

**1-3****Study Guide and Intervention****Squares and Square Roots**

The product of a number and itself is the **square** of the number. Numbers like 4, 25, and 2.25 are called **perfect squares** because they are squares of rational numbers. The factors multiplied to form perfect squares are called **square roots**. Both  $5 \cdot 5$  and  $(-5)(-5)$  equal 25. So, 25 has two square roots, 5 and  $-5$ . A **radical sign**,  $\sqrt{\quad}$ , is the symbol used to indicate the *positive* square root of a number. So,  $\sqrt{25} = 5$ .

**Examples**

- 1**
- Find the square of 5.

$$5 \cdot 5 = 25$$

- 2**
- Find the square of 16.

$$16 \quad x^2 \quad \text{ENTER} \quad 256$$

- 3**
- Find
- $\sqrt{49}$
- .

$$7 \cdot 7 = 49, \text{ so } \sqrt{49} = 7.$$

- 4**
- Find
- $\sqrt{169}$
- .

$$\text{2nd} \quad [\sqrt{\quad}] \quad 169 \quad \text{ENTER} \quad 13$$

$$\text{So, } \sqrt{169} = 13.$$

**Example 5**

A square tile has an area of 144 square inches. What are the dimensions of the tile?

$$\text{2nd} \quad [\sqrt{\quad}] \quad 144 \quad \text{ENTER} \quad 12 \quad \text{Find the square root of 144.}$$

So, the tile measures 12 inches by 12 inches.

**Exercises**

Find the square of each number.

1. 2

2. 9

3. 14

4. 15

5. 21

6. 45

Find each square root.

7.  $\sqrt{16}$

8.  $\sqrt{36}$

9.  $\sqrt{256}$

10.  $\sqrt{1,024}$

11.  $\sqrt{361}$

12.  $\sqrt{484}$

**1-3****Practice****Squares and Square Roots****Find the square of each number.**

1. 2

2. 8

3. 10

4. 11

5. 15

6. 25

7. What is the square of 5?

8. Find the square of 16.

9. Find the square of 21.

**Find each square root.**

10.  $\sqrt{64}$

11.  $\sqrt{121}$

12.  $\sqrt{169}$

13.  $\sqrt{0}$

14.  $\sqrt{81}$

15.  $\sqrt{289}$

16.  $\sqrt{900}$

17.  $\sqrt{1}$

18.  $\sqrt{484}$

**PACKAGING** An electronics company uses three different sizes of square labels to ship products to customers. The area of each type of label is shown in the table.

Labels	
Type	Area
Priority:	100 cm <sup>2</sup>
Caution:	225 cm <sup>2</sup>
Address:	144 cm <sup>2</sup>

19. If the length of a side of a square is the square root of the area, what is the length of a side for each label?

20. How much larger is the Caution label than the Address label?

21. **RECREATION** A square hot tub is outlined by a 2-foot wide tile border. In an overhead view, the area of the hot tub and the border together is 144 square feet. What is the length of one side of the hot tub itself?

**1-4****Study Guide and Intervention****Order of Operations**

Use the **order of operations** to evaluate numerical expressions.

1. Evaluate the expressions inside grouping symbols.
2. Evaluate all powers.
3. Multiply and divide in order from left to right.
4. Add and subtract in order from left to right.

**Example 1** Evaluate  $(10 - 2) - 4 \cdot 2$ .

$$\begin{aligned} (10 - 2) - 4 \cdot 2 &= 8 - 4 \cdot 2 && \text{Subtract first since } 10 - 2 \text{ is in parentheses.} \\ &= 8 - 8 && \text{Multiply 4 and 2.} \\ &= 0 && \text{Subtract 8 from 8.} \end{aligned}$$

**Example 2** Evaluate  $8 + (1 + 5)^2 \div 4$ .

$$\begin{aligned} 8 + (1 + 5)^2 \div 4 &= 8 + 6^2 \div 4 && \text{First, add 1 and 5 inside the parentheses.} \\ &= 8 + 36 \div 4 && \text{Find the value of } 6^2. \\ &= 8 + 9 && \text{Divide 36 by 4.} \\ &= 17 && \text{Add 8 and 9.} \end{aligned}$$

**Exercises**

Evaluate each expression.

1.  $(1 + 7) \times 3$

2.  $28 - 4 \cdot 7$

3.  $5 + 4 \cdot 3$

4.  $(40 \div 5) - 7 + 2$

5.  $35 \div 7(2)$

6.  $3 \times 10^3$

7.  $45 \div 5 + 36 \div 4$

8.  $42 \div 6 \times 2 - 9$

9.  $2 \times 8 - 3^2 + 2$

10.  $5 \times 2^2 + 32 \div 8$

11.  $3 \times 6 - (9 - 8)^3$

12.  $3.5 \times 10^2$

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

## WS "Stilwell Practice 1-4"

For questions 1-26, evaluate each expression. Show your work ☺

1)  $12 \div 3 \times 2$

2)  $20 - 10 + 4$

3)  $9 + 3 \times 5$

4)  $16 + 8 \div 4 - 2$

5)  $32 \div 4 + 3 \times 10$

6)  $8 + 6 - 4 \times 3$

7)  $7 \times (8 + 12)$

8)  $(15 - 10) \div 5$

9)  $36 - (12 - 8)$

10)  $(3 + 6) \times (12 - 9)$

11)  $(3 + 6) \times 12 - 9$

12)  $3 + 6 \times 12 - 9$

13)  $16 \div 8 + 4$

14)  $6 \times 10 - 3$

15)  $24 \times 2 \div 2$

16)  $33 - 8 - 6$

17)  $16 + 30 \div 5$

18)  $45 \div 5 \times 9$

19)  $37 - 12 + 10$

20)  $(75 - 25) \div 10$

21)  $20 \times (30 - 25)$

22)  $48 + 8 \div 4 + 4$

23)  $(24 + 8) \div 4 + 4$

24)  $24 + 8 \div (4 + 4)$

25)  $24 + 12 \times 6 - 1$

26)  $(24 + 12)(6 - 1)$

**OVER** 

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

For questions 27-36, tell whether the following statements are TRUE or FALSE. If the statement is false provide parentheses to make the statement true.

\_\_\_\_\_ 27)  $8 \times 3 + 3 = 27$

\_\_\_\_\_ 28)  $8 \times 3 + 3 = 48$

\_\_\_\_\_ 29)  $14 - 6 \div 2 = 11$

\_\_\_\_\_ 30)  $14 - 6 \div 2 = 4$

\_\_\_\_\_ 31)  $7 + 5 \times 5 = 60$

\_\_\_\_\_ 32)  $7 + 5 \times 5 = 32$

\_\_\_\_\_ 33)  $10 - 8 \div 2 = 6$

\_\_\_\_\_ 34)  $10 - 8 \div 2 = 1$

\_\_\_\_\_ 35)  $6 \times 4 + 8 \div 2 = 28$

\_\_\_\_\_ 36)  $6 \times 4 + 8 \div 2 = 36$

**FINALLY DONE**



**1-4****Skills Practice****Order of Operations****Evaluate each expression.**

1.  $9 - 3 + 4$

2.  $8 + 6 - 5$

3.  $12 \div 4 + 5$

4.  $25 \times 2 - 7$

5.  $36 \div 9(2)$

6.  $6 + 3(7 - 2)$

7.  $3 \times 6.2 + 5^2$

8.  $(1 + 11)^2 \div 3$

9.  $12 - (2 + 8)$

10.  $15 - 24 \div 4 \cdot 2$

11.  $(4 + 2) \cdot (7 + 4)$

12.  $(3 \cdot 18) \div (2 \cdot 9)$

13.  $24 \div 6 + 4^2$

14.  $3 \times 8 - (9 - 7)^3$

15.  $9 + (9 - 8 + 3)^4$

16.  $3 \times 2^2 + 24 \div 8$

17.  $(15 \div 3)^2 + 9 \div 3$

18.  $(52 \div 4) + 5^3$

19.  $26 \times 10^3$

20.  $7.2 \times 10^2$

21.  $5 \times 4^2 - 3 \times 2$

22.  $24 \div 6 \div 2$

23.  $13 - (6 - 5)^5$

24.  $(8 - 3 \times 2) \times 6$

25.  $(11 \cdot 4 - 10) \div 2$

26.  $10 \div 2 \times (4 - 3)$

27.  $1.82 \times 10^5$

28.  $35 \div 7 \times 2 - 4$

29.  $2^5 + 7(9 - 1)$

30.  $12 + 16 \div (3 + 1)$

Name \_\_\_\_\_ Date \_\_\_\_\_ Pd \_\_\_\_\_

# Chapter 1.1 Bringing It All Together

(Powers & Exponents, Squares and Square Roots, Order of Operations)

## Vocabulary Check

Define the following vocabulary words:

1) Evaluate: \_\_\_\_\_

2) Exponent: \_\_\_\_\_

State whether the statement is *true* or *false*.

If *false*, replace the underlined word or number to make a true sentence.

3) Two or more numbers that are multiplied together are called powers. \_\_\_\_\_

4) The product of a number and itself is the square root of the number. \_\_\_\_\_

5) Mathematicians agreed on an order of operations so that numerical expressions would have only one value. \_\_\_\_\_

## ~~1-1 A Plan for Problem Solving (pp. 25-29)~~

~~Underline the correct term to complete each sentence.~~

~~6) The (Plan, Solve) step is the step of the four-step plan in which you decide which strategy you will use to solve the problem.~~

~~7) According to the four-step plan, if your answer is not correct, you should (estimate the answer, make a new plan and start again).~~

~~8) Once you solve a problem, make sure your solution contains any appropriate (strategies, units or labels).~~

~~Use the four-step plan to solve each problem.~~

~~9) When Tamik calls home from college, she talks ten minutes per call for 3 calls each week. How many minutes does she use in a 15-week semester?~~

~~10) Alan was paid \$9 per hour and earned \$128.25. How many hours did he work?~~

**OVER** →

Name \_\_\_\_\_ Date \_\_\_\_\_ Pd \_\_\_\_\_

### 1-3 Squares and Square Roots (pp. 34-37)

Find the square of each number.

11)  $4$  \_\_\_\_\_

12)  $13$  \_\_\_\_\_

13)  $16$  \_\_\_\_\_

14)  $28$  \_\_\_\_\_

Find each square root.

15)  $\sqrt{81}$  \_\_\_\_\_

16)  $\sqrt{324}$  \_\_\_\_\_

17)  $\sqrt{121}$  \_\_\_\_\_

18)  $\sqrt{484}$  \_\_\_\_\_

19) The area of a certain kind of ceramic tile is 25 square inches.  
What is the length of one side? \_\_\_\_\_

### 1-4 Order of Operations (pp. 38-41)

Evaluate each expression. Show your work ☺

20)  $24 - 8 + 3^2$

21)  $9 + 18 \div 6$

22)  $9 + 3(7 - 5)^3$

23)  $15 + 9 \div 3 - 7$

24)  $48 \div 6 + 2 \times 5$

25)  $8 + 2(9 - 5) - (2 \times 3)$

**OVER**  $\longrightarrow$



Name \_\_\_\_\_ Date \_\_\_\_\_ Pd \_\_\_\_\_

26)  $2^3 - 6 \div 3 + 3^2$

27)  $2(7 - 3) \div 2^2$

28)  $(2 + 10) \div 4 + 2^2$

29)  $24 - 8 + 4^2 \div 2^3$

30)  $22 + 3(8 - 2)^3 + 12 \div 4$

31)  $(4 + 3)^2 \div (5 + 2) + 5^2$

32)  $5 \cdot 3^2 - 7 + 4$

33)  $10^2 \div 10 \times 5 + 1^3 - 4^2$

34)  $25 - (3^2 + 2 \times 5)$

35)  $3 + (24 \div 2^3 \cdot 7) - 2^2 \cdot 5$

**FINALLY  
DONE**

