

• Interpreting Pictures of Fractions, Decimals, and Percents

Power Up

facts

Power Up D or E

count aloud

Count by 12s from 12 to 72.

mental math

- a. **Time:** How many months are in two years? ... three years? ... four years?
- b. **Time:** What time is 14 minutes after 3:10 p.m.?
- c. **Number Sense:** $35 + 47$
- d. **Number Sense:** $370 + 50$
- e. **Measurement:** One yard is 36 inches. How many inches is 4 yards?
- f. **Measurement:** One foot is 12 inches. How many inches is $\frac{1}{2}$ of a foot?
- g. **Measurement:** How many inches is $\frac{1}{4}$ of a foot?
- h. **Number Sense:** $4 \times 7, - 1, \div 3, + 1, \times 10$

problem solving

Choose an appropriate problem-solving strategy to solve this problem. Marquise flipped a coin three times. It landed heads up twice and tails up once, but not necessarily in that order. List the possible orders of the three coin flips.

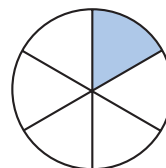
New Concept

Thinking Skill

Discuss

How can we check the answer?

A picture can help us understand the meaning of a fraction. This circle is divided into six equal parts. One of the parts is shaded. So $\frac{1}{6}$ of the circle is shaded.

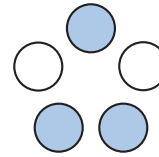


Five of the six parts are not shaded. So $\frac{5}{6}$ of the circle is not shaded.

Example 1

What fraction of this group of circles is shaded?

We see a group of five circles. Three of the five circles are shaded. So $\frac{3}{5}$ of the group is shaded.

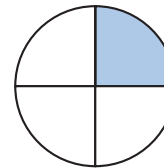


Example 2

What fraction of this circle is *not* shaded? What decimal part *is* shaded?

The circle is divided into four equal parts. One part is shaded and three parts are not shaded. The fraction that is not shaded is $\frac{3}{4}$.

One fourth is shaded. Our fraction manipulatives show that $\frac{1}{4}$ is **0.25** as a decimal. This number is reasonable because $\frac{1}{4}$ of a dollar is a quarter, which is 0.25 of a dollar.



Fractions and **percents** are two ways to describe parts of a whole. A whole is 100 percent, which we abbreviate as 100%. So half of a whole is half of 100%, which is 50%.

All of this rectangle is shaded.



100% of this rectangle is shaded.

Half of this rectangle is shaded.



50% of this rectangle is shaded.

Thinking about cents as part of a dollar can help us understand decimals and percents. Just as one cent is one hundredth of a whole dollar (0.01), one percent is one hundredth of a whole.

$\frac{1}{2}$ of a dollar is \$0.50.

$\frac{1}{2}$ of a dollar is 50¢.



$\frac{1}{2}$ of a whole is 50%.

$\frac{1}{4}$ of a dollar is \$0.25.

$\frac{1}{4}$ of a dollar is 25¢.



$\frac{1}{4}$ of a whole is 25%.

$\frac{1}{10}$ of a dollar is \$0.10.

$\frac{1}{10}$ of a dollar is 10¢.

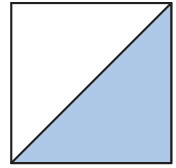


$\frac{1}{10}$ of a whole is 10%.

Example 3

**What percent of this square is shaded?
What decimal part is shaded?**

One half of the square is shaded. The whole square is 100%, so one half of the square is **50%**. When we think of money, we think of $\frac{1}{2}$ of a dollar as \$0.50. We can apply how we think of money to the square above: **0.50** (fifty hundredths) of the square is shaded. Our fraction manipulatives show us that $\frac{1}{2}$ equals 0.5 (five tenths). Both 0.50 and 0.5 name the shaded part because 50 hundredths is equivalent to 5 tenths.



Example 4

Three quarters plus a dime is what percent of a dollar?

Three quarters plus a dime is 85¢, which is 85 hundredths of a dollar. This amount is **85%** of one dollar.

Lesson Practice

Refer to the shapes to answer problems a–i.

a. What fraction of the triangle is shaded?

b. What percent of the triangle is shaded?

c. What decimal part of the triangle is shaded?

d. What are two fractions that name the shaded part of this circle?

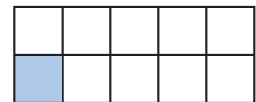
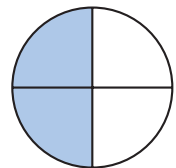
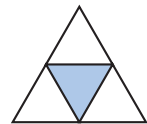
e. What percent of the circle is shaded?

f. What decimal part of the circle is shaded?

g. What fraction of this rectangle is shaded?

h. What percent of the rectangle is shaded?

i. What decimal part of the rectangle is shaded?



In the tables below, find the percent of a dollar represented by the number of coins stated and write the value as a decimal number.

Number of Quarters	Percent of a Dollar	Value
4 quarters	j.	
3 quarters	k.	
2 quarters	l.	
1 quarter	m.	

Number of Dimes	Percent of a Dollar	Value
10 dimes	n.	
9 dimes	o.	
8 dimes	p.	
7 dimes	q.	
6 dimes	r.	
5 dimes	s.	
4 dimes	t.	
3 dimes	u.	
2 dimes	v.	
1 dime	w.	

Written Practice

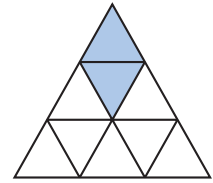
Distributed and Integrated

Formulate For problems 1–4, write an equation and find the answer.

- ⁽¹⁶⁾ On a 100-point math quiz, 36 points can be earned by correctly completing division problems. How many points can be earned by completing other kinds of problems?
- ^(16, 28) *2. The first month of the year is January, which has 31 days. After January, how many days are left in a common year?
- ⁽²¹⁾ 3. Each quart of juice could fill 4 cups. How many quarts of juice were needed to fill 28 cups?
- ⁽²¹⁾ 4. Lorena used five \$0.45 stamps to mail the heavy envelope. What was the total value of the stamps on the envelope?
- ⁽¹²⁾ *5. **Represent** Draw two vertical lines that stay the same distance apart.
- ⁽²⁵⁾ 6. Which factors of 25 are also factors of 50?

7. a. What fraction of this triangle is shaded?
(30)

b. What fraction of the triangle is not shaded?



8. What number is the denominator in the fraction $\frac{2}{3}$?
(20)

*9. Write the time that is a quarter to eight in the morning.
(28)

$$\begin{array}{r} \text{10.} \quad w \\ (13, 14) \quad - \$19.46 \\ \hline \$28.93 \end{array}$$

$$\begin{array}{r} \text{11.} \quad 3010 \\ (9) \quad - 1342 \\ \hline \end{array}$$

$$\begin{array}{r} \text{12.} \quad 28 \\ (6) \quad 54 \\ \quad 75 \\ \quad 91 \\ \quad + 26 \\ \hline \end{array}$$

$$\begin{array}{r} \text{13.} \quad 764 \\ (29) \quad \times 30 \\ \hline \end{array}$$

$$\begin{array}{r} \text{14.} \quad \$9.08 \\ (29) \quad \times 60 \\ \hline \end{array}$$

$$\begin{array}{r} \text{15.} \quad 6 \overline{) \$7.44} \\ (26) \end{array}$$

$$\begin{array}{r} \text{16.} \quad 362 \div 10 \\ (22) \end{array}$$

$$\begin{array}{r} \text{17.} \quad 4 \overline{) 898} \\ (26) \end{array}$$

$$\begin{array}{r} \text{18.} \quad \$42.37 + \$7.58 + \$0.68 + \$15 \\ (13) \end{array}$$

$$\begin{array}{r} \text{19.} \quad (48 \times 6) - 9 \\ (24) \end{array}$$

$$\begin{array}{r} \text{20.} \quad 6 \times 30 \times 12 \\ (18) \end{array}$$

21. From February 1 to September 1 is how many months?
(28)

22. What is the sum of six hundred five and five hundred ninety-seven?
(5, 6)

23. **Multiple Choice** Which of these numbers is between 360 and 370?
(4)

A 356

B 367

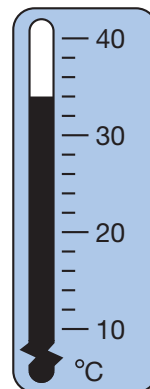
C 373

D 381

24. **Conclude** What are the next three terms in this counting sequence?
(1)

..., 250, 260, 270, 280, _____, _____, _____, ...

- *25. ⁽²⁷⁾ The high temperature one summer day in Madrid, Spain is shown on the thermometer. What was the high temperature that day?



26. ⁽²⁸⁾ What year came one decade after the Louisiana Purchase treaty was signed in 1803?

- *27. ⁽³⁰⁾ Two quarters is what
- decimal part of a dollar?
 - percent of a dollar?

28. **Justify** ⁽²⁶⁾ Show how to check this division answer. Is the answer correct?

$$100 \div 7 = 14 \text{ R } 2$$

29. **Explain** ^(4, 26) Compare. Explain how you can answer the comparison without dividing.

$$100 \div 4 \quad \bigcirc \quad 100 \div 5$$

30. **Formulate** ^(Inv. 1) Write a word problem to represent the equation $2n = 20$. Then solve the equation.

Early Finishers

Real-World Connection

Rosa volunteers at a community garden in Washington, D.C. The garden is divided into ten equal parts. Five of the parts are sections for vegetables, two of the parts are sections for berries, and three of the parts are sections for flowers. Draw a diagram of the garden showing the ten equal parts. Mark sections to show the different types of items planted in the garden. Inside each section, write the amount of space that the section occupies as a fraction, as a decimal, and as a percent.