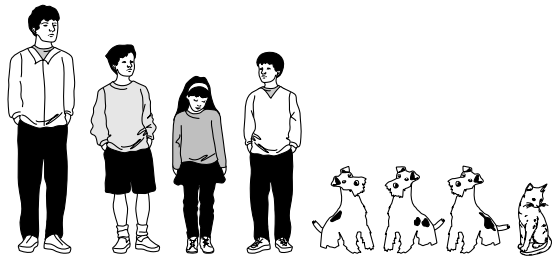
CHAPTER 12

1 Fractions as Parts of a Group

Goal **Use fractions to describe parts of a group.**

1.



a) What fraction of the group are people? $\frac{4}{8}$ or $\frac{1}{2}$

b) What fraction of the group are dogs? $\frac{3}{8}$

c) What does $\frac{1}{8}$ tell about the group?

fraction of the group that is an adult, fraction of the group that is a cat,

or fraction of the group that is a girl

At-Home Help

$\frac{4}{5}$ of the squares are white.

■ □ □ □ □

4 is the **numerator**. It tells how many parts are white.
5 is the **denominator**. It tells how many parts there are in all.

2. **a)** Draw shapes. $\frac{1}{4}$ of the shapes should be triangles.

For example:

△ □ □ □

b) What fraction are **not** triangles? $\frac{3}{4}$

c) What fraction are shapes? $\frac{4}{4}$

3. A club has 10 students in it. $\frac{3}{10}$ of the students are in grade 3.

a) Draw a model of the group using circles.

For example:

● ● ● ○ ○ ○ ○ ○ ○ ○

b) What fraction of the students are **not** in grade 3? $\frac{7}{10}$

4. $\frac{2}{6}$ of a group of shapes are circles and $\frac{2}{6}$ are red.

Draw a group of shapes to fit the description.

For example:

● ○ ■ □ □ □

red red

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CHAPTER 12

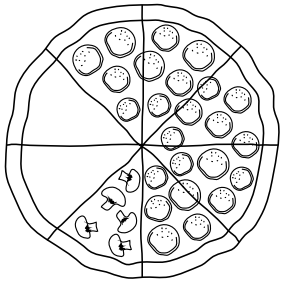
2 Fractions as Parts of a Whole

Goal **Use fractions to describe parts of a whole.**

1. **a)** What fraction of the pizza is plain? $\frac{2}{8}$

b) What fraction of the pizza has pepperoni? $\frac{5}{8}$

c) What fraction of the pizza has mushrooms? $\frac{1}{8}$



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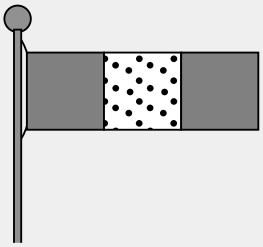
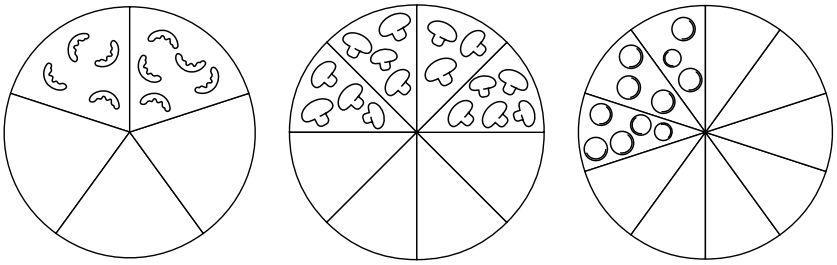
$\frac{2}{3}$ of the flag is grey since 2 out of the 3 equal-size pieces are grey.



2.



a) Draw pepperoni on $\frac{3}{10}$ of 1 of the pizzas.

b) Draw green peppers on $\frac{2}{5}$ of another pizza.

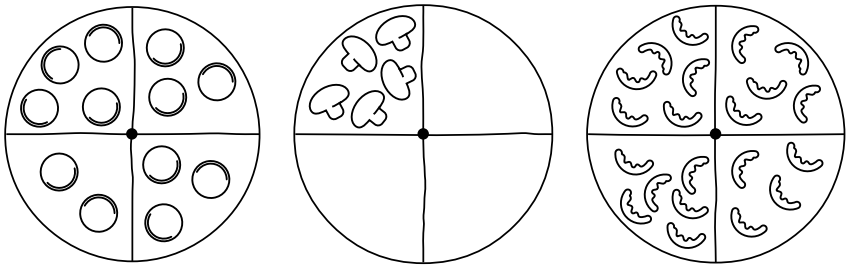
c) Draw mushrooms on $\frac{4}{8}$ of another pizza.

d) What fraction of each pizza is **not** covered?

left $\frac{3}{5}$ middle $\frac{4}{8}$ right $\frac{7}{10}$

e) Which pizza is half covered? middle

3.



a) Draw pepperoni on $\frac{3}{4}$ of the left pizza.

b) Draw mushrooms on $\frac{1}{4}$ of the middle pizza.

c) Draw green peppers on $\frac{4}{4}$ of the right pizza.

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CHAPTER 12

3

Communicate Using Drawings

Goal **Represent and explain fractions using drawings.**

Use the Communication Checklist.

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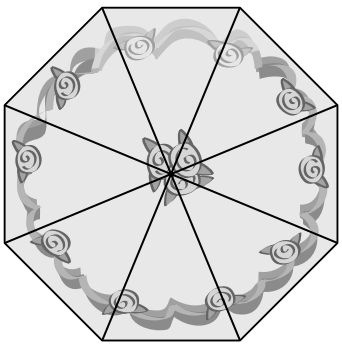
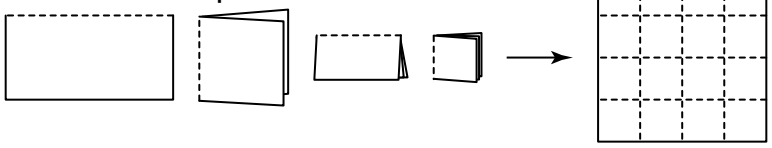
Communication Checklist
- ☑ Did you show all the steps?
- ☑ Did you put the steps in order?
- ☑ Did you show the right amount of detail?
- ☑ Did you include drawings?

1. Write instructions to explain how to divide this cake into 8 equal pieces.
Test your instructions.
Improve them if necessary.



For example, use a ruler and draw straight lines to join opposite vertices. Do this until they are all joined. There will be 4 lines. They cross in the middle of the octagon. There are now 8 equal pieces.

2. Write instructions to explain how to fold a piece of paper into 16 equal pieces.
Test your instructions.
Improve them if necessary.



For example, fold the paper in half. Then fold that still folded paper in half. Then fold that still folded paper in half again. Finally, fold the folded paper in half a 4th time. Unfold and you have 16 equal pieces.

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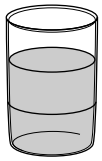
CHAPTER 12

4 Fractions as Parts of a Measure

Goal **Use fractions to describe parts of a measure.**

Choose the correct answer for Questions 1 to 4.

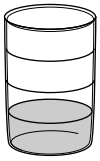
1. What fraction of this glass is full?



A. $\frac{1}{3}$ **C.** $\frac{1}{2}$

B. $\frac{2}{3}$ **D.** $\frac{4}{5}$

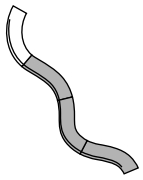
2. What fraction of this glass is full?



E. $\frac{1}{4}$ **G.** $\frac{1}{2}$

F. $\frac{1}{3}$ **H.** $\frac{3}{1}$

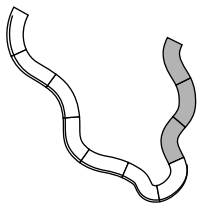
3. What fraction of this ribbon is grey?



A. $\frac{1}{3}$ **C.** $\frac{2}{4}$

B. $\frac{2}{3}$ **D.** $\frac{3}{4}$

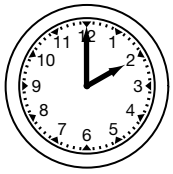
4. What fraction of this ribbon is grey?



E. $\frac{3}{7}$ **G.** $\frac{3}{10}$

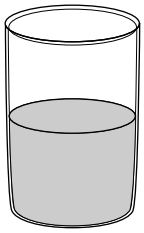
F. $\frac{7}{3}$ **H.** $\frac{10}{3}$

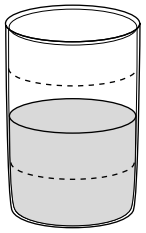
5. a) How many minutes will it take for $\frac{1}{2}$ an hour to pass? 30 minutes

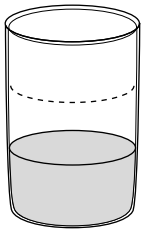


b) How many minutes will it take for $\frac{3}{4}$ of an hour to pass? 45 minutes

6. Draw a mark to show how high the water level would be for each.

a) $\frac{1}{2}$ full 

b) $\frac{2}{4}$ full 

c) $\frac{1}{3}$ full 

At-Home Help

We usually think about fractions of areas. Fractions can also show parts of other measurements, such as length, capacity, and time.

$\frac{1}{4}$ of an hour is shown.

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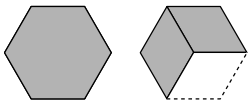
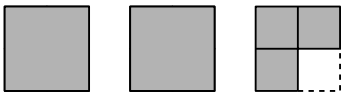
CHAPTER 12

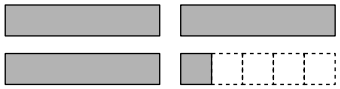
5 Mixed Numbers

Goal **Model and describe mixed numbers.**

1. Write a mixed number for each model.

a)  $1\frac{2}{3}$

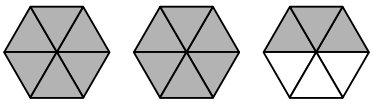
b)  $2\frac{3}{4}$

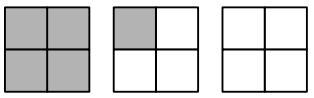
c)  $3\frac{1}{5}$

2. Colour $1\frac{1}{4}$ of 1 set of shapes blue.

Colour $2\frac{1}{2}$ of the other set of shapes red.

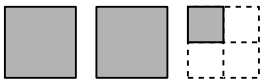
For example:

 red

 blue

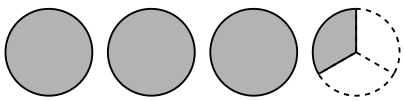
3. Trevor had 3 sandwiches. He ate $\frac{3}{4}$ of 1 sandwich.
He gave the rest to his brother.

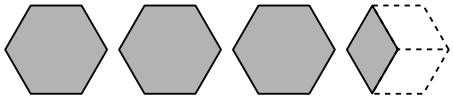
a) Draw a picture to model what Trevor gave to his brother.

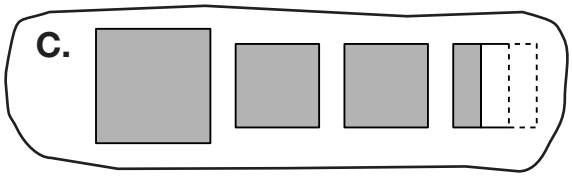
For example: 

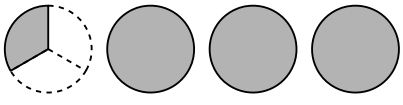
b) What mixed number tells what he gave to his brother? $2\frac{1}{4}$

4. Which does **not** show $3\frac{1}{3}$?

A. 

B. 

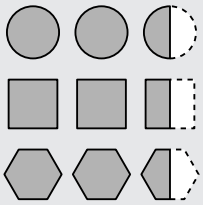
C. 

D. 

At-Home Help

Sometimes we want to describe amounts that are more than 1, but include a fractional part. A number that is made up of a whole number and a fraction is called a **mixed number**.

$2\frac{1}{2}$ is an example of a mixed number. Here are $2\frac{1}{2}$ circles, $2\frac{1}{2}$ squares, and $2\frac{1}{2}$ hexagons.



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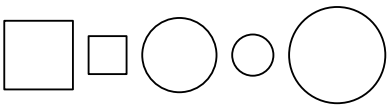
Test Yourself

Circle the correct answer.

1. What fraction of the shapes are squares?

A. $\frac{2}{3}$ **C.** $\frac{3}{2}$

B. $\frac{2}{5}$ **D.** $\frac{3}{5}$



2. What fraction of the coins are nickels?

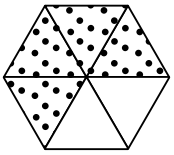
E. 2 **G.** $\frac{2}{3}$

F. $\frac{1}{2}$ **H.** $\frac{1}{10}$

3. What fraction of the hexagon is spotted?

A. $\frac{1}{4}$ **C.** $\frac{2}{4}$

B. $\frac{2}{6}$ **D.** $\frac{4}{6}$



4. What fraction of the grid is shaded?

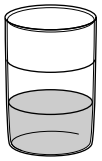
E. $\frac{6}{10}$ **G.** $\frac{4}{10}$

F. $\frac{10}{6}$ **H.** $\frac{10}{4}$

5. What fraction of the glass is full?

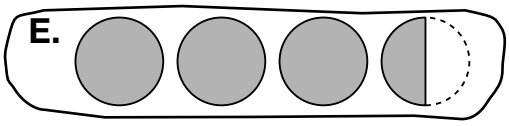
A. $\frac{1}{4}$ **C.** $\frac{1}{2}$

B. $\frac{1}{3}$ **D.** $\frac{2}{3}$

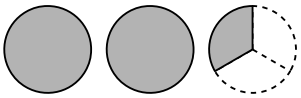


6. Which shows $3\frac{1}{2}$?

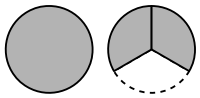
E.



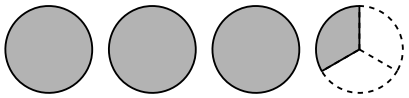
F.



G.



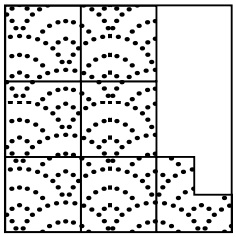
H.



7. How many tiles are missing?

A. 2 **C.** 3

B. $2\frac{1}{2}$ **D.** $2\frac{1}{4}$



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