

Name _____

Date _____

Use Doubles to Multiply

Find the first product. Then use the first product to help you find the second product.

Example

2×6

4×6

What is the first product? 12

Which doubles fact can I use to find the next product?

$4 = 2 \times 2$

So, $4 \times 6 = \text{double } 2 \times 6$ or
 $2 \times 12 = 24$

1. 4×4

8×4

2. 4×6

8×6

3. 4×2

8×2

4. 1×9

2×9

5. 2×3

4×3

6. 3×9

6×9

7. 1×9

2×9

8. 3×4

6×4

9. 4×5

8×5

10. 2×8

4×8

11. 3×8

6×8

12. 4×3

8×3

13. 1×7

2×7

14. 3×5

6×5

15. 4×6

8×6

16. 2×9

4×9

Problem Solving • Reasoning

- 17.** Max stores his baseball card collection in plastic sheets that he keeps in a 3-ring binder. Each plastic sheet holds 12 cards. How many cards can Max store in 2 sheets? How many cards can he store in 4 sheets? How many in 8 sheets?

- 18.** Erin is preparing for a bicycle race by riding around a 2-mile track. How far does she ride if she goes around the track twice? How far does she ride if she goes around 4 times? How far does Erin ride if she goes around the track 8 times?

Name _____

Date _____

Multiplication Properties

Use the multiplication properties to help you find the products.

Example 5×0

Use the properties of Multiplication to solve the problem mentally.

When you multiply any number by 0, the product is 0.

So $5 \times 0 = 0$.

1. 4×1

2. 44×0

3. 0×15

4. 1×64

5. 9×1

6. 18×1

7. $(9 \times 1) \times 0$ 8. $10 \times (1 \times 1)$ 9. $(2 \times 2) \times 2$ 10. $(6 \times 1) \times 1$ 11. $2,000 \times 1$

Solve each equation. Name the property that helped you.

12. $35 \times 0 = m$

13. $2 \times 7 = t \times 2$

14. $(6 \times 2) \times 3 = 6 \times (n \times 3)$

15. $(6 \times r) \times r = 6$

16. $(5 \times 3) \times v = 5 \times (3 \times 2)$

17. $0 \times 22 = b$

Problem Solving • Reasoning

18. Sheila wants to solve the equation 24×0 . How can knowing the zero property help her determine the product?

19. An item on a quiz gives two equations: 3×4 and 4×3 . How can knowing the commutative property help you determine the products?

Name _____

Date _____

Use Patterns to Multiply

Example

$$5 \times 5$$

Count by 5s: 5, 10, 15, 20, 25.

So $5 \times 5 = 25$

$$5 \times 10$$

Count by 10s: 10, 20, 30, 40, 50.

So $5 \times 10 = 50$

Find each product.

$$\begin{array}{r} 1. \quad 9 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 5 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 10 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 9 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 5 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 10 \\ \times 2 \\ \hline \end{array}$$

$$7. \quad 9 \times 3$$

$$8. \quad 5 \times 1$$

$$9. \quad 6 \times 10$$

$$10. \quad 9 \times 7$$

$$11. \quad 5 \times 8$$

$$12. \quad 5 \times 0$$

$$13. \quad 10 \times 4$$

$$14. \quad 3 \times 5$$

Problem Solving • Reasoning

- 15.** Diane is shopping for party favors. Each package of balloons contains 10 balloons. She needs 30 balloons. How can the patterns when you multiply by 10 help her figure out how many packages she needs?

- 16.** Steve wants to buy 27 whistles. Each bag of whistles contains 9 whistles. The clerk hands Steven 3 bags. How can patterns help Steven determine if the 3 bags will have enough whistles?

Name _____

Date _____

Relate Multiplication and Division

Write the fact family for each set of numbers.

Example

4, 6, 24

$$4 \times 6 = 24$$

$$24 \div 4 = 6$$

$$6 \times 4 = 24$$

$$24 \div 6 = 4$$

1. 3, 5, 15

2. 4, 4, 16

3. 3, 6, 18

4. 2, 5, 10

5. 3, 4, 12

6. 3, 8, 24

Problem Solving • Reasoning

7. At a library bake sale, Mara counted 4 pies. Each pie was cut into 6 slices. How many people could buy a slice of pie? Which fact family can help Mara find the answer?

8. How could knowing the fact family for problem 7 help Mara check to see that her calculation of the number of people who could buy a slice of pie was correct?

Name _____ Date _____

Use Doubles to Divide

Example

Find $16 \div 2$.

$$16 \div 2 = n$$

Think of a related multiplication fact.

$$2 \times n = 16$$

$$2 \times 8 = 16$$

So $16 \div 2 = 8$

Find each quotient.

1. $18 \div 3$

2. $36 \div 9$

3. $12 \div 2$

4. $20 \div 5$

5. $16 \div 4$

6. $25 \div 5$

7. $16 \div 2$

8. $14 \div 2$

9. $12 \div 3$

10. $32 \div 4$

11. $7 \overline{)21}$

12. $2 \overline{)4}$

13. $6 \overline{)30}$

14. $8 \overline{)8}$

15. $2 \overline{)18}$

16. $2 \overline{)10}$

17. $3 \overline{)6}$

18. $8 \overline{)16}$

Problem Solving • Reasoning

19. Jamie has 16 pages of social studies to read. He wants to spread the work out over 2 days and read the same number of pages each day. How many pages would he read each day?

20. Jamie decides to spread the reading over 4 days. This will give him twice the amount of time. How can he use doubles to help him figure out how many pages he will read each day?

Name _____

Date _____

Division Rules

Use division rules to help you solve each equation.

Example

$$5 \div 5$$

Think of a division rule.
When you divide a
number (except for 0) by
itself, the quotient is 1.
So $5 \div 5 = 1$.

1. $3 \div n = 3$ _____

2. $0 \div 9 = n$ _____

3. $3 \div 1 = n$ _____

4. $6 \div c = 6$ _____

5. $7 \div 7 = w$ _____

6. $n \div 2 = 0$ _____

7. $8 \div 1 = n$ _____

8. $8 \div n = 4$ _____

9. $0 \div 7 = m$ _____

10. $a \div 1 = 4$ _____

11. $n \div 6 = 0$ _____

12. $5 \div 1 = n$ _____

13. $x \div 1 = 6$ _____

14. $4 \div s = 4$ _____

15. $8 \div n = 8$ _____

16. $9 \div 9 = n$ _____

17. $4 \div 4 = n$ _____

18. $t \div 5 = 0$ _____

19. $n \div 4 = 0$ _____

20. $7 \div b = 7$ _____

Problem Solving • Reasoning

21. A bottle of juice costs \$1. Trey has \$8. He wants to buy a bottle each for himself and his 7 friends. How can he use division to find out if he has enough money?

22. Lily has 5 apples. She and four friends want to share them equally. Which rule of division can help Lily know quickly if everyone can have an apple?

Name _____

Date _____

Divide by 5, 7, 9, or 10**Example**

$$35 \div 7 = n$$

Think of a related multiplication fact.

$$7 \times n = 35$$

$$7 \times 5 = 35$$

So $35 \div 7 = 5$

Find each quotient.

1. $18 \div 9$

2. $81 \div 9$

3. $21 \div 7$

4. $49 \div 7$

5. $63 \div 9$

6. $56 \div 7$

7. $80 \div 10$

8. $36 \div 9$

9. $45 \div 5$

10. $42 \div 7$

11. $5 \overline{)40}$

12. $8 \overline{)80}$

13. $9 \overline{)72}$

14. $10 \overline{)50}$

15. $7 \overline{)42}$

16. $10 \overline{)90}$

17. $8 \overline{)48}$

18. $9 \overline{)45}$

19. $8 \overline{)24}$

20. $9 \overline{)90}$

21. $10 \overline{)70}$

22. $7 \overline{)7}$

Problem Solving • Reasoning

23. A music store is having a sale on CDs. Stella buys 5 CDs for \$50. How much did each CD cost?

24. Tim's mother buys him 7 pairs of socks for \$21. How much does each pair of socks cost?

Name _____

Date _____

Division With Remainders

Find each quotient and remainder.

Example

Find $19 \div 3$.

Think of multiplication facts with products close to 19.

$$3 \times n = 18$$

$$3 \times 6 = 18$$

$$18 = 19 - 1$$

$$19 \div 3 = n$$

$$19 \div 3 = \mathbf{6 R1}$$

1. $2 \overline{)13}$

2. $4 \overline{)14}$

3. $7 \overline{)25}$

4. $6 \overline{)17}$

5. $9 \overline{)47}$

6. $3 \overline{)26}$

7. $6 \overline{)29}$

8. $8 \overline{)67}$

9. $5 \overline{)39}$

10. $7 \overline{)59}$

11. $6 \overline{)58}$

12. $20 \div 7$ _____

13. $66 \div 8$ _____

14. $37 \div 6$ _____

15. $14 \div 3$ _____

16. $77 \div 9$ _____

17. $21 \div 8$ _____

18. $80 \div 9$ _____

19. $47 \div 7$ _____

Problem Solving • Reasoning

20. Elliot wants to store his 25 action figures in 3 shoe boxes. He wants to put the same number of figures in each box. How many figures will be in each box? How many figures will be left?

21. A popular mystery book series consists of 18 books. Adam and three of his friends want to share them equally. How many books will each person get? How many books will be left over?

Name _____ Date _____

Problem-Solving Skill: Multistep Problems

Solve.

1. For their play, the fourth grade needed 8 knights and 9 ladies. There were 27 boys and 28 girls in the class. How many times did they have to stage their play so every student got a part at least once?

Think:

What information do I have?
What steps do I need to take to solve this?

2. To stage their play, the students needed 6 parents to help. There were 32 jobs to do backstage. How many jobs did each parent have to do? Did some parents have to do more?

Think:

What are the questions? What steps do I need to take to find the answers?

3. The students sold tickets to their play. They sold 60 adult tickets and 40 children's tickets. Adult tickets cost \$2.00. Children's tickets cost \$1.00. How much money did they make on the sale of tickets?

4. To make their costumes, the students needed 2 different fabrics. They needed 10 yards of velvet, which cost \$4.00 a yard. They also needed 20 yards of cotton, which cost \$2.00 a yard. How much money did they need for all the fabric?

Solve. Use these or other strategies.

Problem-Solving Strategies

• Make a Table

• Guess and Check

• Write an Equation

• Use Logical Thinking

5. The students needed \$80 for fabric and \$40 for supplies. If they made \$160 selling tickets, did they have enough money? How much was left over?

6. After the play, the class had a party. They made \$40 on ticket sales, and someone donated another \$25. They wanted to buy pizzas for \$4 apiece. How many pizzas could they buy?

Name _____

Date _____

Write and Evaluate Expressions

Example

$$7n$$

What does $7n$ mean?

$$7 \times n$$

What is the value of the variable?

$$n = 7$$

$$\text{So } 7n = 7 \times 7 = 49$$

Evaluate each expression when $n = 7$.

1. $4 + n$ _____ 2. $n \times 3$ _____ 3. $n \div 7$ _____

4. $19 - n$ _____ 5. $n \times 9$ _____ 6. $28 \div n$ _____

7. $n - 3$ _____ 8. $7 \times n$ _____ 9. $2n$ _____

10. $35 - n$ _____ 11. $n \times 0$ _____ 12. $n - 1$ _____

Evaluate each expression when $r = 4$.

13. $r \div 2$ _____ 14. $5r$ _____ 15. $r + 7$ _____ 16. $3r + 6$ _____

17. $r - 4$ _____ 18. $10 \times r$ _____ 19. $44 \div r$ _____ 20. $6 \cdot r$ _____

Evaluate each expression when $s = 8$.

21. $48 \div s$ _____ 22. $3s$ _____ 23. $17 - s$ _____ 24. $s + 3$ _____

25. $2s + 4$ _____ 26. $s \times 7$ _____ 27. $8 \div s$ _____ 28. $s \cdot 2$ _____

Problem Solving • Reasoning

29. Jimmy and his friend Derek collect posters of rock stars. Jimmy has twice as many posters as Derek. Let r stand for the number of posters Derek has. Write an expression to show the number of posters Jimmy has.

30. Tara and Judy collect pens. Tara has 5 fewer pens than Judy has. Let n stand for the number of pens Judy has. Write an expression to show the number of pens Tara has.

Name _____

Date _____

Write and Solve Equations

Example

$$5c = 45$$

Solve

$$5 \times \blacksquare = 45$$

$$\blacksquare = 45 \div 5$$

$$9 = 45 \div 5$$

So $c = 9$.

Solve each equation. Check the solution.

1. $8p = 64$ _____

2. $s = 14 \times 2$ _____

3. $9z = 72$ _____

4. $20 \div r = 4$ _____

5. $d = 32 \div 4$ _____

6. $45 \div w = 9$ _____

7. $8q = 56$ _____

8. $5p = 35$ _____

9. $20 \div m = 10$ _____

10. $28 = y \times 7$ _____

11. $6p = 42$ _____

12. $9c = 36$ _____

13. $49 \div 7 = x$ _____

14. $m = 9 \times 7$ _____

15. $60 = 6p$ _____

16. $t = 28 \div 7$ _____

Problem Solving • Reasoning

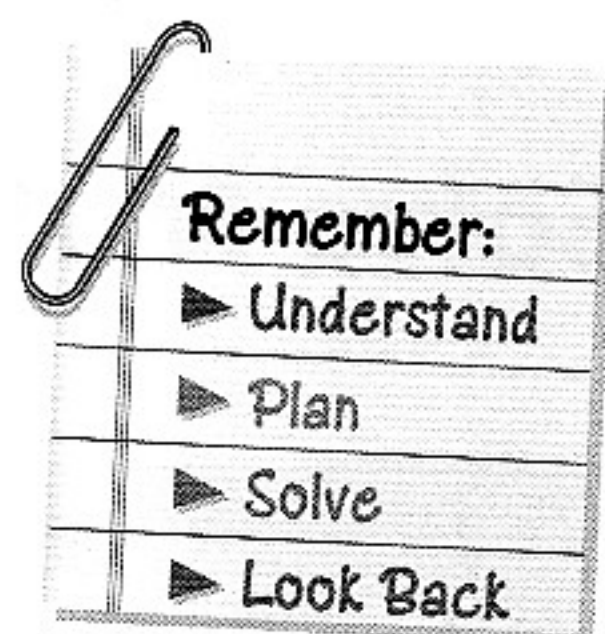
17. Tim has 7 more sheets of colored paper than Marie. He has 36 sheets in all. Let v stand for the number of sheets Marie has. Write an equation that will let you find how many sheets Marie has.

18. John bought some packs of thumb tacks with 20 tacks in each package. He has 60 tacks. Let x stand for the number of packs. Write an equation that will let you find out how many packs of thumb tacks John bought.

Name _____

Date _____

Problem-Solving Application: Using Patterns



Use this array to answer the questions below.

| | Column 1 | Column 2 | Column 3 | Column 4 | Column 5 | Column 6 |
|-------|----------|----------|----------|----------|----------|----------|
| Row 1 | 2 | 4 | 6 | 8 | 10 | 12 |
| Row 2 | 4 | 8 | 12 | 16 | 20 | 24 |
| Row 3 | 6 | 12 | 18 | 24 | 30 | 36 |
| Row 4 | 8 | 16 | X | X | X | X |
| Row 5 | 10 | X | X | X | X | X |

1. If the pattern in Row 4 continues, what number should the last X in Row 4 be?

Think: What is the pattern?

2. How is each number in Row 4 related to the number of the column?

Think: What is the question? What do you know?

3. Let c represent the number of the column. Write an expression that describes the pattern in Row 4.

4. Let c represent the number of the column. Write an expression that describes the pattern in Row 5.

Solve. Use these or other strategies.

Problem-Solving Strategies

- Use a Table
- Write an Equation
- Guess and Check
- Use Logical Thinking

5. Notice that the columns have a pattern too. If the pattern in Column 6 continues, what number should the last X in Row 5 be?

6. Let r represent the number of the row. Write an expression that describes the pattern in Column 6.

Name _____

Date _____

Solve Multiplication Equations

| Begin with this equation. | Solve it. | The solution: |
|---------------------------|----------------|---------------|
| $3z = 9$ | $z = 9 \div 3$ | $z = 3$ |

Use the same equation to complete the table below.

| | Multiply both sides by this number. | Write the new equation. | Solve the new equation. | Are the solutions the same? |
|----|-------------------------------------|---|-------------------------|-----------------------------|
| 1. | 4 | $(4 \times \underline{\quad}) \times z = 9 \times 4$ $12z = 36$ | $z = 3$ | yes |
| 2. | 6 | $(6 \times 3) \times \underline{\quad} = 9 \times 6$ $18z = \underline{\quad}$ | | |
| 3. | 3 | $(3 \times \underline{\quad}) \times z = 9 \times 3$ $9z = \underline{\quad}$ | | |
| 4. | 2 | $(\underline{\quad}) \times z = 9 \times 2$ $6z = \underline{\quad}$ | | |
| 5. | 5 | $(\underline{\quad}) \times z = 9 \times 5$ $15z = \underline{\quad}$ | | |
| 6. | 1 | $(1 \times \underline{\quad}) \times z = 9 \times 1$ $3z = \underline{\quad}$ | | |
| 7. | 7 | $(\underline{\quad}) \times z = 9 \times 7$ $21z = \underline{\quad}$ | | |
| 8. | 10 | $(\underline{\quad}) \times \underline{\quad} = 9 \times 10$ $30z = \underline{\quad}$ | | |

Name _____

Date _____

Two-Step Functions

Example

$$y = 3x + 4$$

| x | y |
|-----|-----|
| 5 | |

$$y = (3 \times 5) + 4$$

$$y = 15 + 4$$

$$y = 19$$

Complete each function table.

$$n = 5m + 9$$

| m | n |
|-----|-----|
| 3 | |
| 8 | |
| | 39 |

1.

2.

3.

$$a = 4b - 9$$

| b | a |
|-----|-----|
| 4 | |
| 10 | |
| | 11 |

4.

5.

6.

$$r = 8s - 36$$

| s | r |
|-----|-----|
| 8 | |
| 6 | |
| | 52 |

7.

8.

9.

$$c = 3d + 20$$

| d | c |
|-----|-----|
| 5 | |
| 1 | |
| | 47 |

10.

11.

12.

$$e = 4 + 5f$$

| f | e |
|-----|-----|
| 4 | |
| 8 | |
| | 14 |

13.

14.

15.

$$g = 6h - 18$$

| h | g |
|-----|-----|
| 11 | |
| 6 | |
| | 24 |

16.

17.

18.

$$j = k + 89$$

| k | j |
|-----|-----|
| 13 | |
| 48 | |
| | 140 |

19.

20.

21.

$$p = 48 \div m$$

| m | p |
|-----|-----|
| 6 | |
| 4 | |
| | 16 |

22.

23.

24.

$$a = 3z \times 9$$

| z | a |
|-----|-----|
| 2 | |
| 4 | |
| | 27 |

25.

26.

27.

$$y = 100 \div x$$

| x | y |
|-----|-----|
| 4 | |
| 20 | |
| | 10 |

28.

29.

30.

$$k = 9g - 22$$

| g | k |
|-----|-----|
| 4 | |
| 8 | |
| | 59 |

31.

32.

33.

Problem Solving • Reasoning

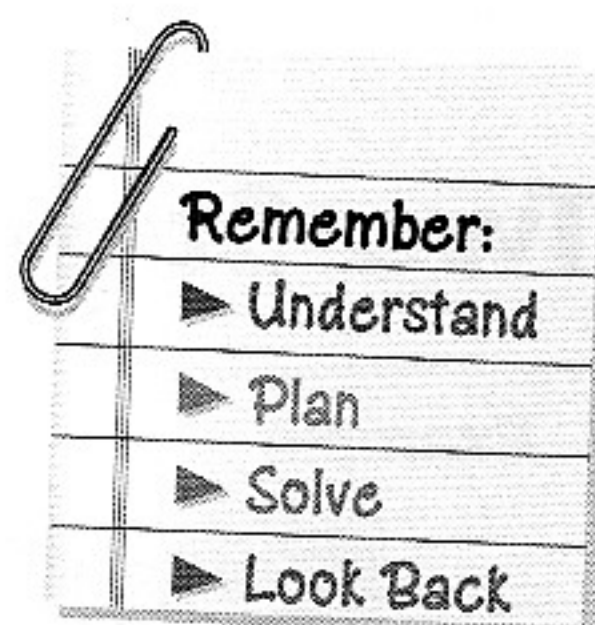
34. Sandra scored 8 points in her first basketball game. In every game after that she scored 5 points. Let g stand for the number of games and P for the total points she scored. Write an equation that shows the total points she scored.

35. The rental at a bowling alley is \$8 per hour. Shoe rental is \$4. Write an equation that shows how much Jake will spend to bowl 2 hours. Let T stand for the total amount and h stand for the number of hours.

Name _____

Date _____

Problem-Solving Strategy: Write an Equation



Use the Write an Equation Strategy to solve each problem.

1. Mrs. Roth makes flags at her shop. She sells small flags for \$6 each. Mr. Westland orders 10 small flags. How much will his order cost?

Think:

Let f stand for the number of flags. What expression could you write to show the cost of the flags?

2. Mrs. Roth needs 3 yards of red nylon, 6 yards of gold nylon, and 2 yards of green nylon. Nylon fabric costs \$3.00 a yard. How much will she spend for fabric?

Think:

How can you show the cost of the fabric?

3. It costs Mrs. Roth \$6 to make a medium-sized flag. She wants to make \$3 profit on each medium-sized flag. How much will she have to charge if a customer orders 30 flags?

4. Mr. Thomas orders 9 small flags at \$6 apiece, 20 medium-sized flags at \$9 apiece, and 5 large flags. His total order costs \$309. How much did he spend for each large flag?

Solve. Use these or other strategies.

Problem-Solving Strategies

- Use a Pattern
- Write an Equation
- Guess and Check
- Use Logical Thinking

5. Mrs. Roth is making flags for a special order. She needs 15 yards of white nylon, 8 yards of red wool, and 12 yards of blue cotton. Cotton costs \$4 a yard. Nylon costs \$3 a yard. Wool costs \$6 a yard. How much will she spend for all the fabric?

6. Mrs. Roth can cut 9 stripes for her flags from one yard of fabric. Her flag pattern calls for 36 stripes. If the fabric costs \$7 a yard, how much will it cost Mrs. Roth to make one flag?