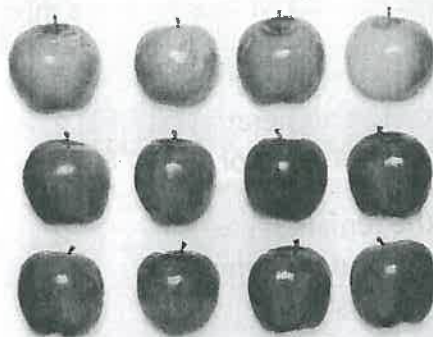


Understand It!
A part of a whole
or a part of a set
can be named by
equivalent fractions.

Equivalent Fractions

How do you find equivalent fractions?

Out of 12 apples, 8 are red. So, $\frac{8}{12}$ of the apples are red. Hannah says that $\frac{4}{6}$ of the apples are red, and Sam says that $\frac{2}{3}$ are red. Who is correct?



Guided Practice*

Do you know HOW?

In 1 through 6, find two equivalent fractions for each fraction. *Possible answer*

$$1. \frac{1}{3} = \frac{2}{6}, \frac{3}{9}$$

$$2. \frac{5}{6} = \frac{10}{12}, \frac{15}{18}$$

$$3. \frac{2}{5} = \frac{4}{10}, \frac{6}{15}$$

$$4. \frac{3}{8} = \frac{6}{16}, \frac{9}{24}$$

$$5. \frac{9}{18} = \frac{3}{6}, \frac{1}{2}$$

$$6. \frac{8}{10} = \frac{4}{5}, \frac{16}{20}$$

Do you UNDERSTAND?

7. Sam said that $\frac{4}{12}$ of the apples are green. Name two equivalent fractions for $\frac{4}{12}$.

8. **Writing to Explain** Jon said that it would be impossible to write all fractions equivalent to $\frac{1}{2}$. Is he right?

Independent Practice

In 9 through 12, find the missing nonzero number to make the fractions equivalent.

$$9. \frac{1 \times 6 = 6}{3 \times 6 = 18}$$

$$10. \frac{17 \div 17 = 1}{34 \div 17 = 2}$$

$$11. \frac{30 \div 5 = 6}{35 \div 5 = 7}$$

$$12. \frac{9 \times 4 = 36}{12 \times 4 = 48}$$

In 13 through 16, find the missing numerator to make the fractions equivalent.

$$13. \frac{1}{3} = \frac{3}{9}$$

$$14. \frac{7}{9} = \frac{49}{63}$$

$$15. \frac{30}{40} = \frac{6}{8}$$

$$16. \frac{15}{35} = \frac{3}{7}$$

In 17 through 24, find the missing denominator to make the fractions equivalent.

$$17. \frac{5}{12} = \frac{10}{24}$$

$$18. \frac{2}{7} = \frac{10}{35}$$

$$19. \frac{14}{80} = \frac{7}{40}$$

$$20. \frac{6}{18} = \frac{3}{9}$$

$$21. \frac{80}{100} = \frac{20}{25}$$

$$22. \frac{12}{64} = \frac{3}{16}$$

$$23. \frac{10}{25} = \frac{2}{5}$$

$$24. \frac{7}{12} = \frac{21}{36}$$

You can multiply or divide the numerator and denominator by the same nonzero number to get equivalent fractions.

One Way

Use multiplication.
Multiply 4 and 6 by 2.

$$\frac{4}{6} = \frac{8}{12}$$

The fractions $\frac{4}{6}$ and $\frac{8}{12}$ are equivalent fractions.

Another Way

Use division.
Divide 4 and 6 by 2.

$$\frac{4}{6} = \frac{2}{3}$$

The fractions $\frac{4}{6}$ and $\frac{2}{3}$ are equivalent fractions.

So, Hannah and Sam were both correct since $\frac{8}{12}$ is equivalent to $\frac{4}{6}$, and $\frac{2}{3}$ is equivalent to $\frac{4}{6}$.

Problem Solving

25. Ming dropped a package of 8 light bulbs and 2 of the bulbs broke. Write two equivalent fractions to represent the fraction of the bulbs that broke.

$$\frac{2}{8} = \frac{1}{4}$$

27. What is the least amount you can spend to buy 7 books?

$$b) 19.50$$



29. It rained 0.45 inch on Friday, 2.2 inches on Saturday, and 1.02 inches on Sunday. How much more did it rain on Saturday than on Friday and Sunday combined?

31. A 2-year old goliath bird-eating spider weighs 6 oz, or $\frac{6}{16}$ lb. Which fraction is equivalent to $\frac{6}{16}$?

- A $\frac{1}{4}$
B $\frac{1}{3}$
C $\frac{1}{8}$
D $\frac{3}{8}$



26. Marcus spelled 20 out of 25 words correctly. What fraction of the words did he spell correctly? What fraction of the words did he spell incorrectly? Write two equivalent fractions for each.

$$\frac{20}{25} = \frac{4}{5} \quad / \quad \frac{5}{25} = \frac{1}{5}$$

28. **Writing to Explain** Explain why $\frac{6}{15}$ and $\frac{3}{5}$ are NOT equivalent fractions.

30. It takes about 12 minutes to hard boil an egg. What fraction of an hour is 12 minutes?

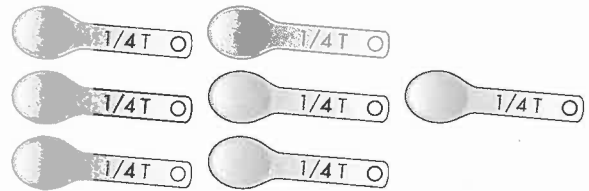
- A $\frac{1}{4}$ C $\frac{2}{5}$
B $\frac{1}{5}$ D $\frac{2}{3}$

32. Maurice ran $\frac{1}{2}$ of a mile, or 2,640 feet in 3 minutes 30 seconds. Which of the following is NOT an equivalent fraction for $\frac{1}{2}$?

- A $\frac{2}{4}$ C $\frac{17}{34}$
B $\frac{10}{20}$ D $\frac{16}{30}$

- Eric uses $3\frac{5}{8}$ yards of material to make a shirt. Which is $3\frac{5}{8}$ written as an improper fraction?
 - $\frac{16}{8}$
 - $\frac{29}{8}$
 - $\frac{35}{8}$
 - $\frac{43}{8}$
- During a school food drive, the 5th grade collects 512 pounds of food. The 6th grade collects 448 pounds of food. About how much more food does the 5th grade collect than the 6th grade?
 - 150 pounds
 - 100 pounds
 - 50 pounds
 - 10 pounds
- Rita hikes $3\frac{1}{2}$ miles on a nature trail. How many $\frac{1}{2}$ -mile long sections of the trail did Rita hike?
 - 2
 - 3
 - 6
 - 7

- The drawing shows the number of tablespoons (T) of oil Petra uses to make a soup. Write the number of tablespoons Petra uses as an improper fraction and as a mixed number.



$$\frac{7}{4}; 1\frac{3}{4}$$

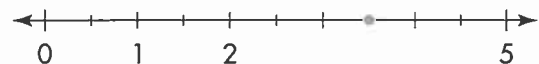
- List these numbers in order from least to greatest.

6.305, 6.35, 6.035, 6.5

6.035, 6.305,

6.35, 6.5

- Draw a point at $3\frac{1}{2}$ on the number line below.



Problem of the Day

9-4

52 Topic 9

Bob has 273 baseball cards. He keeps them in equal groups in boxes. How many boxes of cards could he have? How many baseball cards could be in

each box?

Possible

Answers

3 boxes 91 cards
 91 boxes 3 cards
 7 boxes 39 cards
 39 boxes 7 cards

13 boxes 21 cards
 21 boxes 13 cards

1. What fraction is equivalent to $\frac{4}{5}$?

- A $\frac{6}{8}$
 B $\frac{7}{8}$
 C $\frac{8}{10}$
 D $\frac{9}{10}$

2. A pizza is divided into 12 pieces. Each person gets 3 pieces.
 What is the missing nonzero number that makes $\frac{3}{12}$ equivalent to $\frac{1}{4}$?

$$\frac{3}{12} \div \frac{\blacksquare}{\blacksquare} = \frac{1}{4}$$

- A $\frac{1}{1}$
 B $\frac{2}{2}$
 C $\frac{3}{3}$
 D $\frac{4}{4}$

3. **Writing to Explain** There are twenty kittens on a farm. Four are orange, five are black, eight are white, and three are gray. What fraction of the kittens are white? What fraction of the kittens are orange? Write two equivalents for each fraction.

~~See student samples at the right.~~

$$\frac{8}{20} \text{ white} = \frac{4}{10} = \frac{2}{5}$$

$$\frac{4}{20} \text{ orange} = \frac{2}{10} = \frac{1}{5}$$