Unit 9  Number Sense: Fractions

Introduction
This unit focuses on fractions of wholes and sets. Fractions are used in real-life contexts, and the meaning and value of the numerator and denominator are evaluated in order to:

• name fractions;
• compare fractions, with and without benchmarks; and
• order fractions, with and without benchmarks.

Meeting Your Curriculum

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Mental Math Minutes
The mental math minutes in this unit:
• review doubling and halving to support work related to the benchmark 1/2
• practise multiplication and related division more generally

Generic BLMs
The Generic BLM used in this unit is:
BLM Pattern Blocks (p. S-1)
This BLM can be found in Section S.
Assessment

The lessons covered by a quiz or test are as follows:

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Additional Information for This Unit

**Fraction notation**
We show fractions in two ways in our lesson plans:

Stacked: \( \frac{1}{2} \)  Not stacked: 1/2

Remember to only show students the stacked form when teaching fractions.

**Recurring games**

1. **Picking Pairs.** Students play in pairs or individually. Place cards from BLM Fraction Memory or BLM Equivalent Fractions Memory face up in an array. Students take turns picking pairs of matching cards and placing them in a common discard pile. When there are no more pairs in the array, more cards are added to it. The goal is to place all the cards into the discard pile. If students have any non-matching cards left at the end, then some of their cards must have been matched incorrectly.

2. **Memory.** This version of the well-known game is played like Picking Pairs, but the cards are face down. Students turn over two cards at a time looking for a match. If the cards match, students set them aside; otherwise, they turn them face down again and continue playing. Students can play individually or co-operatively in pairs. In either case, the goal is to find all the matches. If playing with a partner, Player 1 leads by choosing and turning over a card, and Player 2 follows by choosing and turning over another card. Players switch roles after each turn.
Goals
Students will name fractions shown by pictures divided into equal areas and record fractions using standard fractional notation.

MATERIALS
a piece of food that is easily broken (e.g., banana, bread stick)
BLM Fractions Memory (pp. L-38–40)
BLM Are the Shaded Amounts Equal? (p. L-41)
pattern blocks or shapes cut out from BLM Pattern Blocks (p. S-1, see Extension 1)
tangram pieces or shapes cut out from BLM Tangram (p. L-42, see Extension 3)

Mental math minute. Give a student a small number to double, such as 4. Then have successive students double the previous answer: the first student saying 8, the next 16, the next 32, and so on. Occasionally ask students to explain how they got the answer. When students have doubled several three-digit numbers, start with a new one-digit number.

Review “half.” Hold up a banana or another piece of food that is easily broken. Break it into two very unequal pieces. SAY: This is one of two pieces. ASK: Is this half of the banana? (no) Why not? (because the parts are not equal) Emphasize that the parts have to be equal to be called half.

Introduce other unit fractions. SAY: Just as whole numbers count whole objects, fractions are numbers that count part of an object. Draw on the board:

Point to the second circle and SAY: Because there are three equal parts in the circle, each part is called “one third” of the circle. Repeat for four equal parts and one fourth. Point out that people often say “one quarter,” “two quarters,” “three quarters,” and “four quarters” instead of “one fourth,” “two fourths,” “three fourths,” and “four fourths.” Have volunteers say what each part is called when there are five, six, or ten equal parts. Then write on the board

one third, one fourth, one fifth, one sixth, ______________, ______________

Have volunteers continue the pattern. (one seventh, one eighth) ASK: What is each part called if there are 9 equal parts? (one ninth) 10 equal parts? (one tenth) 13 equal parts? (one thirteenth)
Exercises: Write the names for these fractions.

a) one of 11 equal parts  

b) one of 15 equal parts  

c) one of 32 equal parts  

d) one of 100 equal parts  

Bonus: one of 10,000 equal parts

Answers: a) one eleventh, b) one fifteenth, c) one thirty-second, d) one hundredth, Bonus: one ten-thousandth

Counting how many equal parts are shaded. Draw on the board:

Point to the circle and ASK: How many equal parts is this circle divided into? (6) What is each equal part called? (a sixth) SAY: I’m going to count how many sixths are shaded: one sixth, two sixths, three sixths, four sixths, five sixths. ASK: How many sixths are shaded? (5) Write on the board: 5 sixths

Repeat for the next two pictures (3 eighths, 4 ninths), but have volunteers count all the parts, name what the parts are called, and then count the number of shaded parts.

Exercises: Count all the parts. Write the name of the parts. Write how much is shaded.

a) b) c) d) 

Bonus: e) 

f) 

Answers: a) sixths, 5 sixths; b) ninths, 7 ninths; c) thirds, 2 thirds; d) fourths, 3 fourths; Bonus: e) eighths, 3 eighths; f) twelfths, 5 twelfths

Fraction notation. SAY: When we write a fraction using numbers, the fraction has a top number and a bottom number. Then write the answers to parts a) through c) above in fraction notation. (5/6, 7/9, 2/3), Challenge students to predict the fraction notation for part d). (3/4) Show more pictures with different fractions shaded (see margin for examples) until all students are confidently volunteering and writing answers.

ASK: What does the bottom number in a fraction count? (how many equal parts are in the shape) What does the top number in a fraction count? (how many of the equal parts are shaded)

L-4

Teacher Resource for Grade 4
Exercises

1. Write the top and bottom parts for the shaded fraction.
   
   a) [Diagram]
   b) [Diagram]
   c) [Diagram]
   d) [Diagram]

   **Answers:** a) 3/4, b) 2/5, c) 6/8, d) 7/8

2. Write the fraction as a top and bottom number.
   
   a) three eighths  
   b) one half  
   c) four tenths

   **Bonus:** seventeen hundredths

   **Answers:** a) 3/8, b) 1/2, c) 4/10, Bonus: 17/100

3. Write the fraction using words.
   
   a) \(\frac{4}{9}\)  
   b) \(\frac{6}{8}\)  
   c) \(\frac{2}{3}\)  
   d) \(\frac{3}{4}\)

   **Bonus:** \(\frac{19}{23}\)

   **Answers:** a) four ninths, b) six eighths, c) two thirds, d) three fourths, Bonus: nineteen twenty-thirds

**ACTIVITY (Essential)**

Play Picking Pairs (see unit introduction) with the cards from BLM Fractions Memory. Students who finish early can use the same cards to play Memory (see unit introduction). Two cards match if they show the same fraction, regardless if it’s a picture, numbers, or words (see margin). For each fraction represented, there are four matching cards. As long as students have two of the four matching cards, they have a match.

**Numerator and denominator.** Tell students that the top and bottom numbers have special names that are used a lot, so students should try to remember them. SAY: The top number is called the **numerator**, and the bottom number is called the **denominator**. The denominator tells you what you are counting (halves, thirds, fourths, etc.). The numerator tells you how many halves, thirds, fourths, etc., are in the fraction.

**Same fraction, different amount.** Draw two circles on the board, one about twice the size of the other. SAY: We’re going to pretend that each circle represents a whole cake. ASK: Which would you rather have? (the big one) Why? (there is more of it) Write on the board:

\[1 \text{ small cake} = 1 \text{ large cake}\]

ASK: Is it true that one small cake equals one large cake? (no) Circle the 1s and ASK: But these are both 1s, so why aren’t the cakes equal? (they’re not the same size) Erase the equal sign. Explain that there are two important pieces of information: the number tells us how many, and the size tells us how big. Repeat, but with two equal-sized small circles and two equal-sized
large circles. Repeat with one small and one large square and shade the left half of each. ASK: What fraction of each square is shaded? (one half) Write on the board:

\[ \frac{1}{2} \text{ small cake} = \frac{1}{2} \text{ large cake} \]

ASK: Is it true that one half of a small cake equals one half of a large cake? (no)

In the following exercise, complete Question a) on the BLM as a class.

**Exercise:** Complete BLM Are the Shaded Amounts Equal?

**Answers:** a) 5/10, not equal; b) 1/2, not equal; c) 1/2, equal; d) 3/4, not equal; e) 1/2, not equal; f) 4/6, not equal; Bonus: 4/8, equal

**Extensions**

1. Give students pattern blocks or shapes cut from BLM Pattern Blocks. Each student will need one hexagon, two trapezoids, three rhombuses, and six triangles to answer these questions.

   a) What fraction of the hexagon is the trapezoid?
   b) What fraction of the hexagon is the rhombus?
   c) What fraction of the hexagon is the triangle?
   d) What fraction of the trapezoid is the triangle?

   **Bonus:** What fraction of the trapezoid is the rhombus?

   **Answers:** a) 1/2, b) 1/3, c) 1/6, d) 1/3, Bonus: 2/3

2. Add lines to make the parts equal. What fraction is shaded?

   a)
   b)
   c)
   d)

   **Answers**

   a) \[ \frac{1}{8} \]
   b) \[ \frac{3}{11} \]
   c) \[ \frac{1}{8} \], \[ \frac{3}{8} \]
3. Use tangram pieces (or BLM Tangram) to answer.
   
a) What fraction of the large tangram square is the smallest tangram triangle?
   
b) Find three pieces that all look different but are all the same size as two small triangles. What fraction of the whole are each of these shapes?
   
**Answers:** a) 1/16; b) the small square, the parallelogram, and the medium triangle; 2/16
Goals

Students will compare fractions using the common benchmarks 0, 1/2, and 1.

PRIOR KNOWLEDGE REQUIRED

Understands the relationship between half and double

MATERIALS

two identical transparent glasses
enough counters or beans to completely fill either glass
BLM Fractions Memory (pp. L-38–40, see Extension 4)

Mental math minute. Give a student a large even number to halve, such as 144. Then have successive students halve the previous answer, the first student saying 72, the next 36, and so on. Occasionally ask a student to explain how they got the answer. When students reach an odd number, start with a new large, even number.

Ways to write one half using pictures. Draw on the board:

ASK: What fraction is shaded? (1/2) Write the fraction 1/2. Draw a horizontal line across the circle and ASK: Now what fraction is shaded? (2/4) Write the fraction 2/4. The diagram should now show:

\[
\frac{1}{2} = \frac{1}{4}
\]

SAY: The amount of shading is the same, but the number of parts changed. The picture now shows both one shaded part out of two parts and two shaded parts out of four parts. The two fractions show the same amount of shading. Point out the equal sign between the fractions.

Exercises: Write two fractions for the picture. Write an equal sign between the fractions.

a) 

b) 

c) 

Answers: a) 1/2 = 2/4, b) 1/2 = 4/8, c) 1/2 = 8/16

Ways to write one half by doubling and halving. Draw several pictures of one half on the board:
SAY: In a picture showing one half, there are always twice as many parts in the whole, the denominator, as there are in the shaded part, the numerator. So, you can double the numerator to get the denominator.

**Exercises:** Write the missing denominator.

a) \( \frac{1}{2} = \frac{5}{10} \)  
   b) \( \frac{1}{2} = \frac{7}{36} \)  
   c) \( \frac{1}{2} = \frac{12}{50} \)  
   **Bonus:** \( \frac{1}{2} = \frac{4132}{8264} \)

**Answers:** a) 10, b) 14, c) 24, Bonus: 8264

SAY: If you know the denominator of a fraction equal to 1/2, you can divide by 2 to get the numerator.

**Exercises:** Write the missing numerator.

a) \( \frac{1}{2} = \frac{5}{10} \)  
   b) \( \frac{1}{2} = \frac{18}{36} \)  
   c) \( \frac{1}{2} = \frac{25}{50} \)  
   d) \( \frac{1}{2} = \frac{60}{120} \)

**Answers:** a) 5, b) 18, c) 25, d) 60

**Comparing a fraction to one half by shading a picture.** Fill one transparent glass completely with something that is easy to pour without spilling (e.g., counters, beans), and leave an identical transparent glass empty. Pour some of the beans into the empty glass, obviously more than half, then ASK: Did I pour more than half or less than half? (more) How can you tell? (if there is more in the second container than in the first, you poured more than half; if there is more in the first container, you poured less than half)

Ask for two volunteers. Tell students that you have eight counters (or beans) and you are going to give some to each volunteer. Give one volunteer three counters and the other five. ASK: Did they each get half? (no) Who got more than half? Who got less than half?

Draw on the board a circle with 2 out of 6 equal parts shaded. ASK: How many parts are shaded? (2) How many parts are not shaded? (4) Are more parts shaded or not shaded? (not shaded) Is 2/6 more than half or less than half? (less) Repeat for a circle with 5 out of 8 equal parts shaded. SAY: This time, there are more parts shaded (5) than not shaded (3), so 5/8 is more than half. Write on the board:

\[ \frac{2}{6} < \frac{1}{2} \text{ and } \frac{5}{8} > \frac{1}{2} \]

**Exercises:** What fraction is shaded? Is it more or less than half?

a)  
   b)  

**Answers:** a) 3/8, less than half; b) 6/10, more than half

**Comparing a fraction to one half without using a picture.** Draw on the board:

ASK: What fraction is shaded? (6/10) Is that more or less than half? (more)
Write on the board:

\[
\frac{6}{10}
\]

ASK: How can you tell from the fraction, without even looking at the picture, how many pieces are shaded in the picture? (the numerator is 6, so 6 parts are shaded) How can you tell how many pieces are not shaded, just from the fraction? (10 – 6 = 4, so 4 pieces are not shaded)

**Exercises:** How many pieces are shaded? How many pieces are not shaded?

a) \(\frac{3}{7}\)  
b) \(\frac{5}{9}\)  
c) \(\frac{11}{20}\)  
\[
\begin{array}{ccc}
\text{shaded} & \text{shaded} & \text{shaded} \\
\text{not shaded} & \text{not shaded} & \text{not shaded}
\end{array}
\]

d) \(\frac{47}{100}\)  
e) \(\frac{100}{1000}\)  
f) \(\frac{600}{1000}\)  
\[
\begin{array}{ccc}
\text{shaded} & \text{shaded} & \text{shaded} \\
\text{not shaded} & \text{not shaded} & \text{not shaded}
\end{array}
\]

**Answers:** a) 3, 4; b) 5, 4; c) 11, 9; d) 47, 53; e) 100, 900; f) 600, 400

SAY: If more parts are shaded than not shaded, the fraction is more than one half. If fewer parts are shaded, the fraction is less than one half. Pointing to each fraction in the exercises above, ASK: Is the fraction more than half or less than half? Students can signal thumbs up for more than half and thumbs down for less than half. (a) less, b) more, c) more, d) less, e) less, f) more)

**Exercises:** Is the fraction more than half or less than half?

a) \(\frac{5}{8}\)  
b) \(\frac{11}{20}\)  
c) \(\frac{17}{35}\)  
d) \(\frac{22}{45}\)

**Bonus:** Which fractions are more than half? Write down the letters. What do they spell?

\[
\begin{array}{cccc}
Q. \frac{3}{5} & T. \frac{3}{7} & R. \frac{11}{20} & P. \frac{5}{16} & A. \frac{3}{4} & N. \frac{25}{40} \\
G. \frac{8}{14} & E. \frac{52}{100} & Y. \frac{12}{30}
\end{array}
\]

**Answers:** a) more, b) more, c) less, d) less, Bonus: ORANGE

**Using 1/2 as a benchmark.** Write on the board the fractions 3/8 and 2/3. Point to each fraction and ASK: Is it more or less than half? (3/8 is less, 2/3 is more) Now write on the board:

\[
\boxed{} < \frac{1}{2} < \boxed{}
\]
Have a volunteer write the fractions in the correct boxes. SAY: 3/8 is less than 2/3 because 3/8 is less than 1/2, and 1/2 is less than 2/3. If students are having trouble with this, draw on the board a number line with a tick mark at each end and one in the middle. Label the tick marks 0, 1/2, and 1. ASK: Is 3/8 less than 1/2 or greater than 1/2? (less) How do you know? (there are fewer shaded parts than not shaded) Circle the left half of the number line and write “3/8” over it. Repeat for 2/3. Then have a volunteer write the appropriate fractions in the boxes.

Exercises: Compare the fractions. Write < or >. Hint: First compare them both to 1/2.

a) \[ \frac{5}{9} \quad \frac{6}{15} \]
b) \[ \frac{2}{3} \quad \frac{4}{10} \]
c) \[ \frac{10}{18} \quad \frac{12}{30} \]
d) \[ \frac{4}{9} \quad \frac{5}{8} \]

Bonus: \[ \frac{6000}{20000} \quad \frac{760}{900} \]

Answers: a) >, b) >, c) >, d) <, Bonus: <

Word problems practice.

Exercises

a) David walked \( \frac{5}{11} \) of a kilometre. Is that more than or less than half a kilometre?

b) On a soccer team, \( \frac{8}{15} \) of the players are girls. Are there more boys or girls on the team?

c) Luc gave away \( \frac{3}{5} \) of a cake and kept the rest. Did he keep more or less than half?

d) Kate ate \( \frac{4}{9} \) of a chocolate bar and Raj ate \( \frac{6}{11} \) of the chocolate bar. Who had more?

Answers: a) less, b) girls, c) less, d) Raj

Many ways to write 1 as a fraction. SAY: Like the fraction 1/2, the number 1 can also be written different ways. A whole pie is a whole pie, no matter how many pieces it is divided into. Draw on the board three fully shaded circles as shown in the margin. Point to the first circle and ASK: How many parts are shaded? (2) How many parts are in the whole circle? (2) Write “1 = 2/2” on the board. Repeat for the second and third circles, but have volunteers write the fractions equal to 1:

\[ \frac{1}{2} = \frac{2}{2} = \frac{3}{3} = \frac{4}{4} \]

Point out that a fraction is equal to 1 if the numerator is the same as the denominator because that means that all the parts are shaded.
Exercises: Write the missing number in the box to make the fraction equal to 1.

a) \[ \square \quad \frac{7}{7} \]  
b) \[ \square \quad \frac{10}{10} \]  
c) \[ \square \quad \frac{6}{6} \]  
d) \[ \square \quad \frac{9}{9} \]  

Bonus: 182

Answers: a) 7, b) 10, c) 6, d) 9, Bonus: 182

Pictures of more than one whole. Draw an empty circle on the board and ASK: How do we shade this circle to show that it is one whole circle? (shade all of it) Draw another circle of the same size beside the first, and ASK: How could we use shading in this second circle to show that now there is a little bit more than one whole? (shade a little bit) Shade a bit of the second circle (see margin).

Say: Now this shows one whole and a little bit more. Erase a little bit more of the shading (see margin). ASK: Now that the shaded piece is even smaller, does the picture still show a bit more than one whole? (yes)

Pictures of less than one whole. Draw a new circle, shade all of it, and ASK: How much does this picture show? (one whole) Erase a little as shown in the margin. ASK: Now does it show one whole? (no) Is it more than one whole or less than one whole? (less) Erase a little bit more of the shading and ASK: Is this one whole, more than one whole, or less than one whole? (less) Write the fraction \( \frac{9}{10} \) and SAY: This shows approximately 9/10, but it’s hard to tell because there aren’t any lines showing the parts. Ask for other examples of fractions that are less than one whole. ASK: In order for a fraction to be less than a whole, does the numerator have to be less than the denominator, equal to the denominator, or greater than the denominator? (less)

Exercises: Circle the fractions that are not less than one whole.

a) \[ \frac{5}{8} \]  
b) \[ \frac{7}{7} \]  
c) \[ \frac{11}{429} \]  
d) \[ \frac{999}{1000} \]  
e) \[ \frac{4306}{4306} \]  
f) \[ \frac{1}{2} \]  

Answers: b) and e) are not less than one whole.

Extensions

1. Estimate, very approximately, where the fraction goes. Write the letter above the number line.

A. \[ \frac{1}{10} \]  
B. \[ \frac{10}{11} \]  
C. \[ \frac{4}{10} \]  
D. \[ \frac{5}{8} \]

A

closer to 0 closer to \( \frac{1}{2} \) closer to \( \frac{1}{2} \) closer to 1

less than \( \frac{1}{2} \) greater than \( \frac{1}{2} \)
2. Write any number to make the fraction greater than \( \frac{1}{2} \), but less than 1.
   - a) \( \frac{7}{7} \)
   - b) \( \frac{12}{12} \)
   - c) \( \frac{6}{6} \)
   - Bonus: \( \frac{7}{7} \)
   
   **Answers:** a) 4, 5, or 6; b) 7, 8, 9, 10, or 11; c) 4 or 5; Bonus: 8–13

3. Write any number to make the fraction greater than 0, but less than \( \frac{1}{2} \).
   - a) \( \frac{7}{7} \)
   - b) \( \frac{4}{4} \)
   - c) \( \frac{6}{6} \)
   - d) \( \frac{3}{3} \)
   - e) \( \frac{12}{12} \)
   - Bonus: \( \frac{7}{7} \)
   
   **Answers:** a) 1–3, b) 1, c) 1 or 2, d) 1, e) 1–5, Bonus: any number > 14

4. Use one set of BLM Fractions Memory cards. Place all the cards face down. Turn over a card and write a fraction for the part that is not named or shaded. For example, if the card shows \( \frac{2}{3} \), “2 thirds,” “two thirds,” or a picture that shows two thirds, you write \( \frac{1}{3} \), “1 third,” “one third,” or draw a picture of \( \frac{1}{3} \).

5. Identify whether the fraction is closest to the benchmark 0, \( \frac{1}{2} \), or 1.
   - a) \( \frac{1}{9} \) is closest to ___
   - b) \( \frac{5}{11} \) is closest to ___
   - c) \( \frac{8}{14} \) is closest to ___
   - d) \( \frac{13}{15} \) is closest to ___
   - e) \( \frac{3}{20} \) is closest to ___
   - f) \( \frac{98}{100} \) is closest to ___
   
   **Answers:** b) 1/2, c) 1/2, d) 1, e) 0, f) 1
**NS4-47 Equivalent Fractions**

**Pages 23–25**

**Goals**

Students will find equivalent fractions using multiplication.

**PRIOR KNOWLEDGE REQUIRED**

Can use the phrase “times as many as” to compare two numbers

**MATERIALS**

BLM Equivalent Fractions Memory (pp. L-43–45)

**Mental math minute.** Give students multiplication questions that can be done by skip counting by 2, 3, 4, 5, or 10. Have students skip count out loud to answer multiplication questions.

**Breaking all parts into two equal parts to create equivalent fractions.**

Draw the first picture below on the board. Tell students that a parent and a child were sharing a cake, so the parent divided the cake into two pieces. The child said he wanted two pieces, so the parent cut the cake again and gave the child two pieces. Show this with a second picture:

ASK: Did the child get more cake by getting two pieces? (no) Write the first equation below on the board:

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

SAY: The fractions are equal, or equivalent, because the pictures have the same amount shaded. Then show how the numerators and denominators are related by multiplication, as in the second equation above. SAY: Both people get twice as many pieces but the same amount of cake as before.

**Exercises:** Copy the picture into your notebook. Break each part in half to create equivalent fractions.

\[\text{a) } \frac{1}{3} = \frac{2}{6}, \quad \text{b) } \frac{2}{3} = \frac{4}{6}, \quad \text{c) } \frac{1}{4} = \frac{2}{8}, \quad \text{d) } \frac{3}{4} = \frac{6}{8}\]

Sample pictures for a):
Breaking all parts into the same number of equal parts to create equivalent fractions. Draw the pairs of pictures shown below on the board. Have students signal (by holding up the correct number of fingers) how many times as many parts the first picture has compared to the second picture. (a) 4, b) 2, c) 3, d) 4)

Now shade the same amount of each picture in a pair, and have students signal how many times as many shaded parts there are in the first pictures. (a) 4, b) 2, c) 3, d) 4) If this is difficult because there are many parts, show students how to cover all but one part and count how many parts it has been divided into. For example, for a), cover either the left or right half of the circle with more parts and count how many parts they see.

Point out that because all original parts were divided into the same number of parts, the shaded parts were also divided into that number of parts.

Exercises: Write equivalent fractions from the picture on the board.

Answers: a) 4/8 = 1/2, b) 2/6 = 1/3, c) 3/6 = 1/2, d) 8/12 = 2/3

Point out how the numerators and denominators of both fractions are related by multiplication. For example:

\[
\frac{1 \times 4}{2 \times 4} = \frac{4}{8}
\]

Using a single picture to write two equivalent fractions. Tell students that you can use the same picture to show two fractions. Draw on the board the picture in the margin. SAY: You can look at the big parts or the small parts. The big parts show the fraction two thirds because two of the three big parts are shaded. The small parts show the fraction eight twelfths because eight of the twelve small parts are shaded. The fractions are shown by the same picture, so they are equivalent. Write on the board:

\[
\frac{2}{3} = \frac{8}{12}
\]
Exercises: Write two equivalent fractions from the picture.

a) 

b) 

c) 

Answers: a) 1/3, 2/6; b) 1/3, 3/9; c) 3/5, 9/15

Bonus: Write as many equivalent fractions as you can from the picture without adding more lines.

a) 

b) 

Answers: a) 2/3, 4/6, 8/12; b) 1/2, 2/4, 3/6, 6/12

Using multiplication to write an equivalent fraction. Draw the first picture below:

\[
\frac{2}{3} = \frac{12}{12}
\]

\[
\frac{2}{3} \times \frac{4}{4} = \frac{12}{12}
\]

ASK: How many parts do I have to break each piece into to get 12 parts altogether? (4) PROMPT: Three times what is 12? Again, you can focus on just one of the original parts to make it clearer. Divide the parts, then show this relationship as in the second picture above. ASK: How many parts are shaded now? (8) Fill in the numerator. SAY: That’s two groups of four that are shaded.

Exercises: Use multiplication to find the missing numerator.

a) \( \frac{1}{5} = \frac{?}{15} \)  b) \( \frac{3}{4} = \frac{?}{16} \)  c) \( \frac{5}{6} = \frac{?}{12} \)  d) \( \frac{7}{10} = \frac{?}{100} \)

Bonus: e) \( \frac{15}{100} = \frac{150}{1000} \)

Answers: a) 3, b) 12, c) 10, d) 70, Bonus: e) 150

Skip counting to find lists of equivalent fractions. Write on the board:

\[ \frac{3}{5} = \frac{3 \times 2}{5 \times 2} = \frac{3 \times 3}{5 \times 3} = \frac{3 \times 4}{5 \times 4} = \frac{3 \times 5}{5 \times 5} \]

Remind students that they can skip count to multiply. So they can create equivalent fractions by skip counting. Write on the board:

\[ \frac{3}{5} = \frac{3 \times 2}{5 \times 2} = \frac{3 \times 3}{5 \times 3} = \frac{3 \times 4}{5 \times 4} = \frac{3 \times 5}{5 \times 5} \]

Demonstrate skip counting by 3s to get the numerators, and then by 5s to get the denominators. Fill in the fractions. Point to each fraction in turn, and SAY: Two times as many parts, three times as many parts, four times as many parts, five times as many parts.
Exercise: Write four fractions equivalent to \( \frac{2}{5} \).

Bonus: Write more fractions equivalent to \( \frac{2}{5} \).

Sample answers: 4/10, 6/15, 8/20, 10/25, 12/30, 14/35

**ACTIVITY (Optional)**

Play Picking Pairs and then Memory (see unit introduction) using BLM Equivalent Fractions Memory. The third page uses more difficult multiplication; distribute it only to students who can quickly do the required multiplications (in the 6, 7, 8, 9, 11, and 12 times tables).

**Extensions**

1. Use multiplication to find the missing denominator.
   
   a) \( \frac{3}{4} = \frac{15}{x} \)
   
   b) \( \frac{1}{8} = \frac{7}{x} \)
   
   c) \( \frac{5}{6} = \frac{30}{x} \)
   
   d) \( \frac{4}{10} = \frac{40}{x} \)
   
   **Bonus:**
   
   e) \( \frac{3}{1000} = \frac{3000}{x} \)
   
   f) \( \frac{22}{100} = \frac{2200}{x} \)
   
   **Answers:** a) 20, b) 56, c) 36, d) 100, Bonus: e) 1 000 000, f) 10 000

2. Is there a fraction equivalent to \( \frac{3}{8} \) with an odd denominator? Explain.

   **Answer:** No. The denominator will always be a multiple of 8, so it will always be even.
NS4-48 Comparing and Ordering Fractions

Pages 26–29

CURRICULUM REQUIREMENT
AB: required
BC: required
MB: required
ON: required

VOCABULARY
compare
denominator
fraction
fraction names (half, third, fourth, and so on)
greater than (>)
greatest
least
less than (<)
umerator
order

NOTE: Under the BC curriculum, unless comparing fractions to the benchmarks 0, 1/2, and 1, students only need to compare and order fractions with the same denominator.

Goals
Students will compare and order fractions based on the size and the number of fractional parts.
Students will compare and order fractions using number lines and fraction strips.

PRIOR KNOWLEDGE REQUIRED
Knows that 1/2 can be written in different ways
Understands and can use < and > properly
Can compare and order whole numbers

MATERIALS
BLM Fraction Cards (pp. L-46–48)
BLM Ordering with Fraction Strips (p. L-49)
BLM Ordering Fractions (pp. L-50–51, see Extension 1)

Mental math minute. Have groups of three students add two-digit numbers by adding tens and ones separately. Give an addition problem, such as 35 + 46. The first student adds the tens: 30 + 40 = 70; the second adds the ones: 5 + 6 = 11; and the third student finishes the addition: 70 + 11 = 81, so 35 + 46 = 81. Start with problems that do not require regrouping, such as 25 + 34, and continue to questions that require regrouping ones.

Comparing fractions with the same denominator. Draw on the board:

ASK: Are these the same size? (yes) Do they have the same number of parts? (yes) Are the parts the same size? (yes) Have volunteers name the fractions. (1/4 and 3/4) Write them on the board. ASK: Which is more, one fourth of the circle or three fourths of the circle? SAY: Three fourths of something is always greater than one fourth of the same thing, since the fourths are the same size. Have a volunteer write “<” or “>” between the fractions. Draw on the board:

\[
\begin{array}{cccc}
\ & \ & \ & \ \\
\ & \ & \ & \ \\
\ & \ & \ & \ \\
\ & \ & \ & \ \\
\ & \ & \ & \ \\
\ & \ & \ & \ \\
\end{array}
\quad \frac{3}{6}
\]

\[
\begin{array}{cccc}
\ & \ & \ & \ \\
\ & \ & \ & \ \\
\ & \ & \ & \ \\
\ & \ & \ & \ \\
\ & \ & \ & \ \\
\ & \ & \ & \ \\
\end{array}
\quad \frac{5}{6}
\]
ASK: Which strip has a greater amount shaded? (the bottom one) Which is more, five sixths or three sixths of the strip? (5/6 of the strip) Write on the board:

\[
\frac{5}{6} \quad \frac{3}{6}
\]

Have a volunteer write the correct sign between the fractions. (>)

**Exercises:** Write < or >.

a) \[
\frac{2}{5} \quad \underline{\boxed{\quad \frac{4}{5}}}
\]

b) \[
\frac{3}{4} \quad \underline{\boxed{\quad \frac{2}{4}}}
\]

c) \[
\frac{6}{10} \quad \underline{\boxed{\quad \frac{9}{10}}}
\]

**Answers:** a) <, b) >, c) <, Bonus: >

Write on the board:

\[
\frac{4}{9} > \frac{9}{9}
\]

ASK: What numbers could we put in the blank to make the relationship correct? (0, 1, 2, and 3) Have students suggest all possibilities. Repeat with 7/10 < ____/10. (8, 9, 10)

**Exercises:** Write any number in the blank that makes the relationship correct.

a) \[
\frac{6}{10} > \underline{\boxed{\quad \frac{1}{10}}}
\]

b) \[
\frac{2}{5} < \underline{\boxed{\quad \frac{1}{5}}}
\]

c) \[
\frac{1}{2} < \underline{\boxed{\quad \frac{1}{2}}}
\]

d) \[
\frac{7}{7} > \underline{\boxed{\quad \frac{1}{7}}}
\]

**Answers:** a) 5, 4, 3, 2, 1, or 0; b) 3, 4, or 5; c) 2; d) 6, 5, 4, 3, 2, 1, or 0

**ACTIVITY 1 (Essential)**

1. Give each student a card from BLM Fraction Cards. Have students group themselves according to the denominators on their cards. Then ask students to line up from least (at the front) to greatest (at the back).

**Ordering fractions with the same denominator using number lines.**

Draw on the board:

\[
\begin{array}{cccccccc}
& 0 & 1 & 2 & 3 & 4 & 5 & 6 \\
\hline
\frac{1}{6} & \frac{2}{6} & \frac{3}{6} & \frac{4}{6} & \frac{5}{6} & \frac{6}{6} \\
\end{array}
\]

Have a volunteer mark an X on the number line to show 1/6. Continue with the next fraction to the right in the group written below the number line until all these fractions have been marked. ASK: Are the fractions in order.
now, from least to greatest? (yes) Point out that the number line orders the fractions for you. Write the fractions in order in the boxes. \(1/6 < 2/6 < 4/6 < 4/6\)

Exercises

1. Use the number line to order the fractions. Draw an X for each fraction.

   a) \[
   \frac{2}{9}, \frac{7}{9}, \frac{5}{9}, \frac{8}{9}, \frac{1}{9}, \frac{4}{9}
   \]

   b) \[
   \frac{5}{5}, \frac{3}{5}, \frac{0}{5}, \frac{2}{5}
   \]

   Answers: a) 1/9, 2/9, 4/9, 5/9, 7/9, 8/9; b) 0/5, 2/5, 3/5, 5/5

2. Write a fraction that is between the two fractions.

   a) \[\frac{3}{9} \text{ and } \frac{8}{9}\]
   b) \[\frac{1}{5} \text{ and } \frac{5}{5}\]
   c) \[\frac{1}{4} \text{ and } \frac{3}{4}\]
   d) \[\frac{5}{10} \text{ and } \frac{8}{10}\]

   Sample answers: a) 5/9, b) 4/5, c) 2/4, d) 6/10

Ordering fractions with the same denominator by considering the numerators. Draw on the board:

\[
\frac{1}{6} < \frac{2}{6} < \frac{3}{6} < \frac{4}{6}
\]

ASK: What does the denominator “6” mean? (6 parts) Since the denominators are all the same, what tells us how to order the fractions? (numerators) If we do that, which fraction is first and which is last? (one sixth, six sixths) Have volunteers write the fractions in the blanks, in order from least to greatest. \(1/6 < 2/6 < 4/6 < 6/6\)

Exercises: Order the fractions from least to greatest.

   a) \[
   \frac{2}{9}, \frac{7}{9}, \frac{5}{9}, \frac{8}{9}, \frac{1}{9}, \frac{4}{9}
   \]
   b) \[
   \frac{5}{5}, \frac{3}{5}, \frac{0}{5}, \frac{2}{5}
   \]

   Answers: a) 1/9, 2/9, 4/9, 5/9, 7/9, 8/9; b) 0/5, 2/5, 3/5, 5/5
Comparing fractions with the same numerator using fraction strips.

Draw on the board:

\[
\begin{array}{ccc}
\text{ } & \text{ } & \\
\text{ } & \text{ } & \\
\text{ } & \text{ } & \\
\end{array}
\]

ASK: Are the strips the same length? (yes) Do they have the same number of parts? (no) Are the parts the same size? (no) Have volunteers name the fractions. (one fourth, one third, one half) Write the fractions beside the strips, using standard fraction notation. ASK: Which is more, one fourth of the strip or one half of the strip? (one half) Why? (one half is bigger) Point out that the more parts something is divided into, the smaller each part is.

Write on the board:

\[
\begin{array}{c}
\frac{1}{4} & \frac{1}{9} \\
\end{array}
\]

ASK: Which fraction is greater? (1/4) Have a volunteer write the correct inequality sign in the box. (>) Repeat for 3/8 and 3/5. (3/8 < 3/5)

Exercises
1. Write < or >.

\[
\begin{array}{ccc}
a) \frac{1}{8} & \frac{1}{3} & b) \frac{1}{2} & \frac{1}{10} & c) \frac{1}{5} & \frac{1}{4} \\
d) \frac{1}{10} & \frac{1}{100} & e) \frac{2}{5} & \frac{2}{8} & f) \frac{7}{20} & \frac{7}{8} \\
g) \frac{6}{12} & \frac{6}{16} & \text{Bonus:} \frac{35}{1000} & \frac{35}{40} \\
\end{array}
\]

Answers: a) <, b) >, c) <, d) >, e) >, f) <, g) >, Bonus: <

2. Write any number in the blank that makes the relationship correct.

\[
\begin{array}{ccc}
a) \frac{1}{10} & \frac{}{12} & b) \frac{3}{7} & \frac{}{5} \\
c) \frac{5}{9} & \frac{}{5} & \text{Bonus:} \frac{172}{983} & \frac{172}{172} \\
\end{array}
\]

Sample answers: a) 1, b) 3, c) 40, Bonus: 175

ACTIVITY 2 (Essential)
2. Repeat Activity 1, but have students with the same numerator group together and then order themselves.
Ordering fractions with the same numerator using fraction strips.

Draw on the board:

\[
\begin{array}{cccccc}
\frac{1}{2} & \frac{1}{5} & \frac{1}{10} & \frac{1}{4} & \frac{1}{3} \\
\end{array}
\]

Explain that you want to order the fractions from least to greatest.
ASK: What do the denominators represent? (the number of parts)
SAY: The more parts the strip is divided into, the smaller the parts are, which is why the largest denominator represents the smallest shaded fraction. Have volunteers match each fraction to a fraction strip, shade it, and then write the fraction in the box below the strip. The finished diagram should look like this:

\[
\begin{array}{cccccc}
\frac{1}{10} & \frac{1}{5} & \frac{1}{4} & \frac{1}{3} & \frac{1}{2} \\
\end{array}
\]

ASK: Are the fractions ordered from least to greatest? (yes)

**Exercise:** Complete BLM Ordering with Fraction Strips.

**Answers:**
1. a) 2/9, 2/6, 2/5, 2/3; b) 3/16, 3/12, 3/10, 3/7;
2. a) 1/1, 1/3, 1/8, 1/10; b) 4/6, 4/8, 4/15, 4/18

Ordering fractions with the same numerator by considering the numerators and denominators.

Draw on the board:

\[
\begin{array}{cccccc}
\frac{2}{4} & \frac{2}{5} & \frac{2}{10} & \frac{2}{3} \\
\end{array}
\]

ASK: What does the numerator “2” mean here? (the number of shaded parts) If we order the fractions from greatest to least, which fraction will be first? (2/2) Second? (2/3) Last? (2/10) Write all the fractions in the boxes, from greatest to least. (2/2, 2/3, 2/4, 2/5, 2/10)

**Exercises:** Order the fractions in part a) from least to greatest, and the fractions in part b) from greatest to least.

a) \[
\begin{array}{cccccc}
\frac{3}{18} & \frac{3}{5} & \frac{3}{11} & \frac{3}{21} \\
\end{array}
\]
Comparing fractions with different numerators and denominators using the benchmark $\frac{1}{2}$. Draw on the board:

```
0 1/2 1
```

Have students name several fractions, with any denominator, between 0 and 1/2 and then between 1/2 and 1. Write the fractions on the appropriate side of 1/2, but not in order. Then, choose one fraction from each side and write them in a pair, in either order, with a box in between. For example, if $\frac{1}{3}$ and $\frac{2}{10}$ are on the left of 1/2 and $\frac{4}{5}$ and $\frac{3}{4}$ are on the right, you might write:

```
\frac{3}{4} \bigg| \frac{2}{10} \text{ or } \frac{2}{10} \bigg| \frac{4}{5}
```

Have students decide if a greater than or less than sign should go in the box. Write several pairs on the board, and have students copy them and write in inequality signs on their own. Take them up together. Erase everything. Repeat, but use a table instead of a number line:

```
<table>
<thead>
<tr>
<th>Between 0 and $\frac{1}{2}$</th>
<th>Between $\frac{1}{2}$ and 1</th>
</tr>
</thead>
</table>
```

Word problems practice.

Exercises

a) Marla thinks that $\frac{1}{2}$ of a cake is equal to $\frac{1}{2}$ of the moon, but Cathy doesn’t think that is true. She explained why to her teacher, who said her explanation was correct. What was Cathy’s explanation?

b) Arsham doesn’t think that $\frac{1}{2}$ of a cherry pie can weigh the same as a whole apple pie. Is he correct? Explain.

Sample answers

a) One half means one whole divided into two equal parts. The moon is bigger than a cake, so half of the moon cannot equal half of a cake.

b) No. If a cherry pie is much bigger than an apple pie, half the cherry pie could weigh the same as the whole apple pie.
NOTE: Extension 1 is required to cover the Ontario curriculum.

Extensions

1. Complete BLM Ordering Fractions.

   Answers: 1. a) 10/4, 9/4; b) 8/4 < 9/4 < 10/4; 2. a) 9/3, 10/3, 8/3; b) 10/3 > 9/3 > 8/3; 3. a) 8/2, 9/2, 7/2; b) 7/2 < 8/2 < 9/2; 4. a) 16/10, 20/10, 18/10; b) 20/10 > 18/10 > 16/10; 5. >, <, >

2. Use two number lines to decide if the fraction is closer to 0, $\frac{1}{2}$, or 1.

   Write 0, $\frac{1}{2}$, or 1.

   a) $\frac{5}{7}$ is closer to _____  
   b) $\frac{1}{7}$ is closer to _____  
   c) $\frac{6}{7}$ is closer to _____  

   Answers: a) 1/2, b) 0, c) 1

3. Compare the fractions $\frac{3}{4}$ and $\frac{4}{5}$ by comparing how much of a whole pie is left if the given amounts are eaten. Hint: The smaller fraction is from the pie with a bigger piece left over.

   Answer: 1/4 is more than 1/5, so 3/4 is less than 4/5.

4. Write the fractions in order from least to greatest.

   Answer: 1/8, 1/5, 3/5, 6/8
Goals

Students will name fractions of a set and recognize that equal parts of a set do not have to have the same area.

PRIOR KNOWLEDGE REQUIRED

Can name fractions from area models within one

MATERIALS

10 counters in one colour and 10 counters in another for each student (see Extension 3)

Mental math minute. Ask students to solve multiplication questions within the range of $1 \times 1$ to $10 \times 10$ and the corresponding division questions. For each number, go through the questions in order, such as $1 \times 3$, $3 \div 3$, $2 \times 3$, $6 \div 3$, and so on, up to $10 \times 3$ and $30 \div 3$. Then repeat with a different number. Next, try questions out of order, but keep the corresponding multiplication and division together.

Review equal parts of a whole. Ask students to brainstorm all the things they can take a fraction of (Examples: a circle, a square, other shapes; a line, a distance, a cup, a liter, a pound; prompt students to think of things that are not shapes, if necessary).

Introduce fractions of a set. Tell students that they can take a fraction of a set of objects. Draw on the board:

ASK: What fraction of the circles are shaded? (3/8) Now draw on the board:

SAY: There are still 8 circles, and 3 of them are shaded. We can say that three eighths of the circles are shaded, even though the circles are not all the same size. ASK: What fraction of the circles are big? (5/8)

Exercises: Find the fraction of the shapes that are …

a) circles  b) triangles  c) shaded  d) not shaded

Bonus

e) circles  f) small  g) shaded

h) not shaded  i) big  j) triangles
Answers: a) 3/5, b) 2/5, c) 2/5, d) 3/5, Bonus: e) 3/5, f) 3/5, g) 4/5, h) 1/5, i) 2/5, j) 2/5

Exercises: What does the fraction describe?

\[ \begin{array}{cccccc}
\blacksquare & \triangle & \bigcirc & \triangle & \square & \triangle
\end{array} \]

a) \( \frac{3}{8} \) of the shapes are _____________

b) \( \frac{1}{8} \) of the shapes are _____________

Bonus: \( \frac{1}{2} \) of the shapes are _____________

Answers: a) triangles, b) circles, Bonus: squares, shaded, or not shaded

Bonus

a) Describe the picture using the fraction \( \frac{3}{5} \) in two different ways.

\[ \begin{array}{cccc}
\blacksquare & \triangle & \triangle & \square & \blacksquare
\end{array} \]

b) Describe the picture using the fraction \( \frac{3}{5} \) in three different ways.

\[ \begin{array}{cccc}
\bigcirc & \bigcirc & \triangle & \bigcirc & \bigtriangleup
\end{array} \]

Answers: a) 3/5 are shaded, 3/5 are squares; b) 3/5 are circles, 3/5 are not shaded, 3/5 are small

Using “and,” “or,” and “not.” Draw on the board:

\[ \begin{array}{cccccc}
\blacksquare & \blacksquare & \bigcirc & \bigcirc & \bigcirc & \bigcirc
\end{array} \]

Exercises: What fraction of the shapes are ...

a) circles  b) squares  c) circles or squares

d) not circles  e) not triangles

Bonus

f) Which two parts above have the same answer?

g) Make up another question that has the same answer as part d).

Answers: a) 2/9, b) 4/9, c) 6/9, d) 7/9, e) 6/9, Bonus: f) parts c) and e), g) What fractions of the shapes are squares or triangles?

Tell students that they can take a fraction of any kind of set, not just shapes.

ASK: What fraction of your fingers are thumbs? (1/5 or 2/10) Point out that both answers are correct. Emphasize that your fingers do not have to all be the same size; they are still equal parts of a set.

Then ask students questions about themselves. ASK: What fraction of the students in the class wear glasses? What fraction play a musical instrument?
SAY: A basketball team played five games and won two of them.
ASK: What fraction of the games did the team win? \(\frac{2}{5}\)

**Exercises:** What fraction of their games did the team win?

a) Team A played 6 games and won 4.

b) Team B won 5 games and lost 3.

c) Team C played 9 games and won 7.

d) Team D won 4 games and lost 5.

**Answers:** a) \(\frac{4}{6}\), b) \(\frac{5}{8}\), c) \(\frac{7}{9}\), d) \(\frac{4}{9}\)

ASK: Which team won more games, Team C or Team D? (Team C) Which team lost more games, Team C or Team D? (Team D) How can you tell which team is better? (compare the fractions of games won)

**Extensions**

1. Explain how you can use your hands to show that \(\frac{1}{2}\) is equivalent to \(\frac{5}{10}\).

2. What word do you get when you combine ...

   a) the first \(\frac{2}{3}\) of sun and the first \(\frac{1}{2}\) of person?

   b) the first \(\frac{1}{2}\) of grease and the first \(\frac{1}{2}\) of ends?

   c) the first \(\frac{1}{2}\) of wood and the last \(\frac{2}{3}\) of arm?

**Answers:** a) super, b) green, c) worm

**Bonus:** Try making up your own such questions.

3. a) Write as many equivalent fractions as you can for the picture.

```
● ● ○ ○ ○
● ● ○ ○ ○
● ● ○ ○ ○
● ● ○ ○ ○
```

b) Make a model (using counters) of a fraction that can be described in two ways. Example:

```
○ ○ ○ ○ ○ ○
\frac{3}{6}\ of the counters are white
\frac{1}{2}\ of the counters are white
```
c) Using 10 counters of one colour and 10 counters of a different colour, make a model of a fraction that can be described in at least three different ways. Then write the three fractions.

**Sample answers:**

\[
\begin{align*}
\text{Counter 1:} & & \text{Counter 2:} \\
\begin{array}{ccc}
\text{\(1/2\)} & \text{\(2/4\)} & \text{\(4/8\)} \\
\end{array} & \begin{array}{ccc}
\text{\(6/12\)} & \text{\(2/4\)} & \text{\(1/2\)} \\
\end{array}
\end{align*}
\]

4. Draw a set of five shapes (circles and squares) such that:

a) \(\frac{2}{5}\) are squares
\(\frac{2}{5}\) are shaded
One circle is shaded

**Answer**

\[
\begin{array}{ccc}
\text{\(\square\)} & \text{\(\square\)} & \text{\(\bigcirc\)} \text{\(\bigcirc\)} \text{\(\bigcirc\)}
\end{array}
\]

b) \(\frac{3}{5}\) are squares
\(\frac{2}{5}\) are shaded
No circle is shaded

**Answer**

\[
\begin{array}{ccc}
\text{\(\square\)} & \text{\(\square\)} & \text{\(\square\)} \text{\(\bigcirc\)} \text{\(\bigcirc\)}
\end{array}
\]

c) \(\frac{3}{5}\) are squares
\(\frac{3}{5}\) are shaded
\(\frac{1}{3}\) of the squares are shaded

**Answer**

\[
\begin{array}{ccc}
\text{\(\square\)} & \text{\(\square\)} & \text{\(\square\)} \text{\(\bigcirc\)} \text{\(\bigcirc\)}
\end{array}
\]

Bonus

\[
\frac{3}{5}\text{ are squares}
\]

\[
\frac{3}{5}\text{ are shaded}
\]

\[
\frac{2}{5}\text{ are big}
\]

\[
\frac{1}{3}\text{ of the squares is big}
\]

\[
\frac{2}{3}\text{ of the squares are shaded}
\]

No shaded shape is big

Answer

[Diagram showing a grid of squares with some shaded and some big]

CA 4.2 LP U9 NS45-51 L1-37 R1.indd   29
2019-01-08   11:59:42 AM
Fractions Memory (1)

\[
\begin{array}{ccc}
\frac{1}{2} & \frac{2}{3} & \frac{1}{4} \\
\text{one half} & \text{two thirds} & \text{one fourth}
\end{array}
\]
Fractions Memory (2)

3/5, 5/6, 2/7

three fifths, five sixths, two sevenths
Fractions Memory (3)

\[
\frac{3}{8} \quad \frac{2}{9} \quad \frac{7}{10}
\]

three eighths  two ninths  seven tenths
Are the Shaded Amounts Equal?

Write the fraction that is shaded and if the shaded amounts are “equal” or “not equal.”

a) ![Diagram a]
   - Fraction: [Blank]
   - Shaded amounts: [Blank]

b) ![Diagram b]
   - Fraction: [Blank]
   - Shaded amounts: [Blank]

c) ![Diagram c]
   - Fraction: [Blank]
   - Shaded amounts: [Blank]

d) ![Diagram d]
   - Fraction: [Blank]
   - Shaded amounts: [Blank]

e) ![Diagram e]
   - Fraction: [Blank]
   - Shaded amounts: [Blank]

f) ![Diagram f]
   - Fraction: [Blank]
   - Shaded amounts: [Blank]

BONUS

- Fraction: [Blank]
- Shaded amounts: [Blank]
Tangram
## Equivalent Fractions Memory (1)

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# Equivalent Fractions Memory (2)

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## Equivalent Fractions Memory (3)

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### Fraction Cards (1)

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<tr>
<td>25</td>
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</table>
Fraction Cards (2)

\[
\begin{array}{ccc}
9 & 11 & 14 \\
\frac{15}{15} & \frac{15}{15} & \frac{15}{15} \\
9 & 11 & 14 \\
\frac{18}{18} & \frac{18}{18} & \frac{18}{18} \\
9 & 11 & 14 \\
\frac{24}{24} & \frac{24}{24} & \frac{24}{24} \\
9 & 11 & 14 \\
\frac{25}{25} & \frac{25}{25} & \frac{25}{25}
\end{array}
\]
Fraction Cards (3)

\[
\begin{array}{ccc}
\frac{2}{30} & \frac{3}{30} & \frac{5}{30} \\
\frac{9}{30} & \frac{11}{30} & \frac{14}{30} \\
\frac{2}{31} & \frac{3}{31} & \frac{5}{31} \\
\frac{9}{31} & \frac{11}{31} & \frac{14}{31}
\end{array}
\]
Ordering with Fraction Strips

1. Shade the strips to show the fractions. Order the fractions from least to greatest.
   a) \( \frac{2}{5}, \frac{2}{9}, \frac{2}{3}, \frac{2}{6} \)
   b) \( \frac{3}{12}, \frac{3}{16}, \frac{3}{7}, \frac{3}{10} \)

2. Shade the strips to show the fractions. Order the fractions from greatest to least.
   a) \( \frac{1}{8}, \frac{1}{3}, \frac{1}{10}, \frac{1}{1} \)
   b) \( \frac{4}{15}, \frac{4}{6}, \frac{4}{18}, \frac{4}{8} \)
Ordering Fractions (1)

1. a) Count how many fourths are shaded.

b) Write the fractions in order from least to greatest.

2. a) Count how many thirds are shaded.

b) Write the fractions in order from least to greatest.
Ordering Fractions (2)

3. a) Count how many halves are shaded.

\[\begin{array}{c}
\text{Shaded Halves} \\
\end{array}\]

b) Write the fractions in order from least to greatest.

\[\begin{array}{c}
\text{Fractions in Order} \\
\end{array}\]

4. a) Count how many tenths are shaded. Write the fractions in order from greatest to least.

\[\begin{array}{c}
\text{Shaded Tenths} \\
\end{array}\]

b) Write the fractions in order from least to greatest.

\[\begin{array}{c}
\text{Fractions in Order} \\
\end{array}\]

5. Write < or >.

If \(\frac{8}{8} = 1\) then \(\frac{9}{8} \quad \text{1.}\)

If \(\frac{5}{5} = 1\) then \(\frac{4}{5} \quad \text{1.}\)

Since \(\frac{9}{8} > 1\) and \(\frac{4}{5} < 1\), then \(\frac{9}{8} \quad \text{and} \quad \frac{4}{5} \).
Pattern Blocks

---

Blackline Master — Generic — Teacher Resource for Grade 4

S-1