

Lesson 1: Introduction of the Concept of Equivalent Fractions

Time allowed: One lesson, 30-45 mins

Worksheets: 1, Template A

Intended outcomes:


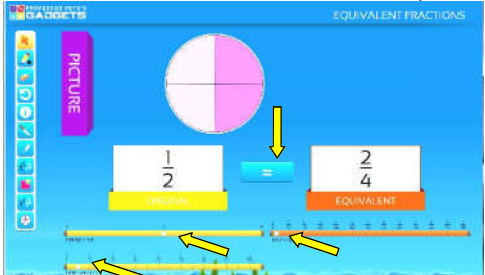
- For the student to be able to understand that by cutting a given fraction into smaller pieces (making the denominator larger) the size of the fraction showed by the shaded area does not change.

Curriculum standards:



US 3.NF.3ab Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size
4.NF.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models.

Aust ACMNA077 Investigate equivalent fractions used in contexts

UK LKS2yr3 recognise and show, using diagrams, equivalent fractions with small denominator
LKS2yr4 recognise and show, using diagrams, families of common equivalent fraction

- Cut up real objects such as apples or cakes and discuss the fact that although the object is cut into small pieces, the actual amount of apple does not change. One apple cut into 4 pieces is 4 fourths or quarters, but is still one whole. 
- Ask what happens if I have half of an apple cut into 4 fourths or quarters. Pull apart and regroup the 2 fourths or quarters/one half to illustrate this point. Write on the board and discuss what is written.
- Display $1/2$ on the **Equivalent Fraction Gadget**. Enter fourths/quarters as the chosen denominator for the equivalent fraction. 
- Toggle between the original fraction and the equivalent fraction by clicking the **equal button**.
- Have the students write the equivalent fraction. $\frac{1}{2} = \frac{2}{4}$
- Continue to cut the apple into eighths. Discuss the one quarter now being 2 eighths. $\frac{1}{4} = \frac{2}{8}$
Display these fractions on the Equivalent Fractions Gadget. Write the equivalent fractions.
- Discuss what happens when the numerator is greater than 1, such as $\frac{3}{4} = \frac{6}{8}$
- Point out both the denominator and the numerator change by the same multiplier. Have students explain in their own words what is actually happening and how can we write this efficiently: multiply the numerator and denominator by 2. Students should have made this connection by now.

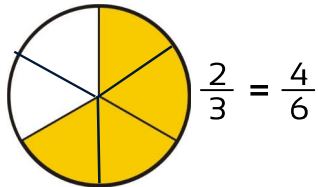
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- i) Give more examples on the board (for example, $\frac{1}{2}$), and ask students to write the equivalent fraction shown on the screen.
- j) Work through examples on **Worksheet 1** displaying each fraction then cutting them once using the **Knife tool**.  
- k) Use **Template A** if more examples are needed.

Name _____

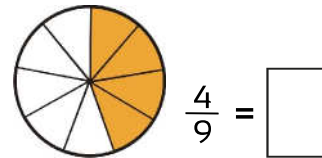
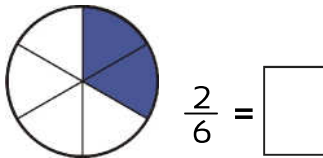
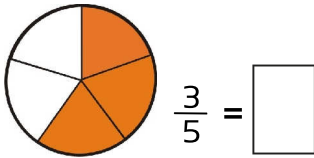
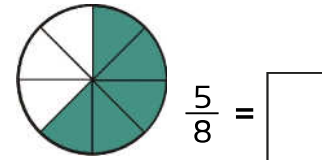
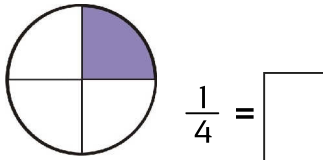
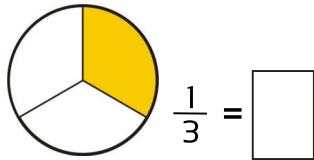
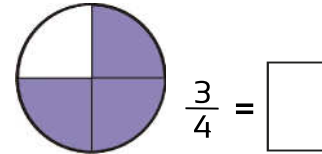
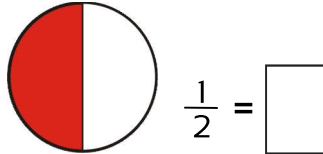
Cut each Fractional Piece into Two Pieces

Equivalent fractions
example:



Draw lines to cut each fractional piece in two pieces to make new fractions.

Write the equivalent fraction that each shape now shows.



Write the equivalent fraction of each of these if each fractional piece was cut in two.

1) $\frac{6}{8} = \frac{\square}{\square}$

(Note: The diagram shows a circle divided into 8 sectors with 6 shaded, and arrows indicating that each sector is cut into two, resulting in 16 sectors with 12 shaded.)

4) $\frac{3}{4} = \frac{\square}{\square}$

(Note: The diagram shows a circle divided into 4 quadrants with 3 shaded, and arrows indicating that each quadrant is cut into two, resulting in 8 quadrants with 6 shaded.)

7) $\frac{2}{7} = \frac{\square}{\square}$

2) $\frac{2}{5} = \frac{\square}{\square}$

5) $\frac{3}{9} = \frac{\square}{\square}$

8) $\frac{1}{12} = \frac{\square}{\square}$

3) $\frac{7}{8} = \frac{\square}{\square}$

6) $\frac{6}{10} = \frac{\square}{\square}$

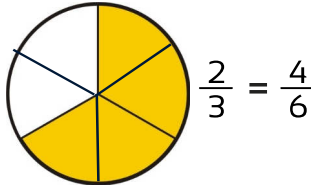
9) $\frac{5}{6} = \frac{\square}{\square}$

Name _____

ANSWERS

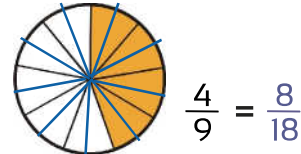
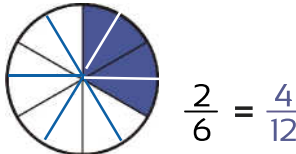
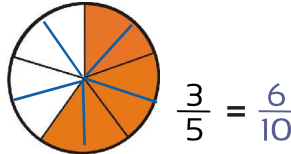
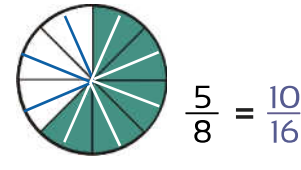
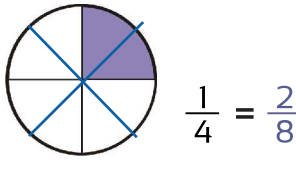
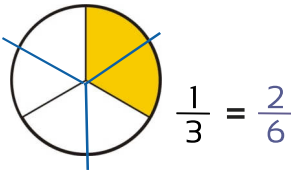
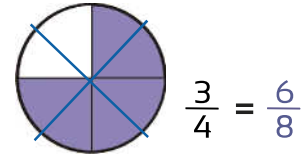
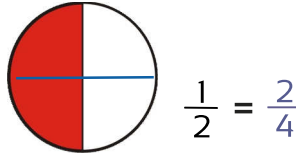
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Draw lines to cut each fractional piece in two pieces to make new fractions.

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Write the equivalent fraction of each of these if each fractional piece was cut in two.

1) $\frac{6}{8} = \frac{\boxed{12}}{\boxed{16}}$

4) $\frac{3}{4} = \frac{\boxed{6}}{\boxed{8}}$

7) $\frac{2}{7} = \frac{\boxed{4}}{\boxed{14}}$

2) $\frac{2}{5} = \frac{\boxed{4}}{\boxed{10}}$

5) $\frac{3}{9} = \frac{\boxed{6}}{\boxed{18}}$

8) $\frac{1}{12} = \frac{\boxed{2}}{\boxed{24}}$

3) $\frac{7}{8} = \frac{\boxed{14}}{\boxed{16}}$

6) $\frac{6}{10} = \frac{\boxed{12}}{\boxed{20}}$

9) $\frac{5}{6} = \frac{\boxed{10}}{\boxed{12}}$