

• Recognizing Halves

Power Up

facts

Power Up D or E

count aloud

Count up by 5s from 1 to 51 (1, 6, 11, 16, ...).
Count up and down by 3s between 0 and 36.

mental math

- a. **Number Sense:** 10×75
- b. **Number Sense:** 7×30 plus 7×5
- c. **Number Sense:** 5×35
- d. **Number Sense:** 6×35
- e. **Money:** The bicycle's price is \$280. Sales tax is \$14.50. What is the total cost?
- f. **Measurement:** Twenty feet is 240 inches. How many inches is 20 feet plus 12 inches?
- g. **Number Sense:** The total attendance at the football game was 960. Before the game ended, 140 people had left. How many people remained at the end of the game?
- h. **Number Sense:** $6 \times 4, + 1, \div 5, + 1, \div 2$

problem solving

Choose an appropriate problem-solving strategy to solve this problem. Behind curtains A, B, and C were three prizes: a car, a boat, and a pogo stick. One prize was behind each curtain. List all the possible arrangements of prizes behind the curtains.

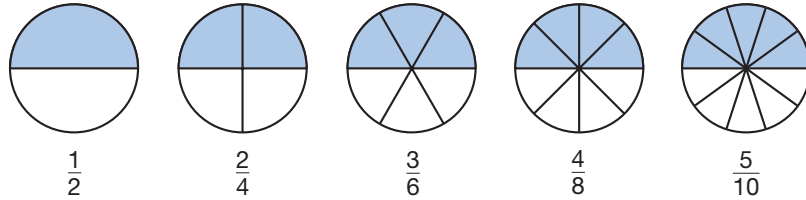
New Concept

Thinking Skill

Represent

What decimal represents the part of each circle that is shaded? What percent?

Many fractions equal one half. Here we show five fractions equal to one half:



Notice that the numerator of each fraction is half the denominator.

$\frac{2}{4}$ Two is half of four. $\frac{3}{6}$ Three is half of six.

$\frac{4}{8}$ Four is half of eight. $\frac{5}{10}$ Five is half of ten.

A fraction is equal to one half if the numerator is half the denominator. A fraction is less than one half if the numerator is less than half the denominator. A fraction is greater than one half if the numerator is more than half the denominator.

Example 1

Which fraction is *not* equal to $\frac{1}{2}$?

A $\frac{9}{18}$

B $\frac{10}{25}$

C $\frac{25}{50}$

D $\frac{50}{100}$

In each choice, the numerator is half the denominator, except for B.

Example 2

Anana ordered two pizzas for her family. The vegetarian pizza was sliced into twelfths, and the cheese pizza was sliced into eighths. The family ate all but five slices of vegetarian pizza and four slices of cheese pizza. Compare the fractional parts of the two pizzas that were not eaten:

$$\frac{5}{12} \bigcirc \frac{4}{8}$$

The denominator of $\frac{5}{12}$ is 12, and half of 12 is 6. Since 5 is less than half of 12, $\frac{5}{12}$ is less than $\frac{1}{2}$. The other fraction, $\frac{4}{8}$, equals $\frac{1}{2}$. So $\frac{5}{12}$ is less than $\frac{4}{8}$.

$$\frac{5}{12} < \frac{4}{8}$$

There is less vegetarian pizza left than cheese pizza.



Lesson Practice

- a. **Analyze** Think of a counting number. Double it. Then write a fraction equal to $\frac{1}{2}$ using your number and its double.
- b. **Multiple Choice** Which of these fractions does *not* equal $\frac{1}{2}$?
- A $\frac{7}{14}$ B $\frac{8}{15}$ C $\frac{9}{18}$ D $\frac{21}{42}$
- c. Compare: $\frac{5}{8} \bigcirc \frac{5}{12}$ d. Compare: $\frac{12}{24} \bigcirc \frac{6}{12}$

Written Practice

Distributed and Integrated

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

- *1. ⁽¹⁶⁾ It cost \$3.48 to rent the movie. Leo gave the clerk \$5.00. How much money should Leo get back?
- *2. ⁽¹¹⁾  **Justify** The veggie wrap cost \$1.45, and the fruit salad cost \$0.95. What was the cost of the veggie wrap and fruit salad together? Explain why your answer is reasonable.
- *3. ⁽²¹⁾ A week is 7 days. How many days is 52 weeks?
- *4. ⁽²¹⁾  **Justify** Sumiko, Hector, and Ariel have \$24. They want to divide the money equally. How much money will each receive? Write a multiplication formula. Explain how you found the answer.
5. ^(Inv. 2) One half of the contents of a 20-ounce bag of snack mix is granola. One fourth of the contents is raisins.
- a. How many ounces of granola are in the bag?
- b. How many ounces of raisins are in the bag?

6. ⁽²³⁾ Compare: $\frac{3}{10} \bigcirc \frac{3}{6}$

7. ⁽²²⁾ $40 \div 6$

8. ⁽²²⁾ $3 \overline{)20}$

9. ⁽¹⁸⁾ $60 = n \times 10$

10. ⁽¹⁷⁾
$$\begin{array}{r} \$3.08 \\ \times \quad 7 \\ \hline \end{array}$$

11. ⁽¹⁷⁾
$$\begin{array}{r} 2514 \\ \times \quad 3 \\ \hline \end{array}$$

12. ⁽¹⁷⁾
$$\begin{array}{r} 697 \\ \times \quad 8 \\ \hline \end{array}$$

13. Use words to show how this problem is read: $7\overline{)35}$

(20)

14. $4 \times 3 \times 10$

(18)

15. $12 \times 2 \times 10$

(18)

16.
$$\begin{array}{r} 4035 \\ - \quad s \\ \hline 3587 \end{array}$$

(14)

17.
$$\begin{array}{r} m \\ - 1056 \\ \hline 5694 \end{array}$$

(14)

18.
$$\begin{array}{r} \$70.00 \\ - \$ 7.53 \\ \hline \end{array}$$

(13)

19. $\$5.00 + \$8.75 + \$10.00 + \0.35

(13)

20. $\$6.25 + \$0.85 + \$4.00 + d = \20.00

(10, 13)

21. **Connect** Write two multiplication facts and two division facts for the fact family 7, 9, and 63.

(19)

22. Write the numbers 48, 16, and 52 in order from greatest to least.

(4)

23. **Represent** Draw two vertical lines side by side.

(12)

24. Use words to name the number 212,500.

(7)

25. **Connect** Write two addition facts and two subtraction facts for the fact family 7, 9, and 16.

(8)

*26. **Multiple Choice** Which fraction below does *not* equal $\frac{1}{2}$?

(23)

A $\frac{10}{20}$

B $\frac{20}{40}$

C $\frac{40}{80}$

D $\frac{80}{40}$

*27. The fraction $\frac{3}{4}$ is equivalent to what decimal?

(Inv. 2)

28. Chanisse has nine quarters in her coin purse. Write and solve a multiplication equation that shows the value of the nine quarters.

(17)

29. Write an “equal groups” word problem for this equation. Then answer the question in your problem.

(21)

$$3 \times 12 = p$$

30. What is the tenth term in this counting sequence?

(1)

$$8, 16, 24, 32, \dots$$

• Parentheses and the Associative Property

Power Up

facts

Power Up F

count aloud

Count up by 5s from 2 to 52. Count up and down by 3s between 0 and 36.

mental math

- Measurement:** Three feet equals 1 yard. How many feet is 12 yards?
- Number Sense:** 8×40 plus 8×2
- Number Sense:** 7×42
- Number Sense:** 6×42
- Fractional Parts:** $\frac{1}{2}$ of 40
- Fractional Parts:** $\frac{1}{4}$ of 40
- Fractional Parts:** $\frac{1}{10}$ of 40
- Number Sense:** $6 \times 3, + 2, \div 2, - 2, \div 2$

problem solving

Choose an appropriate problem-solving strategy to solve this problem. Copy this subtraction problem and fill in the missing digits:

$$\begin{array}{r} _4_ \\ - 3_2 \\ \hline 58 \end{array}$$

New Concept

The **operations of arithmetic** are addition, subtraction, multiplication, and division. When there is more than one operation in a problem, **parentheses** can show us the order for doing the operations. Parentheses separate a problem into parts. We do the part inside the parentheses first. In the problem below, the parentheses tell us to add 5 and 4 before we multiply by 6.

$$\begin{aligned} 6 \times (5 + 4) &= \\ 6 \times \underbrace{\quad 9 \quad} &= 54 \end{aligned}$$

Discuss What would the answer be if there were no parentheses?

Example 1



Visit www.SaxonMath.com/Int5Activities for a calculator activity.

Melody drew 8 flowers. She painted 4 flowers blue. Then she painted 2 flowers red. How many flowers were not painted?

It takes two steps to find the answer to this problem. The parentheses show us which step to take first. We add 4 and 2 to get 6. Then we subtract 6 from 8 and get 2.

$$\begin{aligned}8 - (4 + 2) &= \\8 - 6 &= 2\end{aligned}$$

We find that **2 flowers** were not painted.

Justify Why can't we subtract 4 from 8 and then add 2 for an answer of 6?

Example 2

Compare: $2 \times (3 + 4) \bigcirc (2 \times 3) + 4$

The numbers and operations on both sides are the same, but the order for doing the operations is different. We follow the proper order on both sides and find that the amount on the left is greater than the amount on the right.

$$\begin{aligned}2 \times (3 + 4) &\bigcirc (2 \times 3) + 4 \\2 \times 7 &\bigcirc 6 + 4 \\14 &> 10\end{aligned}$$

When performing the operations of arithmetic, we perform one operation at a time. If we have three numbers to add, we decide which two numbers to add first. Suppose we wish to find $4 + 5 + 6$. We may find $4 + 5$ first and then add 6, or we may find $5 + 6$ first and then add 4. Either way, the sum is 15.

$$(4 + 5) + 6 = 4 + (5 + 6)$$

Whichever way we group the addends, the result is the same. This property is called the **Associative Property of Addition**.

The Associative Property also applies to multiplication, but not to subtraction or division. Below we illustrate the **Associative Property of Multiplication**. Whichever way we group the factors, the product is the same.

$$\begin{aligned}(2 \times 3) \times 4 &\bigcirc 2 \times (3 \times 4) \\6 \times 4 &\bigcirc 2 \times 12 \\24 &= 24\end{aligned}$$

Lesson Practice

Solve each problem by following the proper order of operations:

a. $6 - (4 - 2)$

b. $(6 - 4) - 2$

c. $(8 \div 4) \div 2$

d. $8 \div (4 \div 2)$

e. $12 \div (4 - 1)$

f. $(12 \div 4) - 1$

g. Name the four operations of arithmetic.

Analyze For each problem, write the proper comparison symbol, and state whether the Associative Property applies.

h. $(8 \div 4) \div 2 \bigcirc 8 \div (4 \div 2)$

i. $(8 - 4) - 2 \bigcirc 8 - (4 - 2)$

j. $(8 \times 4) \times 2 \bigcirc 8 \times (4 \times 2)$

Written Practice


Distributed and Integrated

*1. How much money is one half of a dollar plus one fourth of a dollar?
(Inv. 2)

Formulate For problems 2–4, write an equation and find the answer.

*2. How many horseshoes are needed to shoe 25 horses?
(21)

3. Inez removed some eggs from a carton of one dozen eggs. If nine eggs remained in the carton, how many eggs did Inez remove?
(16)

*4.  **Justify** The auditorium had nine hundred fifty-six seats. During a performance only four hundred ninety-eight seats were occupied. How many seats were not occupied? Explain how you solved the problem.
(11)

5. **Connect** Write two multiplication facts and two division facts for the fact family 5, 10, and 50.
(19)

6. Compare: $3 \times (4 + 5) \bigcirc (3 \times 4) + 5$
(24)

7. $30 - (20 + 10)$
(24)

8. $(30 - 20) + 10$
(24)

*9. Compare: $4 \times (6 \times 5) \bigcirc (4 \times 6) \times 5$
(24)

10. $60 \div 7$
(22)

11. $50 \div 6$
(22)

12. $10 \overline{)44}$
(22)

13. $\begin{array}{r} \$50.36 \\ \times \quad 4 \\ \hline \end{array}$
(17)

14. $\begin{array}{r} 7408 \\ \times \quad 6 \\ \hline \end{array}$
(17)

15. $\begin{array}{r} 4637 \\ \times \quad 9 \\ \hline \end{array}$
(17)

16. $\begin{array}{r} w \\ - \$9.62 \\ \hline \$14.08 \end{array}$
(13, 14)

17. $\begin{array}{r} 4730 \\ - \quad j \\ \hline 2712 \end{array}$
(14)

18. $\begin{array}{r} \$30.00 \\ - \$ 0.56 \\ \hline \end{array}$
(13)

19. $\$3.54 + \$12 + \$1.66$
(13)

20. $\$20 - \16.45
(13)

21. **Connect** Write two addition facts and two subtraction facts for the fact family 9, 5, and 14.
(8)

22. Which digit in 256 shows the number of hundreds?
(3)

23. The Dawson Company purchased 4 telephones for \$35 each. This addition problem shows one way to find the total cost. Change the addition problem to a multiplication problem and find the total cost of the 4 telephones.
(13, 17)

$$\$35 + \$35 + \$35 + \$35$$

*24. **Predict** What is the tenth term of this counting sequence?
(1)

$$3, 6, 9, 12, 15, \dots$$

*25. **Multiple Choice** When odd numbers are divided by 2, there is a remainder of 1. Which of these odd numbers can be divided by 5 without a remainder?
(22)

A 23

B 25

C 27

D 29

26. **Represent** Draw two vertical lines.
(12)

27. **Connect** Write two multiplication facts and two division facts for the fact family 7, 8, and 56.
(19)

28. Compare: $(8 + 4) + 2$ \bigcirc $8 + (4 + 2)$
(24)

Conclude Based on your answer, does the Associative Property apply to addition?

29. a. What number is half of 14?
(2, 23)

b. Write a fraction equal to $\frac{1}{2}$ using 14 and its half.

30. **Multiple Choice** When Maisha woke up in the morning, the temperature was 65°F . The high temperature for that day was 83°F at 4:09 p.m.
(10)

Which equation can be used to find the number of degrees the temperature increased after Maisha woke up?

A $65 + d = 83$ **B** $83 + 65 = d$ **C** $d + 83 = 65$ **D** $83 + d = 65$

Early Finishers

Real-World Connection

James has 9 storage boxes on each of 5 shelves. Each box contains 6 items. How many items are there altogether? Explain how using the Associative Property of Multiplication can make the problem easier to solve.