

Vertical Progression:

1st Grade	<p>1.G.A Reason with shapes and their attributes.</p> <ul style="list-style-type: none"> ○ 1.G.A.3 Partition circles and rectangles into two and four equal shares, describe the shares using the words <i>halves</i>, <i>fourths</i>, and <i>quarters</i>, and use the phrases <i>half of</i>, <i>fourth of</i>, and <i>quarter of</i>. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.
2nd Grade	<p>2.MD.B Relate addition and subtraction to length.</p> <ul style="list-style-type: none"> ○ 2.MD.B.6 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram. <p>2.G.A Reason with shapes and their attributes.</p> <ul style="list-style-type: none"> ○ 2.G.A.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them. ○ 2.G.A.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words <i>halves</i>, <i>half of</i>, <i>a third of</i>, <i>etc.</i>, and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.
3rd Grade	<p>3.NF.A Develop understanding of fractions as numbers.</p> <ul style="list-style-type: none"> ○ 3.NF.A.1 Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$. ○ 3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram. ○ 3.NF.A.2a Represent a fraction $1/b$ 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 $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line. ○ 3.NF.A.2b Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line. ○ 3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. ○ 3.NF.A.3a Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. ○ 3.NF.A.3b Recognize and generate simple equivalent fractions, e.g., $1/2 = 2/4$, $4/6 = 2/3$. Explain why the fractions are equivalent, e.g., by using a visual fraction model. ○ 3.NF.A.3c Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. <i>Examples: Express 3 in the form $3 = 3/1$; recognize that $6/1 = 6$; locate $4/4$ and 1 at the same point of a number line diagram.</i> ○ 3.NF.A.3d Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

4th Grade

4.NF.A Extend understanding of fraction equivalence and ordering.

- **4.NF.A.1** Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ 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.A.2** 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 $1/2$. 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.B Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

- **4.NF.B.3** Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.
- **4.NF.B.3.c** Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.

Students will demonstrate command of the ELG by:

- Representing equal parts of a whole as a fraction in many ways (e.g., number lines, models).
- Placing and identifying fractions on a number line.
- Determining the relative size of fractions using a number line.
- Comparing fractions with unlike and like denominators using a visual model.
- Constructing and using visual representations of equivalent fractions.
- Using visual fraction models and number lines to identify and generate simple equivalent fractions.
- Using visual fraction models and number lines to represent whole numbers as fractions and identify fractions that are equivalent to whole numbers.
- Comparing two fractions with the same numerator or the same denominator by reasoning about their size and record the results with the symbols $>$, $=$, or $<$ and plotting the location of equivalent fractions on a number line.
- Using grade-level academic and content language independently to explain orally and in writing why fractions are equivalent.

Note: Denominators are limited to 2, 3, 4, 6, and 8.

Vocabulary:

- denominator
- equal
- equal distance
- equal part(s)
- equivalence
- equivalent
- fraction
- mixed number
- number line
- numerator
- partition
- region
- unit fraction

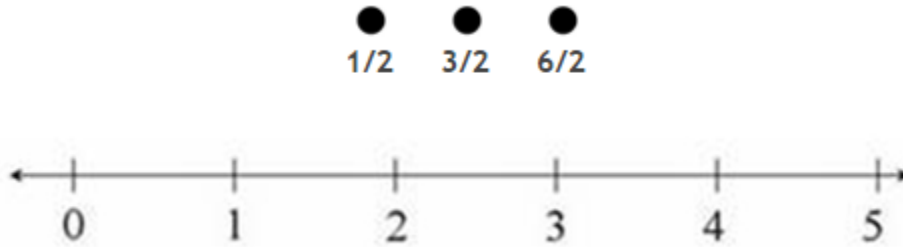
Sample Instructional/Assessment Tasks:

1) **Standard(s):** 3.NF.A.2

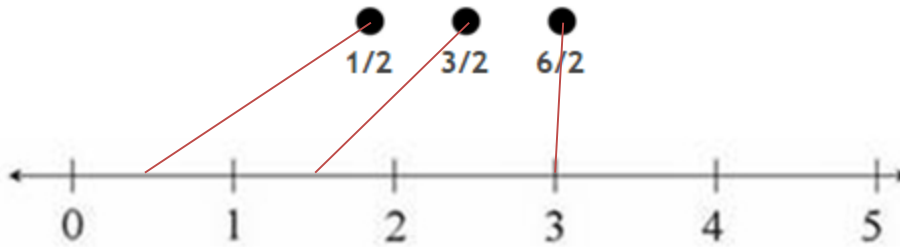
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Item Prompt:

Draw a line from each fraction to the proper place on the number line.



Correct Answer: Show the number line with the proper lines.



2) **Standard(s):** 3.NF.A.3

Source: Engage NY

Item Prompt:

Which of these pairs of fractions is equivalent?

$$\frac{5}{8} \quad \frac{2}{4} \qquad \frac{2}{4} \quad \frac{4}{8} \qquad \frac{2}{4} \quad \frac{3}{8} \qquad \frac{2}{4} \quad \frac{2}{8}$$

Prove that the pair you chose is equivalent.

Correct Answer:

$\frac{2}{4} \quad \frac{4}{8}$ These two fractions are equivalent and this can be represented on a number line or with a circle model or with a rectangle model.