135^\circ ; \angle TRU = \Box \\
  10^\circ + \Box + 135^\circ = 180^\circ \\
  10^\circ + 135^\circ + \Box = 180^\circ \\
  145^\circ + \Box = 180^\circ \\
  \Box = 180^\circ - 145^\circ \\
  \Box = 35^\circ
  \]

  Measure of $\angle TRU = 35^\circ$
Sample Response: 0 points

Some angles are shown along line QRS.

A. What is the sum, in degrees, of the measures of $\angle QRT$ and $\angle URS$? Enter the number in the first box.

B. What is the measure, in degrees, of $\angle TRU$? Enter the number in the second box.

A. 180 degrees
B. 155 degrees
Notes on Scoring

This response earns no credit (0 points) because the student did not correctly identify the sum of \( \angle QRT \) and \( \angle URS \) and did not correctly identify the measure of \( \angle TRU \).

- The student may have used mathematical reasoning about lines to figure out the measure of \( \angle QRS \) but used incorrect reasoning to determine that the measure of \( \angle QRS \) was equal to the sum of \( \angle QRT \) and \( \angle URS \).
  
  A line is 180°. The first sentence states, \( \angle QRS \) is a line; therefore, the measure of \( \angle QRS = 180° \).

  \[
  \angle QRS = 180° \text{ and } \angle QRT + \angle URS = \angle QRS
  \]

  \[
  180° = \angle QRS = \angle QRT + \angle URS
  \]

  \[
  180° = 180°
  \]

  Sum of \( \angle QRT + \angle URS = 180° \)

- The student may have used addition to find the sum of \( \angle QRT \) and \( \angle URS \) and incorrectly identified the sum of \( \angle QRT \) and \( \angle URS \) as equal to the measure of \( \angle TRU \).

  \[
  \angle QRT = 20°; \angle URS = 135°; \angle TRU = \angle QRT + \angle URS
  \]

  \[
  20° + 135° = 155° = \angle TRU
  \]

  \[
  \text{Measure of } \angle TRU \neq 155°
  \]
Sample Response: 0 points

Some angles are shown along line QRS.

A. What is the sum, in degrees, of the measures of \( \angle QRT \) and \( \angle URS \)? Enter the number in the first box.

B. What is the measure, in degrees, of \( \angle TRU \)? Enter the number in the second box.

A. \( \boxed{115} \) degrees

B. \( \boxed{45} \) degrees
Notes on Scoring

This response earns no credit (0 points) because the student did not correctly identify the sum of \(\angle QRT\) and \(\angle URS\) and did not correctly identify the measure of \(\angle TRU\).

- The student may have subtracted \(\angle QRT\) from \(\angle URS\), instead of finding the sum.
  \[
  \angle QRT = 20^\circ \text{ and } \angle URS = 135^\circ \\
  135^\circ - 20^\circ = 115^\circ 
  \]

- The student may have used mathematical reasoning about lines to figure out the measure of \(\angle QRS\) and then set up an incorrect addition equation to find the measure of \(\angle TRU\), omitting the measure of \(\angle QRT\).

A line is \(180^\circ\). The first sentence states, \(\angle QRS\) is a line; therefore, the measure of \(\angle QRS = 180^\circ\).

\[
\angle QRS = 180^\circ \text{; } \angle URS = 135^\circ \text{; } \angle TRU = \square \\
\angle URS + \angle TRU = \angle QRS \\
135^\circ + \square = 180^\circ \\
\square = 180^\circ - 135^\circ \\
\square = 45^\circ 
\]

Measure of \(\angle TRU \neq 45^\circ\)
Grade 4
Math
Practice Test

Question 10

Question and Scoring Guidelines
Question 10

A model is shown.

What is the product represented by the model? Enter the product in the box.

Points Possible: 1

**Content Cluster:** Use place value understanding and properties of operations to perform multi-digit arithmetic with whole numbers less than or equal to 1,000,000.

**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
• 625

Other Correct Responses
• Any equivalent value

For this item, a full-credit response includes:
• A correct value (1 point).
Grade 4
Math
Practice Test

Question 10

Sample Responses
A model is shown.

What is the product represented by the model? Enter the product in the box.

625
**Notes on Scoring**

This response earns full credit (1 point) because the student correctly identified the product represented by the model.

- The student may have solved the problem by using the area model to find partial products and then found the sum of the partial products.

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<th></th>
<th>20</th>
<th>5</th>
</tr>
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<tbody>
<tr>
<td>5</td>
<td>×5</td>
<td>×5</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>25</td>
</tr>
</tbody>
</table>

<table>
<thead>
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</tr>
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<tbody>
<tr>
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<td>×5</td>
</tr>
<tr>
<td>400</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

\[200 + 25 = 225\]
Sample Response: 1 point

A model is shown.

What is the product represented by the model? Enter the product in the box.

625.0
Notes on Scoring

This response earns full credit (1 point) because the student correctly identified the product represented by the model.

- The student may have solved the problem by finding partial products and the sum of the partial products without using the area model.

\[
\begin{align*}
25.0 &= (20 + 5) \\
\times 25.0 &= (20 + 5) \\
25.0 &= 5.0 \times 5.0 \\
100.0 &= 5.0 \times 20.0 \\
100.0 &= 20.0 \times 5.0 \\
400.0 &= 20.0 \times 20.0 \\
\end{align*}
\]

While decimals are introduced in the standards in grade 4, students are not expected to be able to perform calculations using the four operations until grade 5. A student can earn credit in grade 4 by identifying an equivalent value to a correct response.
A model is shown.

What is the product represented by the model? Enter the product in the box.

425
Notes on Scoring

This response earns no credit (0 points) because the student did not correctly identify the product represented by the model.

- The student may have solved the problem by using the area model to find partial products but omitted two of the partial products.

```
  5
  x 5
  ___
  25

  20
  x 20
  ___
  400

  20
  x 5
  ___
  25

400 + 25 = 425

25 x 25 ≠ 425
```
A model is shown.

What is the product represented by the model? Enter the product in the box.

100
Notes on Scoring

This response earns no credit (0 points) because the student did not correctly identify the product represented by the model.

- The student may have solved the problem by using the area model to find the sum of each rectangle and adding the sums together.

\[
\begin{array}{ccc}
5 & 20 & 5 \\
+5 & +5 \\
25 & 10
\end{array}
\]

\[
\begin{array}{ccc}
20 & 20 & +10 \\
+20 & +5 \\
40 & 25 & 25 \times 25 \neq 100
\end{array}
\]

\[
\begin{array}{cc}
20 & 5
\end{array}
\]
Grade 4
Math Practice Test

Question 11

Question and Scoring Guidelines
Question 11

Theresa has $2\frac{2}{3}$ cups of rice. She uses $1\frac{1}{3}$ cups for a recipe.

How many cups of rice does Theresa have left? Enter the number in the box.

\[ \text{cups} \]

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Points Possible: 1

Content Cluster: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. (Fractions need not be simplified).

Content Standard: Understand a fraction $\frac{a}{b}$ with $a > 1$ as a sum of fractions $\frac{1}{b}$.

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. (4.NF.3c)
Scoring Guidelines

Exemplar Response

- $1\frac{1}{3}$ cups

Other Correct Responses

- Any equivalent fraction

For this item, a full-credit response includes:

- A correct fraction (1 point).
Sample Response: 1 point

Theresa has $2\frac{2}{3}$ cups of rice. She uses $1\frac{1}{3}$ cups for a recipe.

How many cups of rice does Theresa have left? Enter the number in the box.

\[
1\frac{1}{3} \quad \text{cups}
\]

Notes on Scoring

This response earns full credit (1 point) because the student correctly identified the number of cups Theresa has left.

- The student may have solved the problem using subtraction.

\[
2\frac{2}{3} - 1\frac{1}{3} = 1\frac{1}{3}
\]
Sample Response: 1 point

Theresa has $2 \frac{2}{3}$ cups of rice. She uses $1 \frac{1}{3}$ cups for a recipe.

How many cups of rice does Theresa have left? Enter the number in the box.

\[
\frac{4}{3}
\]

cups

Notes on Scoring

This response earns full credit (1 point) because the student correctly identified the number of cups Theresa has left.

- The student may have converted the mixed numbers into improper fractions and solved the problem using subtraction.

\[
\frac{2}{3} = \frac{8}{3} \quad \text{and} \quad 1\frac{1}{3} = \frac{4}{3}
\]

\[
\frac{8}{3} - \frac{4}{3} = \frac{4}{3}
\]

While it may be convenient for students to place fractions in simplest form to help with problem solving, students are not required to place fractions in simplest form. A student can earn credit by identifying an equivalent value to a correct response.
Sample Response: 0 points

Theresa has \(2 \frac{2}{3}\) cups of rice. She uses \(1 \frac{1}{3}\) cups for a recipe.

How many cups of rice does Theresa have left? Enter the number in the box.

\[
\begin{array}{c}
\frac{1}{0} \\
\end{array}
\]

cups

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly identify the number of cups Theresa has left.

- The student may have solved the problem by subtracting incorrectly.

\[
\frac{2}{3} - \frac{1}{3} \neq \frac{1}{0}
\]
Sample Response: 0 points

Theresa has $2\frac{2}{3}$ cups of rice. She uses $1\frac{1}{3}$ cups for a recipe.

How many cups of rice does Theresa have left? Enter the number in the box.

\[
\frac{4}{0} \quad \text{cups}
\]

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly identify the number of cups Theresa has left.

- The student may have converted the mixed numbers to improper fractions, and then solved the problem by subtracting incorrectly.

\[
\frac{2}{3} = \frac{8}{3} \quad \text{and} \quad \frac{1}{3} = \frac{4}{3}
\]

\[
\frac{8}{3} - \frac{4}{3} = \frac{4}{3}
\]

\[
\frac{4}{3} = \frac{4}{3} \quad \text{and} \quad \frac{4}{3} = \frac{4}{3}
\]
Grade 4 Math Practice Test

Question 12

Question and Scoring Guidelines
Question 12

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.

<table>
<thead>
<tr>
<th>Poster Size</th>
<th>Price</th>
<th>Number of Posters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>$7</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>$11</td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>$13</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Poster Size</th>
<th>Price</th>
<th>Number of Posters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>$7</td>
<td>4</td>
</tr>
<tr>
<td>Medium</td>
<td>$11</td>
<td>3</td>
</tr>
<tr>
<td>Large</td>
<td>$13</td>
<td>3</td>
</tr>
</tbody>
</table>

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
Practice Test
Question 12
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.

<table>
<thead>
<tr>
<th>Poster Size</th>
<th>Price</th>
<th>Number of Posters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>$7</td>
<td>4</td>
</tr>
<tr>
<td>Medium</td>
<td>$11</td>
<td>3</td>
</tr>
<tr>
<td>Large</td>
<td>$13</td>
<td>3</td>
</tr>
</tbody>
</table>
Notes on Scoring

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

- The student may have used a table to find a combination of $7, $11, and $13 posters that totaled $100.

<table>
<thead>
<tr>
<th>Poster Size</th>
<th>Price</th>
<th>Number of Posters</th>
<th>Multiples of 7, 11, and 13</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>$7</td>
<td>4</td>
<td>7, 14, 21, 28, 35, 42, 49</td>
<td>$28</td>
</tr>
<tr>
<td>Medium</td>
<td>$11</td>
<td>3</td>
<td>11, 22, 33, 44, 55</td>
<td>$33</td>
</tr>
<tr>
<td>Large</td>
<td>$13</td>
<td>3</td>
<td>13, 26, 39, 52</td>
<td>$39</td>
</tr>
</tbody>
</table>

\[
28 + 33 + 39 = (28 + 33) + 39 = (61) + 39 = 100
\]
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.

<table>
<thead>
<tr>
<th>Poster Size</th>
<th>Price</th>
<th>Number of Posters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>$ 7</td>
<td>3</td>
</tr>
<tr>
<td>Medium</td>
<td>$11</td>
<td>6</td>
</tr>
<tr>
<td>Large</td>
<td>$13</td>
<td>1</td>
</tr>
</tbody>
</table>
Notes on Scoring

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

- The student may have used a table to find a combination of $7, $11, and $13 posters that totaled $100.

<table>
<thead>
<tr>
<th>Poster Size</th>
<th>Price</th>
<th>Number of Posters</th>
<th>Multiples of 7, 11, and 13</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>$7</td>
<td>3</td>
<td>7, 14, 21, 28, 35, 42, 49, 56, 63, 70</td>
<td>$21</td>
</tr>
<tr>
<td>Medium</td>
<td>$11</td>
<td>6</td>
<td>11, 22, 33, 44, 55, 66, 77</td>
<td>$66</td>
</tr>
<tr>
<td>Large</td>
<td>$13</td>
<td>1</td>
<td>13, 26, 39, 52, 65, 78</td>
<td>$13</td>
</tr>
</tbody>
</table>

\[21 + 66 + 13\]
\[= 21 + 13 + 66\]
\[= (21 + 13) + 66\]
\[= (34) + 66\]
\[= 100\]
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.

<table>
<thead>
<tr>
<th>Poster Size</th>
<th>Price</th>
<th>Number of Posters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>$7</td>
<td>10</td>
</tr>
<tr>
<td>Medium</td>
<td>$11</td>
<td>1</td>
</tr>
<tr>
<td>Large</td>
<td>$13</td>
<td>1</td>
</tr>
</tbody>
</table>
Notes on Scoring

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

- The student may have used a table to choose values for the posters that totaled less than $100 instead of exactly $100.

\[
70 + 11 + 13 \\
= 70 + (11 + 13) \\
= 70 + (24) \\
= 94 \\
94 \neq 100
\]
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.

<table>
<thead>
<tr>
<th>Poster Size</th>
<th>Price</th>
<th>Number of Posters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>$7</td>
<td>0</td>
</tr>
<tr>
<td>Medium</td>
<td>$11</td>
<td>3</td>
</tr>
<tr>
<td>Large</td>
<td>$13</td>
<td>5</td>
</tr>
</tbody>
</table>
Notes on Scoring

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

- The student may have used a table to choose values for the posters that totaled less than $100 instead of exactly $100.

<table>
<thead>
<tr>
<th>Poster Size</th>
<th>Price</th>
<th>Number of Posters</th>
<th>Multiples of 7, 11, and 13</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>$ 7</td>
<td>0</td>
<td>7, 14, 21, 28, 35, 42, 49, 56, 63, 70</td>
<td>$ 0</td>
</tr>
<tr>
<td>Medium</td>
<td>$11</td>
<td>3</td>
<td>11, 22, 33, 44, 55, 66, 77</td>
<td>$33</td>
</tr>
<tr>
<td>Large</td>
<td>$13</td>
<td>5</td>
<td>13, 26, 39, 52, 65, 78</td>
<td>$65</td>
</tr>
</tbody>
</table>

\[
0 + 33 + 65 \\
= 33 + 65 \\
= 98
\]

98 \neq 100
Grade 4
Math
Practice Test

Question 13

Question and Scoring Guidelines
Question 13

Two fractions and two unshaded fraction models are shown.

A. Select a symbol to complete the comparison of the two fractions.

B. Select parts of each fraction model to show the comparison completed in part A.

Points Possible: 2

Content Cluster: Extend understanding of fraction equivalence and ordering limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.

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**

A.

\[
\frac{3}{4} > \frac{4}{6}
\]

B.

For this item, a full-credit response includes:

- A correct comparison (1 point);
  AND
- Two correct fraction models (1 point).

**Other Correct Responses**

- Part B: Any 3 sections in the first model and any 4 sections in the second model can be selected.
Notes on Scoring

This response earns full credit (2 points) because the student correctly identified the symbol to complete the comparison of the two fractions and correctly modeled the comparison from Part A in Part B.

While the example in Part B shows the red fraction model on the left with the upper-right piece unshaded, the student could have shaded any 3 out of the 4 pieces.

While the example in Part B shows the blue fraction model on the right with the left-middle and the right-middle pieces unshaded, the student could have shaded any 4 out of the 6 pieces.
Sample Response: 2 points

Two fractions and two unshaded fraction models are shown.

A. Select a symbol to complete the comparison of the two fractions.

B. Select parts of each fraction model to show the comparison completed in part A.

Notes on Scoring

This response earns full credit (2 points) because the student correctly identified the symbol to complete the comparison of the two fractions and correctly modeled the comparison from Part A in Part B.

While the example in Part B shows the red fraction model on the left with the lower-left piece unshaded, the student could have shaded any 3 out of the 4 pieces.

While the example in Part B shows the blue fraction model on the right with the left-lower and the right-lower pieces unshaded, the student could have shaded any 4 out of the 6 pieces.
Sample Response: 1 point

Two fractions and two unshaded fraction models are shown.

A. Select a symbol to complete the comparison of the two fractions.

B. Select parts of each fraction model to show the comparison completed in Part A.

Notes on Scoring

This response earns partial credit (1 point) because the student did not identify the correct symbol to complete the comparison of the two fractions but correctly modeled the fractions from Part A in Part B.

- The student may have thought $\frac{3}{4} < \frac{4}{6}$ because the numerator in $\frac{4}{6}$ is greater than the numerator in $\frac{3}{4}$.

While the example in Part B shows the red fraction model on the left with the upper-right piece unshaded, the student could have shaded any 3 out of the 4 pieces.

While the example in Part B shows the blue fraction model on the right with the left-middle and the right-middle pieces unshaded, the student could have shaded any 4 out of the 6 pieces.
Sample Response: 1 point

Two fractions and two unshaded fraction models are shown.

A. Select a symbol to complete the comparison of the two fractions.

B. Select parts of each fraction model to show the comparison completed in part A.

Notes on Scoring

This response earns partial credit (1 point) because the student correctly identified the symbol to complete the comparison of the two fractions but incorrectly modeled the comparison from Part A in Part B.

- The student may have thought the fractions $\frac{3}{4}$ and $\frac{4}{6}$ represented the unshaded amount of the models.
Sample Response: 0 points

Two fractions and two unshaded fraction models are shown.
A. Select a symbol to complete the comparison of the two fractions.
B. Select parts of each fraction model to show the comparison completed in part A.

Notes on Scoring

This response earns no credit (0 points) because the student did not identify the correct symbol to complete the comparison of the two fractions and incorrectly modeled the comparison from Part A in Part B.

- The student may have incorrectly solved the problem by using subtraction to get $\frac{1}{2}$.
  $$\frac{4}{6} - \frac{3}{4} \neq \frac{1}{2}$$

- The student may have created equivalent fractions to $\frac{1}{2}$ and incorrectly compared those equivalent fractions to $\frac{1}{2}$.
  $$\frac{1}{2} = \frac{2}{4} \quad \text{and} \quad \frac{1}{2} = \frac{3}{6}$$
  $$\frac{4}{6} \neq \frac{3}{4}$$

- The student may have incorrectly identified $\frac{4}{6}$ and $\frac{3}{4}$ as fractions equivalent to $\frac{1}{2}$, therefore equal to each other.
  $$\frac{3}{4} \neq \frac{1}{2} \quad \text{and} \quad \frac{4}{6} \neq \frac{1}{2}$$
Sample Response: 0 points

Two fractions and two unshaded fraction models are shown.
A. Select a symbol to complete the comparison of the two fractions.
B. Select parts of each fraction model to show the comparison completed in part A.

Notes on Scoring

This response earns no credit (0 points) because the student did not identify the correct symbol to complete the comparison of the two fractions and incorrectly modeled the comparison from Part A in Part B.
- The student may have thought the fractions $\frac{3}{4}$ and $\frac{4}{6}$ represented the unshaded amount of the models and made the comparison based on the unshaded amount of both models.
Grade 4
Math
Practice Test

Question 14

Question and Scoring Guidelines


**Question 14**

A worker has 32 screwdrivers to put into tool kits.

A. How many tool kits can the worker make if he puts 6 screwdrivers into each tool kit? Enter the number in the first box.

B. How many screwdrivers will be left over after the worker makes the tool kits? Enter the number in the second box.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Points Possible:** 2

**Content Cluster:** Use place value understanding and properties of operations to perform multi-digit arithmetic with whole numbers less than or equal to 1,000,000.

**Content Standard:** Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (4.NBT.6)
Scoring Guidelines

Exemplar Response
- A. 5
- B. 2

Other Correct Responses
- Any equivalent value

For this item, a full-credit response includes:
- A correct value for A (1 point)
AND
- A correct value for B (1 point).
Grade 4
Math
Practice Test

Question 14

Sample Responses
**Sample Response: 2 points**

A worker has 32 screwdrivers to put into tool kits.

A. How many tool kits can the worker make if he puts 6 screwdrivers into each tool kit? Enter the number in the first box.

B. How many screwdrivers will be left over after the worker makes the tool kits? Enter the number in the second box.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>32</td>
</tr>
</tbody>
</table>

A. 5
B. 2

**Notes on Scoring**

This response earns full credit (2 points) because it identified the correct number of screwdrivers in both boxes.
- The student may have used an array to develop and model his or her mathematical thinking.
**Sample Response: 2 points**

A worker has 32 screwdrivers to put into tool kits.

A. How many tool kits can the worker make if he puts 6 screwdrivers into each tool kit? Enter the number in the first box.

B. How many screwdrivers will be left over after the worker makes the tool kits? Enter the number in the second box.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td>2.0</td>
<td></td>
</tr>
</tbody>
</table>

**Notes on Scoring**

This response earns full credit (2 points) because it identified the correct number of screwdrivers in both boxes.

- The student may have solved the problem using multiplication and subtraction.
  
  \[
  5.0 \times 6 = 30.0 \\
  32.0 - 30.0 = 2.0
  \]

While decimals are introduced in the standards in grade 4, students are not expected to be able to perform operations with decimals until grade 5. A student can earn credit in grade 4 by identifying an equivalent value to a correct response.
Sample Response: 1 point

A worker has 32 screwdrivers to put into tool kits.

A. How many tool kits can the worker make if he puts 6 screwdrivers into each tool kit? Enter the number in the first box.

B. How many screwdrivers will be left over after the worker makes the tool kits? Enter the number in the second box.

A. 6
B. 2

Notes on Scoring

This response earns partial credit (1 point) because it identified the incorrect number of boxes of screwdrivers but the correct number of left-over screwdrivers.

- The student may have used an array to develop and model his or her mathematical thinking.
Sample Response: 1 point

A worker has 32 screwdrivers to put into tool kits.

A. How many tool kits can the worker make if he puts 6 screwdrivers into each tool kit? Enter the number in the first box.

B. How many screwdrivers will be left over after the worker makes the tool kits? Enter the number in the second box.

A. \[
\begin{array}{c}
5 \\
\end{array}
\]

B. \[
\begin{array}{c}
.2 \\
\end{array}
\]

Notes on Scoring

This response earns partial credit (1 point) because it identified the correct number of boxes of screwdrivers but the incorrect number of left-over screwdrivers.

- The student may have solved the problem using multiplication and subtraction.

\[
5 \times 6 = 30 \\
32 - 30 \neq .2
\]

While decimals are introduced in the standards in grade 4, students are not expected to be able to perform operations with decimals until grade 5. A student can earn credit in grade 4 by identifying an equivalent value to a correct response.
A worker has 32 screwdrivers to put into tool kits.

A. How many tool kits can the worker make if he puts 6 screwdrivers into each tool kit? Enter the number in the first box.

B. How many screwdrivers will be left over after the worker makes the tool kits? Enter the number in the second box.

A. 6
B. 0

Notes on Scoring

This response earns no credit (0 points) because it identified the incorrect number of boxes of screwdrivers and the incorrect number of left-over screwdrivers.

- The student may have thought that there are 36 screwdrivers to place into boxes instead of 32.

  \[36 \div 6 = 6 \text{ boxes}\]
  \[36 - 36 = 0 \text{ left over}\]
Notes on Scoring

This response earns no credit (0 points) because it identified the incorrect number of boxes of screwdrivers and the incorrect number of left-over screwdrivers.
- The student may have thought that there are 36 screwdrivers to place into boxes and subtracted 32 from 36 to identify the number left over.

36 ÷ 6 = 6 boxes
36 - 32 = 4 left over
Grade 4
Math
Practice Test

Question 15

Question and Scoring Guidelines
Question 15

A pattern is shown.

1 3 6 10

What is the next number in the pattern?

A 12
B 13
C 15
D 16

Points Possible: 1

Content Cluster: Generate and analyze patterns.

Content Standard: Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way. (4.OA.5)
**Scoring Guidelines**

*Rationale for Option A:* This is incorrect. The student may have thought that the next number in the pattern is 12.

*Rationale for Option B:* This is incorrect. The student may have thought that the next number in the pattern is 13.

*Rationale for Option C:* **Key** - The student identified the next number in the pattern.

*Rationale for Option D:* This is incorrect. The student may have thought that the next number in the pattern is 16.

**Sample Response: 1 point**

![A pattern is shown.](image)

What is the next number in the pattern?

- A 12
- B 13
- C 15
- D 16
Question and Scoring Guidelines
Question 16

A model representing two fractions being added is shown.

A. Create an addition expression that is represented by the model. Enter the expression in the first box.

B. What is the sum of the two fractions? Enter the number in the second box.

A. 

B. 

Points Possible: 1

Content Cluster: Understand decimal notation for fractions, and compare decimal fractions limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.

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 \( \frac{3}{10} \) as \( \frac{30}{100} \), and add \( \frac{3}{10} + \frac{4}{100} = \frac{34}{100} \). (4.NF.5)
Scoring Guidelines

Exemplar Response

A. \(\frac{12}{100} + \frac{2}{10}\)

B. \(\frac{32}{100}\)

Other Correct Responses

- A. Any equivalent values, but must be a sum
- B. Any equivalent value

For this item, a full-credit response includes:

- A correct expression and a correct value (1 point).
Sample Response: 1 point

A model representing two fractions being added is shown.

A. Create an addition expression that is represented by the model. Enter the expression in the first box.

B. What is the sum of the two fractions? Enter the number in the second box.

A. \( \frac{12}{100} + \frac{20}{100} \)

B. \( \frac{32}{100} \)

Notes on Scoring

This response earns full credit (1 point) because the student created a correct addition expression that represented the model and the student found the correct sum of the two fractions.

While it may be convenient for students to place fractions in simplest form to help with problem solving, students are not required to place fractions in simplest form. A student can earn credit by identifying an equivalent value to a correct response.
Sample Response: 1 point

A model representing two fractions being added is shown.

A. Create an addition expression that is represented by the model. Enter the expression in the first box.

B. What is the sum of the two fractions? Enter the number in the second box.

A. \( \frac{12}{100} + \frac{2}{10} \)

B. \( \frac{32}{100} \)

Notes on Scoring

This response earns full credit (1 point) because the student created a correct addition expression that represented the model and the student found the correct sum of the two fractions.

While it may be convenient for students to place fractions in simplest form to help with problem solving, students are not required to place fractions in simplest form. A student can earn credit by identifying an equivalent value to a correct response.
Sample Response: 0 points

A model representing two fractions being added is shown.

A. Create an addition expression that is represented by the model. Enter the expression in the first box.

B. What is the sum of the two fractions? Enter the number in the second box.

A. \[ \frac{12}{100} + \frac{2}{10} \]

B. 

Notes on Scoring

This response earns no credit (0 points) because although the student created a correct addition expression that represented the model, he/she did not provide the correct sum of the two fractions.

- The student may have been unable to identify equivalent fractions for \( \frac{12}{100} \) and \( \frac{2}{10} \) in order to add the two fractions.

\[ \frac{12}{100} = \frac{12}{100} \quad \text{and} \quad \frac{2}{10} = \frac{20}{100} \]

\[ \frac{12}{100} + \frac{20}{100} = \frac{32}{100} \]
Notes on Scoring

This response earns no credit (0 points) because although the student created a correct addition expression that represented the model, he/she found the incorrect sum of the two fractions.

- The student may have been unable to identify equivalent fractions for $\frac{12}{100}$ and $\frac{2}{10}$ before adding the two fractions together.

$$\frac{12}{100} = \frac{12}{100} \quad \text{and} \quad \frac{2}{10} = \frac{20}{100}$$

- The student may have added the two fractions without finding common denominators and creating equivalent fractions.

$$\frac{12}{100} + \frac{2}{10} \neq \frac{14}{110}$$
Grade 4
Math
Practice Test

Question 17

Question and Scoring Guidelines
Question 17

A student ran 9 kilometers (km).

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

[Table with meters]

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 the metric measurement units within one system of units. Metric units include kilometer, meter, centimeter, and millimeter; kilogram and gram; and liter and milliliter. Express a larger measurement unit in terms of a smaller unit. Record measurement conversions in a two-column table. For example, express the length of a 4-meter rope in centimeters. Because 1 meter is 100 times as long as a 1 centimeter, a two-column table of meters and centimeters includes the number pairs 1 and 100, 2 and 200, 3 and 300, ... (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).
Grade 4
Math
Practice Test
Question 17
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
Notes on Scoring

This response earns full credit (1 point) because it identified the correct number of meters that the student ran.
- The student may have used a table to correctly convert from kilometers to meters.

<table>
<thead>
<tr>
<th>Kilometer (km)</th>
<th>km × 1,000 = m</th>
<th>Meter (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 × 1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>2</td>
<td>2 × 1,000</td>
<td>2,000</td>
</tr>
<tr>
<td>3</td>
<td>3 × 1,000</td>
<td>3,000</td>
</tr>
<tr>
<td>4</td>
<td>4 × 1,000</td>
<td>4,000</td>
</tr>
<tr>
<td>5</td>
<td>5 × 1,000</td>
<td>5,000</td>
</tr>
<tr>
<td>6</td>
<td>6 × 1,000</td>
<td>6,000</td>
</tr>
<tr>
<td>7</td>
<td>7 × 1,000</td>
<td>7,000</td>
</tr>
<tr>
<td>8</td>
<td>8 × 1,000</td>
<td>8,000</td>
</tr>
<tr>
<td>9</td>
<td>9 × 1,000</td>
<td>9,000</td>
</tr>
</tbody>
</table>
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
Notes on Scoring

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

- The student may have identified that $1 \text{ km} = 1000 \text{ m}$ and multiplied 9 by 1,000 to find the number of meters in 9 kilometers.

\[
\begin{align*}
1.0 \text{ km} &= 1,000.0 \text{ m} \\
1.0 \text{ km} \times 1,000 &= 1,000.0 \text{ m} & \text{AND} & 9.0 \text{ km} \times 1,000 &= 9,000.0 \text{ m}
\end{align*}
\]
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
Notes on Scoring

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

- The student may have used a table and divided by 1000 instead of multiplying by 1000.

<table>
<thead>
<tr>
<th>Kilometer (km)</th>
<th>$\text{km ÷ 1,000} \neq \text{m}$</th>
<th>Meter (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$1 \div 1,000$</td>
<td>0.001</td>
</tr>
<tr>
<td>2</td>
<td>$2 \div 1,000$</td>
<td>0.002</td>
</tr>
<tr>
<td>3</td>
<td>$3 \div 1,000$</td>
<td>0.003</td>
</tr>
<tr>
<td>4</td>
<td>$4 \div 1,000$</td>
<td>0.004</td>
</tr>
<tr>
<td>5</td>
<td>$5 \div 1,000$</td>
<td>0.005</td>
</tr>
<tr>
<td>6</td>
<td>$6 \div 1,000$</td>
<td>0.006</td>
</tr>
<tr>
<td>7</td>
<td>$7 \div 1,000$</td>
<td>0.007</td>
</tr>
<tr>
<td>8</td>
<td>$8 \div 1,000$</td>
<td>0.008</td>
</tr>
<tr>
<td>9</td>
<td>$9 \div 1,000$</td>
<td>0.009</td>
</tr>
</tbody>
</table>

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
Notes on Scoring

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

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

1 km ≠ 100 m
1 km × 100 ≠ 100 m AND 9 km × 100 ≠ 900 m
Question 18

Two groups of figures are shown.

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Figure 1]</td>
<td>![Figure 2]</td>
</tr>
</tbody>
</table>

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

- acute angles
- obtuse angles
- parallel sides
- 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. (4.G.2)
Scoring Guidelines

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

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

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

Rationale for Option D: **Key** - The student correctly recognized 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.

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Figure 1</td>
<td>Figure 2</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Figure 3</td>
<td>Figure 4</td>
</tr>
<tr>
<td></td>
<td>Figure 5</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Figure 7</td>
</tr>
<tr>
<td>Figure 8</td>
<td>Figure 9</td>
</tr>
</tbody>
</table>

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

A. acute angles  
B. obtuse angles  
C. parallel sides  
D. perpendicular sides
Grade 4
Math
Practice Test

Question 19

Question and Scoring Guidelines
Question 19

Enter a number that is less than 2.3 and greater than 2.07.

Points Possible: 1

Content Cluster: Understand decimal notation for fractions, and compare decimal fractions limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.

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

Exemplar Response

• 2.1

Other Correct Responses

• Any value between 2.07 and 2.3, exclusive

For this item, a full-credit response includes:

• A correct value (1 point).
Sample Responses
Sample Response: 1 point

Enter a number that is less than 2.3 and greater than 2.07.

2.29

Notes on Scoring

This response earns full credit (1 point) because the student correctly identified a number that is less than 2.3 and greater than 2.07.
Sample Response: 1 point

Enter a number that is less than 2.3 and greater than 2.07.

2.15679900

Notes on Scoring

This response earns full credit (1 point) because the student correctly identified a number that is less than 2.3 and greater than 2.07.

While decimals beyond hundredths are not introduced in the standards until grade 5, a student can earn credit at grade 4 by identifying a decimal beyond hundredths that is equivalent to a correct response.
Sample Response: 0 points

Enter a number that is less than 2.3 and greater than 2.07.

2.03

Notes on Scoring

This response earns no credit (0 points) because the student did not identify a number that is less than 2.3 and greater than 2.07.

- The student may have thought that 2.03 is greater than 2.07.
Sample Response: 0 points

Enter a number that is less than 2.3 and greater than 2.07.

2.92

Notes on Scoring

This response earns no credit (0 points) because the student did not identify a number that is less than 2.3 and greater than 2.07.
- The student may have thought that 2.92 is less than 2.3.
Grade 4
Math
Practice Test

Question 20

Question and Scoring Guidelines
Question 20

A. Move the angles to the protractor to measure each angle.

B. Select the letter that matches the angle label for the angle with a measure of 50 degrees.

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

Other Correct Responses

- The correct angle does not need to be on the protractor in Part A

For this item, a full-credit response includes:

- The correct angle (1 point).
Grade 4
Math
Practice Test

Question 20

Sample Responses
Sample Response: 1 point

A. Move the angles to the protractor to measure each angle.

B. Select the letter that matches the angle label for the angle with a measure of 50 degrees.

Notes on Scoring

This response earns full credit (1 point) because the student correctly selected the letter that matches the angle label for the angle with a measure of 50 degrees.
Sample Response: 0 points

A. Move the angles to the protractor to measure each angle.

B. Select the letter that matches the angle label for the angle with a measure of 50 degrees.

Notes on Scoring

This response earns no credit (0 points) because the student did not select the correct letter that matches the angle label to the angle with a measure of 50 degrees.
Sample Response: 0 points

A. Move the angles to the protractor to measure each angle.

B. Select the letter that matches the angle label for the angle with a measure of 50 degrees.

Notes on Scoring

This response earns no credit (0 points) because the student did not select the correct letter that matches the angle label to the angle with a measure of 50 degrees.

- The student may have incorrectly measured the angle using the protractor.
Grade 4
Math
Practice Test

Question 21

Question and Scoring Guidelines
Question 21

What is 25,632 rounded to the nearest thousand? Enter the number in the box.

Points Possible: 1

**Content Cluster:** Generalize place value understanding for multi-digit whole numbers less than or equal to 1,000,000.

**Content Standard:** Use place value understanding to round multi-digit whole numbers to any place through 1,000,000. (4.NBT.3)

**Scoring Guidelines**

**Exemplar Response**
- 26,000

**Other Correct Responses**
- Any equivalent value

For this item, a full-credit response includes:
- The correct value (1 point).
Grade 4
Math
Practice Test

Question 21

Sample Responses
Sample Response: 1 point

What is 25,632 rounded to the nearest thousand? Enter the number in the box.

26000

Notes on Scoring

This response earns full credit (1 point) because the student correctly rounded the number 25,632 to the nearest thousand.
Sample Response: 1 point

What is 25,632 rounded to the nearest thousand? Enter the number in the box.

\[
\frac{52000}{2}
\]

Notes on Scoring

This response earns full credit (1 point) because the student correctly rounded the number 25,632 to the nearest thousand.

While interpreting a fraction as division is not in the standards until grade 5, a student can earn credit in grade 4 by identifying an equivalent value to a correct response.
Sample Response: 0 points

What is 25,632 rounded to the nearest thousand? Enter the number in the box.

25000

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly round the number 25,632 to the nearest thousand.
- The student may have thought that 25,632 rounded down to 25,000.
Sample Response: 0 points

What is 25,632 rounded to the nearest thousand? Enter the number in the box.

30000

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly round the number 25,632 to the nearest thousand.

- The student may have thought that 25,632 was supposed to be rounded to the nearest ten thousand.
Grade 4
Math
Practice Test

Question 22

Question and Scoring Guidelines
Question 22

A shape is shown.
Select all of the angles in the shape that appear to be acute.

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, and obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. (4.G.1)
**Scoring Guidelines**

**Exemplar Response**

For this item, a full-credit response includes:

- Two correctly marked angles (1 point).

**Other Correct Responses**

- N/A
Grade 4
Math
Practice Test

Question 22

Sample Responses
Sample Response: 1 point

A shape is shown.
Select all of the angles in the shape that appear to be acute.

Notes on Scoring

This response earns full credit (1 point) because the student correctly identified all of the angles that appear to be acute.
- The student may have recognized that acute angles are less than 90° and identified all of the angles that appear to be less than 90°.
Sample Response: 0 points

A shape is shown.
Select all of the angles in the shape that appear to be acute.

Notes on Scoring

This response earns no credit (0 points) because the student did not identify all of the angles that appear to be acute.

- The student may have thought that acute angles are greater than 90° and identified all of the angles that appear to be greater than 90°.
Sample Response: 0 points

A shape is shown.
Select all of the angles in the shape that appear to be acute.

Notes on Scoring

This response earns no credit (0 points) because the student did not identify all of the angles that appear to be acute.
- The student may have thought that acute angles are greater than 90° and identified two angles that appear to be greater than 90°.
Grade 4
Math
Practice Test

Question 23

Question and Scoring Guidelines
**Question 23**

Jack, Derek, and Amber share a small pitcher of juice. The fraction of the pitcher that each person drinks is shown.

Jack: $\frac{1}{3}$  
Derek: $\frac{2}{12}$  
Amber: $\frac{3}{6}$

Complete the sentence to create a correct comparison.

The amount of juice that Jack drinks is \underline{less than} the amount of juice that \underline{Amber} drinks.

---

**Points Possible: 1**

**Content Cluster:** Extend understanding of fraction equivalence and ordering limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.

**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**

- The amount of juice that Jack drinks is \textbf{less than} the amount of juice that \textbf{Amber} drinks.

**Other Correct Responses**

- The amount of juice that Jack drinks is \textbf{greater than} the amount of juice that \textbf{Derek} drinks.

For this item, a full-credit response includes:

- A correct comparison (1 point).
Grade 4
Math
Practice Test

Question 23

Sample Responses
Sample Response: 1 point

Jack, Derek, and Amber share a small pitcher of juice. The fraction of the pitcher that each person drinks is shown.

Jack: \(\frac{1}{3}\)
Derek: \(\frac{2}{12}\)
Amber: \(\frac{3}{6}\)

Complete the sentence to create a correct comparison.

The amount of juice that Jack drinks is less than the amount of juice that Amber drinks.

Notes on Scoring

This response earns full credit (1 point) because it completed the sentence to create a correct comparison.

- The student may have compared the amount of juice Jack and Amber drink to a benchmark fraction such as \(\frac{1}{2}\).

\[
\frac{3}{6} = \frac{3 + 3}{6 + 3} = \frac{1}{2} \quad \text{and} \quad \frac{1}{3} < \frac{1}{2}
\]

The amount of juice Jack drinks is less than the amount of juice Amber drinks.
Sample Response: 1 point

Jack, Derek, and Amber share a small pitcher of juice. The fraction of the pitcher that each person drinks is shown.

Jack: $\frac{1}{3}$

Derek: $\frac{2}{12}$

Amber: $\frac{3}{6}$

Complete the sentence to create a correct comparison.
The amount of juice that Jack drinks is greater than the amount of juice that Derek drinks.

Notes on Scoring

This response earns full credit (1 point) because it completed the sentence to create a correct comparison.

- The student may have identified a common denominator and used it to create equivalent fractions to compare the amount of juice Jack and Derek drink.

  Jack drinks $\frac{1}{3}$ and Derek drinks $\frac{2}{12}$ of the pitcher of juice.

  $\frac{1}{3} = \frac{1 \times 4}{3 \times 4} = \frac{4}{12}$ and $\frac{4}{12} > \frac{2}{12}$

  The amount of juice Jack drinks is greater than the amount of juice Derek drinks.
Jack, Derek, and Amber share a small pitcher of juice. The fraction of the pitcher that each person drinks is shown.

Jack: \(\frac{1}{3}\)

Derek: \(\frac{2}{12}\)

Amber: \(\frac{3}{6}\)

Complete the sentence to create a correct comparison.
The amount of juice that Jack drinks is less than \(\frac{\text{[blank]}}{}\) the amount of juice that Derek \(\frac{\text{[blank]}}{}\) drinks.

**Notes on Scoring**

This response earns no credit (0 points) because it completed the sentence to create an incorrect comparison.

- The student may have compared the amount of juice Jack and Derek drink by comparing numerators without finding common denominators or creating equivalent fractions.
Sample Response: 0 points

Jack, Derek, and Amber share a small pitcher of juice. The fraction of the pitcher that each person drinks is shown.

Jack: $\frac{1}{3}$
Derek: $\frac{2}{12}$
Amber: $\frac{3}{6}$

Complete the sentence to create a correct comparison.
The amount of juice that Jack drinks is equal to ___ the amount of juice that ___ drinks.

Notes on Scoring

This response earns no credit (0 points) because it completed the sentence to create an incorrect comparison.

- The student may have compared the amount of juice Jack and Amber drink by finding common denominators and creating incorrect equivalent fractions.

Jack drinks $\frac{1}{3}$ and Amber drinks $\frac{3}{6}$ of the pitcher of juice.

$$\frac{1}{3} = \frac{1 \times 3}{3 \times 3} \neq \frac{3}{6} \quad \text{and} \quad \frac{3}{6} = \frac{3}{6}$$

$$\frac{1}{3} \neq \frac{3}{6}$$
Grade 4
Math
Practice Test

Question 24

Question and Scoring Guidelines


**Question 24**

Place the measurements in the empty boxes to order them from least to greatest.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Least</td>
<td></td>
<td></td>
<td>Greatest</td>
</tr>
</tbody>
</table>

613 mm 71 cm 5 m 34 cm

**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 the metric measurement units within one system of units. Metric units include kilometer, meter, centimeter, and millimeter; kilogram and gram; and liter and milliliter. Express a larger measurement unit in terms of a smaller unit. Record measurement conversions in a two-column table. For example, express the length of a 4-meter rope in centimeters. Because 1 meter is 100 times as long as 1 centimeter, a two-column table of meters and centimeters includes the number pairs 1 and 100, 2 and 200, 3 and 300, ... (4.MD.1)

**Scoring Guidelines**

**Exemplar Response**

- 34 cm, 613 mm, 71 cm, 5 m

**Other Correct Responses**

- N/A

For this item, a full-credit response includes:

- The correct order of measurements (1 point).
Sample Responses
Sample Response: 1 point

Place the measurements in the empty boxes to order them from least to greatest.

Notes on Scoring

This response earns full credit (1 point) because it placed the measurements in order from least to greatest.

- The student may have converted each of the measurements into millimeters to compare their lengths from least to greatest.

1 meter = 100 centimeters and 1 centimeter = 10 millimeters

<table>
<thead>
<tr>
<th>Meters (m)</th>
<th>× 100 =</th>
<th>Centimeters (cm)</th>
<th>× 10 =</th>
<th>Millimeters (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 × 100 =</td>
<td>100</td>
<td>100 × 10 =</td>
<td>1,000</td>
</tr>
<tr>
<td>5</td>
<td>5 × 100 =</td>
<td>500</td>
<td>500 × 10 =</td>
<td>5,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>34</td>
<td>34 × 10 =</td>
<td>340</td>
</tr>
<tr>
<td></td>
<td></td>
<td>71</td>
<td>71 × 10 =</td>
<td>710</td>
</tr>
</tbody>
</table>

34 cm = 340 mm
613 mm = 613 mm
71 cm = 710 mm
5 m = 5,000 mm
Sample Response: 0 points

Place the measurements in the empty boxes to order them from least to greatest.

5 m  34 cm  71 cm  613 mm

Least  Greatest

Notes on Scoring

This response earns no credit (0 points) because it incorrectly placed the measurements in order from least to greatest.

- The student may have placed the numbers in order from least to greatest based on the distance measured without recognizing that the distances are in different metric units.
Sample Response: 0 points

Place the measurements in the empty boxes to order them from least to greatest.

613 mm  34 cm  71 cm  5 m

Least  Greatest

Notes on Scoring

This response earns no credit (0 points) because it incorrectly placed the measurements in order from least to greatest.

- The student may have placed the numbers in order from least to greatest based on the size of the metric unit of measurement rather than the distance of the measurement.