

LESSON ORGANIZER

80–100 min

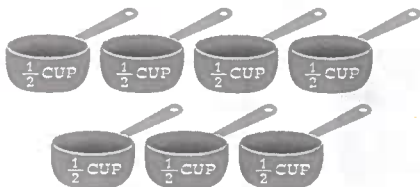
Student Materials

- Pattern Blocks (PM 28)
- triangular dot paper (PM 26)
- number lines (PM 32)
- 1-cm grid paper (PM 23)
- coloured pencils
- hundredths grids (Master 5.14)

Assessment: Master 5.1 Unit Rubric: Fractions, Ratios, and Percents; Master 5.4 Unit Summary: Fractions, Ratios, and Percents

Sample Solutions

2. $3\frac{1}{2}$ is the same as $\frac{6}{2} + \frac{1}{2} = \frac{7}{2}$, so Jolene will have to fill the measuring cup 7 times.



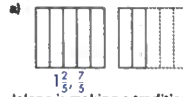
5. a) $40 \div 12 = 3 \text{ R}4$. The students ate 3 pizzas plus 4 slices, so they must have ordered at least 4 pizzas.
 c) 4 pizzas is 48 slices, so 8 slices were left over. This is $\frac{8}{12}$ or $\frac{2}{3}$.

Unit 5

Show What You Know

LESSON

1. Use a mixed number and an improper fraction to describe each picture.



2. Jolene is making a traditional ham dish for Le Banquet de la Cabane à Sucre. She has a $\frac{1}{2}$ -cup measuring cup. How many times will Jolene have to fill it to measure $3\frac{1}{2}$ cups of maple syrup? 7 times
 Draw a picture to show your solution.



3. Write each mixed number as an improper fraction.

a) $3\frac{1}{4}$ b) $7\frac{2}{3}$ c) $4\frac{1}{2}$ d) $2\frac{7}{8}$

4. Write each improper fraction as a mixed number.

a) $\frac{14}{5}$ b) $\frac{17}{8}$ c) $\frac{11}{3}$ d) $\frac{15}{6}$ or $2\frac{1}{2}$

5. A class ordered 12-slice pizzas for lunch.

The students ate 40 slices.

- a) What is the least number of pizzas the class could have ordered? 4 pizzas

b) Write an improper fraction and a mixed number for the number of pizzas the students ate. $\frac{40}{12}$ or $\frac{10}{3}$, $3\frac{1}{3}$ or $3\frac{1}{3}$

c) Suppose the least number of pizzas were ordered. Write a fraction for how many pizzas were left over. $\frac{8}{12}$ or $\frac{2}{3}$

6. You will need triangular dot paper.

Use the yellow hexagon Pattern Block to represent one whole.

- a) Draw a picture to show each improper fraction.

$\frac{7}{3}$ $\frac{11}{6}$ $\frac{9}{2}$ $\frac{10}{3}$

- b) Draw a picture to show each mixed number.

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

c) Order the improper fractions in part a from least to greatest. $\frac{11}{6}$, $\frac{7}{3}$, $\frac{10}{3}$, $\frac{9}{2}$

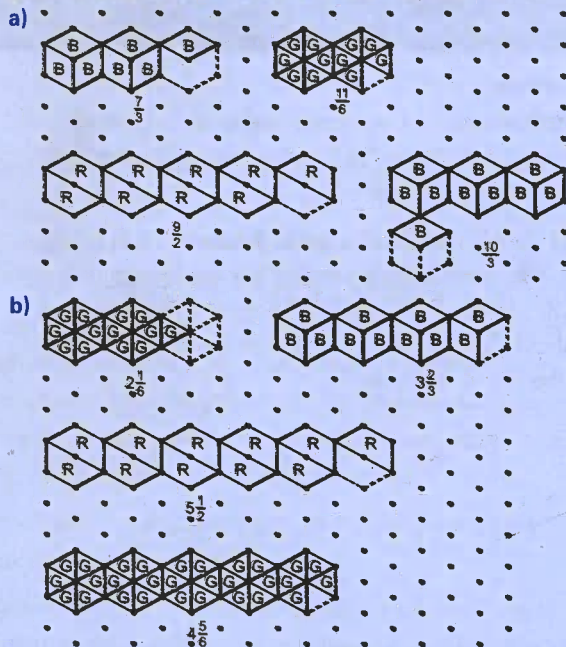
d) Order the mixed numbers in part b from greatest to least. $5\frac{1}{2}$, $4\frac{5}{6}$, $3\frac{2}{3}$, $2\frac{1}{6}$



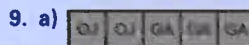
194

Unit

6. In the art below, B stands for blue rhombus, G stands for green triangle, and R stands for red trapezoid.



7. a) I wrote $\frac{3}{2}$ as $1\frac{1}{2}$. The two numbers are equivalent. Students should show the numbers on a number line in halves.
 b) I wrote $\frac{8}{5}$ as $\frac{16}{10}$ and $1\frac{7}{10}$ as $\frac{17}{10}$. Students should show the numbers on a number line in tenths.
 c) I wrote $2\frac{3}{4}$ as $2\frac{6}{8}$ and $\frac{25}{8}$ as $3\frac{1}{8}$. Students should show the numbers on a number line in eighths or quarters.
 8. a) I wrote $\frac{9}{2}$ as $\frac{27}{6}$, $2\frac{1}{6}$ as $\frac{13}{6}$, and $\frac{2}{3}$ as $\frac{4}{6}$. Students should show the numbers on a number line in sixths.
 b) I wrote $\frac{7}{2}$ as $\frac{14}{4}$ and $3\frac{1}{4}$ as $\frac{13}{4}$. Students should show the numbers on a number line in quarters.
 c) I wrote $1\frac{1}{4}$ as $\frac{5}{4}$ and then as $\frac{25}{20}$, and $\frac{15}{10}$ as $\frac{30}{20}$. Students should show the numbers on a number line in twentieths, or tenths.



7 Place each pair of numbers on a number line. Which strategy did you use?

- a) $\frac{3}{2}, 1\frac{1}{2}$ b) $\frac{8}{5}, \frac{7}{10}$ c) $\frac{25}{8}, 2\frac{3}{4}$

8 Place the numbers in each set on a number line. Show your work. List the numbers from least to greatest.

- a) $\frac{9}{2}, 2\frac{1}{3}, \frac{2}{3}$ b) $\frac{7}{2}, 3\frac{1}{4}, \frac{3}{4}$ c) $\frac{7}{20}, 1\frac{1}{4}, \frac{15}{10}$
 $\frac{2}{3}, 2\frac{1}{2}, \frac{5}{2}$ d) $3\frac{1}{4}, \frac{7}{2}$ e) $\frac{7}{20}, 1\frac{1}{4}, \frac{15}{10}$

9 In a punch, 2 cups of orange juice are mixed with 3 cups of ginger ale.

- a) Use grid paper. Draw a diagram to show this ratio.
 b) How much ginger ale is needed for 10 cups of orange juice? 15 cups
 c) How much orange juice is needed for 21 cups of ginger ale? 14 cups



10 a) Write as many ratios as you can for the buttons. Explain what each ratio means.



- b) Suppose you doubled the number of each colour of buttons. What would the ratio 40 : 16 describe? All buttons to red buttons

11 What percent of the buttons in question 10 are red? 40%

12 Use a hundredths grid.

- a) Colour the grid so 14% is green, 45% is yellow, 17% is blue, and the rest is red.
 b) Write a fraction with hundredths and a decimal to describe each colour of the grid.
 c) What percent of the grid is red? 24%

13 Conner got 23 out of 25 on a spelling test. Rose got 88% on the test. Whose mark was greater? How do you know?
 Conner's mark

UNIT 5 Learning Goals

- relate improper fractions to mixed numbers
- compare mixed numbers and fractions
- use ratios for part-to-part and part-to-whole comparisons
- explore equivalent ratios
- explore percents
- relate percents to fractions and decimals

b) Multiply both terms in the ratio by 5. 15 cups of ginger ale are needed.

c) Multiply both terms in the ratio by 7. 14 cups of orange juice are needed.

10. a) $8 : 5$, red to blue; $5 : 8$, blue to red; $8 : 7$, red to yellow; $7 : 8$, yellow to red; $5 : 7$, blue to yellow; $7 : 5$, yellow to blue; $8 : 20$, red to all buttons; $5 : 20$, blue to all buttons; $7 : 20$, yellow to all buttons; $20 : 8$, all buttons to red; $20 : 5$, all buttons to blue; $20 : 7$, all buttons to yellow

b) There would be 16 red buttons, 10 blue buttons, and 14 yellow buttons. $16 + 10 + 14 = 40$

So, $40 : 16$ describes all buttons to red buttons.

11. $\frac{8}{20} = \frac{40}{100} = 40\%$

12. a)

G	G	Y	Y	Y	B	B	R	R
G	G	Y	Y	Y	B	B	R	R
G	G	Y	Y	Y	B	B	R	R
G	G	Y	Y	Y	B	B	R	R
G	G	Y	Y	Y	B	B	R	R
G	G	Y	Y	Y	B	B	R	R
G	G	Y	Y	Y	B	B	R	R
Y	Y	Y	Y	Y	B	R	R	R
Y	Y	Y	Y	Y	B	R	R	R
Y	Y	Y	Y	Y	B	R	R	R

b) Green: $\frac{14}{100}$, 0.14; yellow: $\frac{45}{100}$, 0.45; blue: $\frac{17}{100}$, 0.17; red: $\frac{24}{100}$, 0.24

13. 23 out of $25 = \frac{23}{25} = \frac{92}{100} = 92\%$

$92\% > 88\%$

So, Conner's mark was greater.

ASSESSMENT FOR LEARNING

What to Look For

Conceptual Understanding

- ✓ **Questions 1 and 2:** Students explain the concepts of mixed numbers and improper fractions.
- ✓ **Question 6:** Students draw pictures to represent improper fractions and mixed numbers.
- ✓ **Questions 9 and 11:** Students explain the concepts of ratio and percent.

Procedural Knowledge

- ✓ **Questions 3 and 4:** Students convert mixed numbers to improper fractions, and improper fractions to mixed numbers.
- ✓ **Questions 6, 7, and 8:** Students compare and order proper fractions, improper fractions, and mixed numbers.
- ✓ **Question 10:** Students use ratios to describe part-to-part and part-to-whole comparisons.
- ✓ **Question 12:** Students relate fractions, decimals, and percents.

Problem-Solving Skills

- ✓ **Questions 5, 9, and 13:** Students solve problems involving fractions, ratios, and percents.