Show You Know

Determine a common denominator for each pair of fractions. Then show two different methods to determine equivalent fractions using the common denominator.

a) $\frac{1}{3}$ and $\frac{3}{4}$

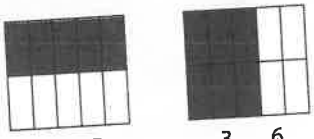
b) $\frac{5}{8}$ and $\frac{1}{6}$

c) $\frac{3}{20}$ and $\frac{4}{25}$

Connect and Reflect

Key Ideas

- You can use paper folding, diagrams, pattern blocks, or multiples to determine a common denominator.



$\frac{1}{2} = \frac{5}{10}$

$\frac{3}{5} = \frac{6}{10}$

The common denominator for $\frac{1}{2}$ and $\frac{3}{5}$ is 10.

- To write fractions with a common denominator, determine equivalent fractions.

$$\frac{1}{2} = \frac{3}{6}$$

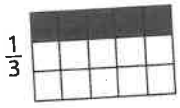
(×3 above, ×3 below)

Practise

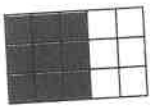
For help with #1 to #5, refer to the Example on pages 103–104.

1. Determine a common denominator and equivalent fractions for each pair of fractions.

a)

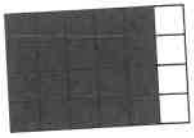


$\frac{1}{3}$

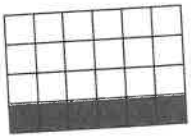


$\frac{3}{5}$

b)



$\frac{5}{6}$



$\frac{1}{4}$

2. Determine a common denominator and equivalent fractions for each pair of fractions.

a)

$\frac{1}{4}$

$\frac{2}{3}$

b)

$\frac{1}{2}$

$\frac{3}{4}$

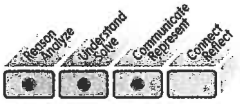
3. How can you use a diagram to determine a common denominator for each pair of fractions?
   a) $\frac{1}{2}$ and $\frac{1}{3}$
   b) $\frac{2}{3}$ and $\frac{1}{5}$
   c) $\frac{1}{6}$ and $\frac{2}{5}$

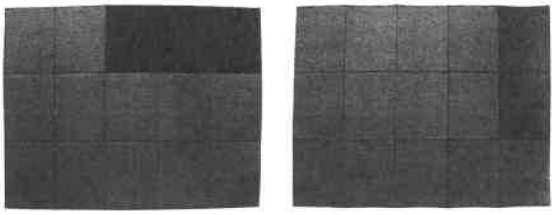
4. Use multiples to determine a common denominator for each set of fractions. Then write equivalent fractions using the common denominator.
   a) $\frac{1}{2}$ and $\frac{2}{5}$ b) $\frac{1}{3}$ and $\frac{1}{4}$ c) $\frac{5}{8}$, $\frac{1}{6}$, and $\frac{5}{12}$

5. Determine a common denominator for each set of fractions and write the equivalent fractions.
   a) $\frac{3}{8}$ and $\frac{1}{4}$ b) $\frac{1}{6}$ and $\frac{1}{4}$ c) $\frac{1}{5}$, $\frac{2}{3}$, and $\frac{7}{10}$

Apply

6. **Competency Check** Tina wants to find a common denominator and equivalent fractions for $\frac{3}{4}$ and $\frac{2}{3}$. She draws the following diagrams:





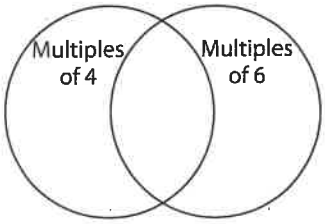
   a) Is she correct? If not, what is her error(s)?
   b) Solve the question using your method.
   c) Discuss your method with a classmate.

7. Ian thinks a common denominator for $\frac{3}{4}$ and $\frac{5}{6}$ is 12. Meko thinks it is 10. Do you agree with Ian or Meko? What mistake did the other person likely make?

8. How can you use multiples to find a common denominator for the fractions $\frac{1}{2}$, $\frac{2}{5}$, and $\frac{3}{4}$? What is the common denominator?

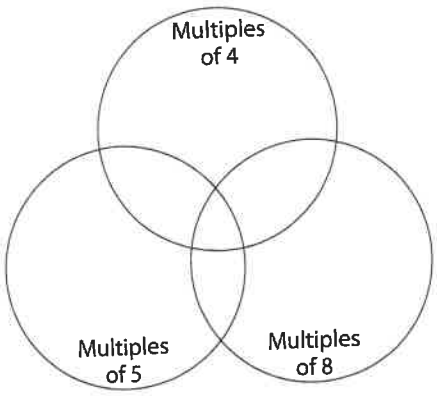
9. Which is the greater fraction in each pair? Explain your reasoning.
   a) $\frac{3}{4}$, $\frac{11}{16}$ b) $\frac{5}{7}$, $\frac{34}{49}$
   c) $\frac{11}{30}$, $\frac{3}{10}$ d) $\frac{12}{27}$, $\frac{4}{9}$

10. Draw a Venn diagram like the one shown to list common denominators that are less than 50 for $\frac{1}{4}$ and $\frac{1}{6}$. Which is the least common multiple?



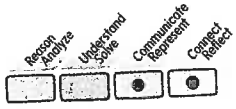
11. a) Draw and label a Venn diagram like the one shown to list common denominators that are less than 50 for $\frac{1}{4}$, $\frac{1}{5}$, and $\frac{1}{8}$.

b) What patterns do you notice?



12. Blood in the human body is made up of three types of blood cells. Approximately $\frac{1}{700}$ are white blood cells, $\frac{17}{350}$ are platelets, and $\frac{165}{175}$ are red blood cells. In a sample of 700 blood cells, how many of each type of cell would you expect to find? Explain your thinking.

13. During a class discussion, Dakota says time can be expressed in fifths. John says time can be expressed in sixtieths. Adrianna says time can be expressed in quarters. Mandeep says time can be expressed in thirds. Do you agree with any of these students? Is there another way to express time? Explain.



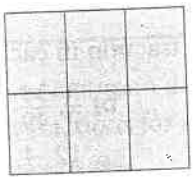
14. Fill in each blank with a numerator to make the statement true. Provide as many answers as possible. Explain how you found the solution to each.

a) $\frac{1}{4} < \frac{\blacksquare}{2} < \frac{3}{4}$ **b)** $\frac{1}{3} < \frac{\blacksquare}{6} < \frac{5}{6}$ **c)** $\frac{2}{5} < \frac{\blacksquare}{10} < \frac{4}{5}$

15. Explain how to list the fractions in order from least to greatest (ascending order).

$\frac{1}{3}, \frac{1}{4}, \frac{5}{6}, \frac{2}{3}, \frac{3}{4}, \frac{1}{2}$

16. The ancient Greeks thought of numbers as being represented by rectangles. They would have made a rectangle like the one shown to represent 6.



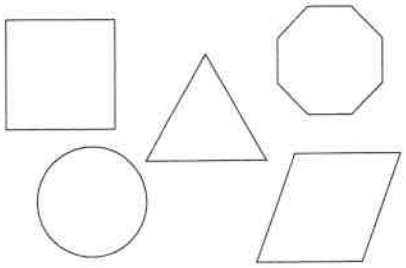
a) How could you use this rectangle to find a common denominator for $\frac{1}{2}$ and $\frac{1}{3}$? Explain.

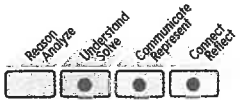
b) Use a rectangle to find a common denominator for $\frac{3}{4}$ and $\frac{1}{7}$.

17. $\frac{5}{12}$ of a schoolyard is taken up by grass. $\frac{7}{18}$ is the track. The rest is pavement. Which takes up more space, the grass or the track? Explain how you know.

Extend

18. a) Copy the shapes. For each shape, colour in $\frac{3}{8}$.





b) Which shapes were more difficult to colour in? Which were easier? Explain.

c) Imagine you are using paper folding to determine a common denominator for $\frac{3}{8}$ and $\frac{2}{5}$. Which of the shapes could you use? Which is the easiest shape to use? Why? Show the work by drawing the fold lines on your shapes.

d) Compare your drawings with a classmate's.

19. a) Which of the following fractions is closest to $\frac{3}{10}$? How could you convince someone else your answer is correct?

A $\frac{2}{5}$ **B** $\frac{21}{100}$ **C** $\frac{1}{4}$ **D** $\frac{9}{40}$

b) Determine another fraction that is closer to $\frac{3}{10}$ than the one you chose in part a).

20. The chart shows the fraction of the total number of students at Maple Leaf Elementary School that are in each grade.

Kindergarten	$\frac{7}{40}$
Grade 1	$\frac{3}{20}$
Grade 2	$\frac{11}{72}$
Grade 3	$\frac{5}{36}$
Grade 4	$\frac{26}{180}$
Grade 5	$\frac{2}{15}$
Grade 6	$\frac{13}{90}$

a) Which grade has the greatest number of students?

b) Which grade has the least number of students?

c) Which two grades have the same number of students?

d) If there are 54 students in grade 1, what is the total number of students in the school?

21. What is the common denominator for the following?

a) $\frac{1}{a}$ and $\frac{1}{b}$

b) $\frac{1}{a}$ and $\frac{1}{b}$ and $\frac{1}{c}$