## Content Standard

**MAFS.3.NF** Number and Operations – Fractions

**MAFS.3.NF.1** Develop understanding of fractions as numbers.

**MAFS.3.NF.1.2** Understand a fraction as a number on the number line; represent fractions on a number line diagram.

**MAFS.3.NF.1.2a** Represent a fraction $\frac{1}{b}$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into $b$ equal parts. Recognize that each part has size $\frac{1}{b}$ and that the endpoint of the part based at 0 locates the number $\frac{1}{b}$ on the number line.

**MAFS.3.NF.1.2b** Represent a fraction $\frac{a}{b}$ on a number line diagram by marking off $a$ lengths $\frac{1}{b}$ from 0. Recognize that the resulting interval has size $\frac{a}{b}$ and that its endpoint locates the number $\frac{a}{b}$ on the number line.

### Assessment Limits
Denominators limited to 2, 3, 4, 6, 8.
Models restricted to number lines starting at 0.
- Part A: number line interval from 0 to 1.
- Part B: number lines can extend from 0 to 1+.

### Calculator
No

### Acceptable Response Mechanisms
- Equation Response
- Graphic Response – Drag and drop, Drawing/Graphing, Hot Spot
- Multiple Choice Response
- Multi-Select Response

### Context
- **No context**

### Example

**Context**
Recognize and represent unit fractions and non-unit fractions on number lines:
- Number lines limited to the interval 0 to 2
- Unit fractions and non-unit fractions less than 1 with denominators of 2, 3, 4, 6, 8
- Non-unit fractions greater than 1 limited to halves and fourths
- 1-2 fractions represented or referenced in the item

**Context easier**
Given number lines limited to the interval 0 to 1 with scale increments of halves, thirds, and fourths.
Unit fractions and non-unit fractions less than 1 limited to $\frac{1}{2}, \frac{1}{3}, \text{and } \frac{1}{4}$
Only 1 fraction represented or referenced in the item

**Context more difficult**
Number lines can extend beyond the interval 0 to 2.
Any fraction less than or greater than 1 with denominator 2, 3, 4, 6 or 8.
More than 2 fractions may be represented or referenced in the item.
<table>
<thead>
<tr>
<th>Sample Item Stem</th>
<th>Response Mechanism</th>
<th>Notes, Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which number line is divided into thirds?</td>
<td>Multiple Choice Response</td>
<td></td>
</tr>
<tr>
<td><img src="image1.png" alt="Number Line" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Which fraction is represented by the total length marked on the number line shown?</td>
<td>Equation Response</td>
<td></td>
</tr>
<tr>
<td><img src="image2.png" alt="Number Line" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What fraction is represented by the length marked on the number line shown?</td>
<td>Equation Response</td>
<td></td>
</tr>
<tr>
<td><img src="image3.png" alt="Number Line" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What fraction is represented by the total length marked on the number line?</td>
<td>Equation Response</td>
<td></td>
</tr>
<tr>
<td><img src="image4.png" alt="Number Line" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Look at the number lines shown.</td>
<td>Graphic Response – Drag and Drop, Hot Spot</td>
<td></td>
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<tr>
<td>Select the number line that can be used to correctly plot the fraction (\frac{3}{4}). Then, correctly plot the fraction on the selected number line.</td>
<td></td>
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<tr>
<td><img src="image5.png" alt="Number Line" /></td>
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<td></td>
</tr>
</tbody>
</table>