Comparing Fractions – Lesson 3
Find Common Numerators and Denominators

4.NF.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 ½. 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.

Objective: Compare fractions by finding common numerators or denominators.

Materials:
- Comparing Fractions – Common Numerator and Denominator Activity Sheet (one per student)

Introduction – Whole Class Examples
*These are the examples from the Background Knowledge sheet.
Write each example up on the board. Remind students that it is easy to compare fractions when you have common numerators (same number of pieces) or common denominators (same size pieces). Discuss the relationship between the numerators and the denominators in the examples. (Which is easier to make the same – numerators or denominators? Talk about how using multiples can help you decide.) Discuss making equivalent fractions to have common numerators or denominators. Compare the fractions by drawing the fraction models on the board (make sure you stress that we can compare the size of these fractions because they are based on the same whole), have students shade in the fraction models on their pages, and discuss the fraction models.

Compare Fractions by Creating Common Numerators

$$\frac{4}{6} \quad \bigcirc \quad \frac{2}{5}$$

Look at the relationship between the two numerators (4 and 2) and the two denominators (6 and 5). It is much easier to find a common numerator (4) than it would be to find a common denominator. So, make an equivalent fraction for $\frac{2}{5}$ with a numerator of 4 ($\frac{4}{10}$).

You can now compare $\frac{4}{6}$ to $\frac{4}{10}$ by reasoning about the size of the pieces. Sixths are larger than tenths, so $\frac{4}{6}$ is greater than $\frac{2}{5}$.
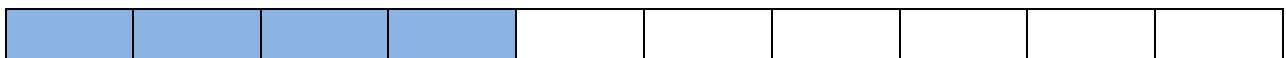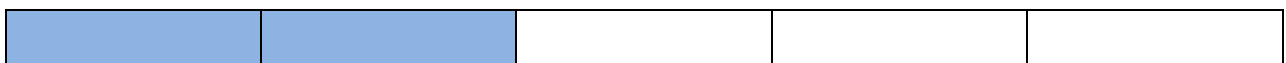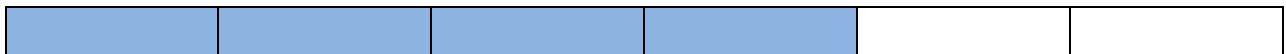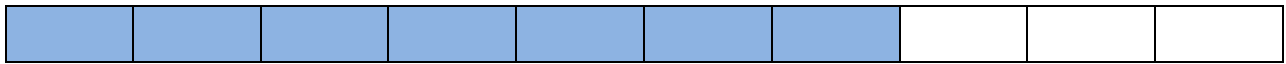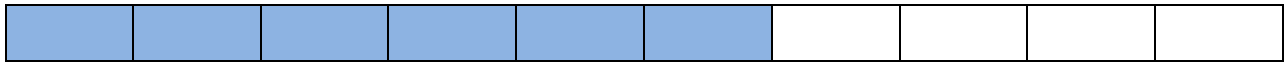
Comparing Fractions – Lesson 3
Find Common Numerators and Denominators

Compare Fractions by Creating Common Denominators

$\dfrac{3}{5}$ ◯ $\dfrac{7}{10}$

Look at the relationship between the two numerators (3 and 7) and the two denominators (5 and 10). In this problem, it makes more sense to use a common denominator of 10. $\dfrac{3}{5}$ = $\dfrac{6}{10}$. You can now compare $\dfrac{6}{10}$ to $\dfrac{7}{10}$ by reasoning about the amount of same-size pieces you have. 6 is less than 7, so $\dfrac{3}{5}$ is less than $\dfrac{7}{10}$.

Guided Practice – Comparing Fractions Activity Sheet
Have students work on problems 1-6 on the Comparing Fractions Activity Sheet by using their Fraction Tiles and drawing visual fraction models. Discuss these problems. (#6 has neither one of the numerators NOR one of the denominators as a multiple of the other, so they will need to find a common multiple for the numerators OR denominators)

Independent Practice – Comparing Fractions Activity Sheet
Have students work on problems 7-10 on the Comparing Fractions Activity Sheet.

*After this lesson is complete, make a poster listing the 5 strategies:
        Like Numerators (same number of pieces)
        Like Denominators (same size pieces)
        Use Benchmark Fractions (such as ½ and 1 whole)
        Create Common Numerators
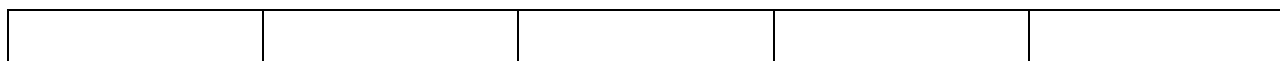   **Create Common Denominators**

Use activities from the supplemental section to continue practicing comparing fractions; make sure you have students discuss what strategy they are using to compare the fractions and why they chose that strategy.

$\frac{3}{8}$ ◯ $\frac{1}{4}$

COMPARING FRACTIONS
Common Numerators or Common Denominators
ACTIVITY SHEET

> *Remember that it is easy to compare fractions if you have the same number of pieces OR if you have the same size pieces. Sometimes you will need to make equivalent fractions, so you either have the same number of pieces or the same size pieces.*

L1-6b

Compare Fractions by Creating Common Numerators

$\frac{4}{6}$ ◯ $\frac{2}{5}$

Look at the relationship between the two numerators (4 and 2) and the two denominators (6 and 5). It is much easier to find a common numerator (4) than it would be to find a common denominator. Make an equivalent fraction for $\frac{2}{5}$ with a numerator of 4 ($\frac{4}{10}$). You can now compare $\frac{4}{6}$ to $\frac{4}{10}$ by reasoning about the size of the pieces. Sixths are larger than tenths, so $\frac{4}{6}$ is greater than $\frac{2}{5}$.

$\frac{4}{6}$

$\frac{2}{5}$

$\frac{4}{10}$

Compare Fractions by Creating Common Denominators

$\dfrac{3}{5}$ $\bigcirc$ $\dfrac{7}{10}$

Look at the relationship between the two numerators (3 and 7) and the two denominators (5 and 10). In this problem, it makes more sense to use a common denominator of 10. $\dfrac{3}{5}$ = $\dfrac{6}{10}$. You can now compare $\dfrac{6}{10}$ to $\dfrac{7}{10}$ by reasoning about the amount of same-size pieces you have. 6 is less than 7, so $\dfrac{3}{5}$ is less than $\dfrac{7}{10}$.
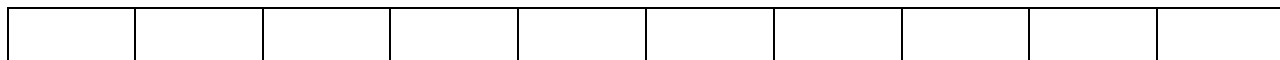
$\dfrac{3}{5}$

$\dfrac{6}{10}$

$\dfrac{7}{10}$

Decide whether to use a common numerator or denominator. Make equivalent fractions. Then draw a visual fraction model to compare. Write <, >, or =.

1. $\dfrac{3}{5}$ $\bigcirc$ $\dfrac{6}{8}$

2. $\dfrac{2}{3}$ ◯ $\dfrac{4}{6}$

3. $\dfrac{7}{8}$ ◯ $\dfrac{3}{4}$

4. $\dfrac{3}{12}$ ◯ $\dfrac{1}{4}$