

Review,  
Practice,  
& Mastery of

# CALIFORNIA MATHEMATICS STANDARDS

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## For the Student

This book will help you review, practice, and master the California Mathematics Content Standards. Here are the steps to follow to use this book.

1. Take the Tryout Test and check your answers. Use the chart at the bottom of this page to find out your strengths and weaknesses in the areas covered. Don't be discouraged if you don't get all the answers right or if you don't understand some questions. Remember the questions that are hard for you to answer. They will be the types of questions you need to work on the most.
2. Work through the lessons that follow the Tryout Test. Each lesson provides a review as well as practice questions based on the content standards. Each lesson ends with a short mastery test to reinforce your learning. As you go, complete the "Charting Your Progress" chart on page 127 of this book.
3. After completing all eight lessons, take the Final Mastery Test. Your score on this test will show your understanding of the content standards.

By following the steps outlined above, you will increase your mastery of the California Mathematics Content Standards.

Lesson	Tryout Test Items	Final Mastery Test Items
<b>1</b> Real Numbers	9, 15, 19, 32, 41, 49, 59	9, 15, 19, 32, 41, 49, 59
<b>2</b> Solving Equations and Inequalities	14, 16, 23, 28, 30, 40	14, 16, 23, 28, 30, 40
<b>3</b> Graphing Equations and Inequalities	3, 11, 20, 26, 39, 46, 50, 55	3, 11, 20, 26, 39, 46, 50, 55
<b>4</b> Polynomials	6, 17, 29, 35, 37, 42, 45, 56, 60	6, 17, 29, 35, 37, 42, 45, 56, 60
<b>5</b> Rational Expressions	2, 4, 7, 21, 43, 48, 53, 58	2, 4, 7, 21, 43, 48, 53, 58
<b>6</b> Functions	1, 33, 38, 44, 47, 52	1, 33, 38, 44, 47, 52
<b>7</b> Quadratic Equations and Functions	5, 8, 10, 12, 22, 27, 31, 34, 54	5, 8, 10, 12, 22, 27, 31, 34, 54
<b>8</b> Logic and Proofs	13, 18, 24, 25, 36, 51, 57	13, 18, 24, 25, 36, 51, 57

# Table of Contents

For the Student . . . . . 2

**Tryout Test** . . . . . 5

## **1 Real Numbers**

Sets of Numbers (1.0) . . . . . 12

Closure Property (1.0) . . . . . 13

Commutative and Associative  
Properties (1.1) . . . . . 14

Distributive Property (1.1) . . . . . 15

Opposites and Reciprocals (2.0) . . . . . 16

Rules of Exponents (2.0) . . . . . 17

Roots and Fractional Powers (2.0) . . . . . 19

**Mastery Test 1** . . . . . 20

## **2 Solving Equations and Inequalities**

Solving Equations (5.0) . . . . . 21

Solving Inequalities (5.0) . . . . . 24

Simplifying Before Solving (4.0) . . . . . 26

Equations with Absolute Value (3.0) . . . . . 28

Inequalities with Absolute Value (3.0) . . . . . 30

Solving Word Problems (5.0) . . . . . 32

**Mastery Test 2** . . . . . 36

## **3 Graphing Equations and Inequalities**

Slope and Intercepts (6.0) . . . . . 38

Graphing Equations (6.0) . . . . . 40

Writing Equations for Lines (7.0) . . . . . 43

Parallel and Perpendicular Lines (8.0) . . . . . 45

Solving Systems of Equations (9.0) . . . . . 48

Graphing Inequalities (6.0) . . . . . 54

Solving Systems of Inequalities (9.0) . . . . . 56

**Mastery Test 3** . . . . . 58

## **4 Polynomials**

Adding and Subtracting  
Polynomials (10.0) . . . . . 60

Multiplying Polynomials (10.0) . . . . . 62

Dividing Polynomials (10.0) . . . . . 65

Factoring Polynomials (11.0) . . . . . 67

Factoring Special Products (11.0) . . . . . 69

Factoring Trinomials of the Type  
 $x^2 + bx + c$  (11.0) . . . . . 71

Factoring Trinomials of the Type  
 $ax^2 + bx + c$  (11.0) . . . . . 73

**Mastery Test 4** . . . . . 74

## **5 Rational Expressions**

Simplifying Rational  
Expressions (12.0) . . . . . 75

Multiplying and Dividing Rational  
Expressions (13.0) . . . . . 77

Common Denominators (13.0) . . . . . 79

Adding and Subtracting Rational  
Expressions (13.0) . . . . . 80

Rate, Work, and Percent Mixture  
Problems (15.0) . . . . . 82

**Mastery Test 5** . . . . . 85

## **6 Functions**

Relations and Functions (16.0–18.0) . . . . . 86

Finding the Domain and the Range  
(17.0) . . . . . 88

Graphs of Functions and Relations  
(17.0–18.0) . . . . . 90

**Mastery Test 6** . . . . . 92

*continued*

# Table of Contents *continued*

<b>7 Quadratic Equations and Functions</b>	
Solving Equations by Factoring (14.0) . . . . .	93
Completing the Square (14.0) . . . . .	95
The Quadratic Formula (19.0–20.0) . . . . .	97
Graphing Quadratic Functions (21.0) . . . . .	99
Using the Discriminant (22.0) . . . . .	101
Applications of Quadratic Functions (23.0) . . . . .	103
<b>Mastery Test 7</b> . . . . .	106
<b>8 Logic and Proofs</b>	
Inductive and Deductive Reasoning (24.1) . . . . .	107
Forms of Deductive Arguments (24.2) . . . . .	110
Counterexamples (24.3) . . . . .	112
Proofs (25.1–25.2) . . . . .	113
Universal Statements (25.3) . . . . .	117
<b>Mastery Test 8</b> . . . . .	119
<b>Final Mastery Test</b> . . . . .	120
<b>Charting Your Progress</b> . . . . .	127



# LESSON 1

## Real Numbers

- Sets of Numbers
- Closure Property
- Commutative and Associative Properties
- Distributive Property
- Opposites and Reciprocals
- Rules of Exponents
- Roots and Fractional Powers

### Sets of Numbers

#### Review Algebra I Standard 1.0

The set of **real numbers** includes these sets:

- Whole Numbers** 0, 1, 2, 3, 4, . . .
- Integers** Positive whole numbers and their opposites, and 0
- Rational Numbers** Numbers that can be written as the ratio of two integers. The fractions  $\frac{1}{2}$  and  $\frac{5}{3}$  and decimals 0.5 and 1.75 are examples of rational numbers.
- Irrational Numbers** Numbers that cannot be written as the ratio of two integers. Repeating decimals, the constant  $\pi$  (pi), and  $\sqrt{2}$  are examples of irrational numbers.

#### Example A

Show that 2.5 is a rational number by writing it as a ratio of two integers.

Answer: \_\_\_\_\_

#### Remember . . .

A ratio is a comparison of two numbers through division.

$$\frac{4}{3} = \text{the ratio 4 to 3}$$

#### Step-By-Step

- 1 Look at the the definition of a rational number. Rational numbers can be written as the ratio of two integers. Rewrite 2.5 as a mixed number.

$$2\frac{1}{2}$$

- 2 Convert the mixed number into an improper fraction.

#### Try It

Now try these problems on your own.

- 1 Which set of numbers includes the square root of 20?  
A irrational numbers    C rational numbers  
B integers    D whole numbers
- 2 What is the name of this set?  
 $\{\dots -3, -2, -1, 0, 1, 2, 3, \dots\}$   
A real numbers    C rational numbers  
B integers    D whole numbers
- 3 Which set does not include negative numbers?  
A real numbers    C rational numbers  
B integers    D whole numbers
- 4 Which of these equals an integer?  
A  $12 \div 5$     C  $-15 \div 4$   
B  $-12 \div 5$     D  $-15 \div 5$

## Closure Property

### Review Algebra I Standard 1.0

The Closure Property states that a set is **closed** under an operation if the result of performing that operation is a member of the set. For example, positive integers are closed under addition because adding any two positive integers always results in a positive integer.

### Example B

Which set of numbers is not closed under addition?

- A positive integers
- B negative integers
- C odd numbers
- D even numbers

### Remember . . .

If an element outside a set is produced by an operation, the set is not closed under that operation.

$$3 + 5 = 8$$

Odd numbers are not closed under addition.

### Step-By-Step

In Example B, look for the set in which adding two elements does not always result in a member of the set.

- 1 Try two numbers at random from each set.

**Positive Integers:**  $6 + 8 = \underline{\quad}$

**Negative Integers:**  $-3 + -5 = \underline{\quad}$

**Odd Numbers:**  $3 + 5 = \underline{\quad}$

**Even Numbers:**  $6 + 8 = \underline{\quad}$

- 2 For which set is the sum not a member of that set?

### Try It

Now try these problems on your own.

- 5 Write an example to show that positive integers are not closed under subtraction.

**Answer:** \_\_\_\_\_

- 6 Which set of numbers is not closed under multiplication?

- A odd integers
- B even integers
- C prime numbers
- D composite numbers

### Remember . . .

A **prime number** has only two factors, itself and 1. A **composite number** has more than two factors.

- 7 For which set and operation is the Closure Property not valid?

- A integers, subtraction
- B integers, division
- C rational numbers, multiplication
- D positive real numbers, taking a square root

- 8 Write an example to show that whole numbers are not closed under the operation of taking an average.

**Answer:** \_\_\_\_\_

## Commutative and Associative Properties

**Review Algebra I Standard 1.1** Use the **Commutative** and **Associative Properties** of real numbers to simplify expressions and solve equations.

**Commutative Properties:** The order in which you add or multiply two real numbers does not change the result.

**Commutative Property of Addition**      **Commutative Property of Multiplication**

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

$$5 \cdot -3 = -3 \cdot 5$$

**Associative Properties:** Addends or factors can be grouped in different ways without changing the result.

**Associative Property of Addition**      **Associative Property of Multiplication**

$$-2 + (8 + 4) = (-2 + 8) + 4$$

$$\frac{1}{2}(4 \cdot 6) = (\frac{1}{2} \cdot 4)6$$

**Example C** Which number sentence illustrates the Commutative Property?

- A  $7 + 6 = 8 + 5$
- B  $(4 + 8) + 10 = (5 + 7) + 10$
- C  $15 + (10 + 25) = 15 + (25 + 10)$
- D  $15 + (10 + 25) = (15 + 10) + 25$

### Step-By-Step

- 1 Read the definition for the Commutative Property of Addition. Which answer choices have the same numbers on each side of the equation?

- 2 Which answer changes the order of the numbers without changing the way they are grouped?

**Try It** Now try these problems on your own.

- 9 Which property is illustrated by this number sentence?

$$(3 + 8) \cdot (6 + 4) = (6 + 4) \cdot (3 + 8)$$

- A Commutative Property of Addition
- B Commutative Property of Multiplication
- C Associative Property of Addition
- D Associative Property of Multiplication

- 10 Use the numbers 3 and 8 to show that subtraction is not commutative.

- 11 Which property is illustrated by this number sentence?

$$6 + 4 \times (0.2 \times 9) = 6 + (4 \times 0.2) \times 9$$

**Answer:** \_\_\_\_\_

- 12 Complete this statement.

$$18 \cdot (42 \cdot 36) = (18 \cdot 42) \cdot \underline{\hspace{2cm}}$$

- A 18
- B 36
- C 756
- D 1,512

## Distributive Property

**Review Algebra I Standard 1.1** To evaluate  $0.5(38 + 64)$ , you can add and then multiply. However, you might find it easier to multiply each addend and add the sum.

$$0.5(38 + 64) = (0.5 \times 38) + (0.5 \times 64)$$

This is an example of the **Distributive Property** of multiplication over addition. The property is true for all real numbers. If the variables  $a$ ,  $b$ , and  $c$  are used to stand for any three real numbers, the property can be written like this:

$$a(b + c) = ab + ac$$

**Example D** Which equation illustrates the Distributive Property?

- A  $(3 + 11) \times 4 = (3 \times 4) + (3 \times 11)$
- B  $(3 + 11) \times 4 = (3 \times 4) + (11 \times 4)$
- C  $(3 + 11) \times 4 = (3 + 4) \times 11$
- D  $(3 + 11) \times 4 = (3 + 11) \times (4 + 11)$

### Step-By-Step

- 1** Think about writing the expression  $(3 + 11) \times 4$  as the sum of two products. Complete the first product.

$$(3 + 11) \times 4 = (\square \times 4) + \dots$$

- 2** Complete the second product.

$$(3 + 11) \times 4 = (3 \times 4) + (\square \times \square)$$

**Try It** Now try these problems on your own.

- 13** Write the number that completes this illustration of the Distributive Property.

$$17 \cdot (\square + 9) = (17 \cdot 4) + (17 \cdot 9)$$

**Answer:** \_\_\_\_\_

- 14** Mark earns \$12 per hour. He works 4 hours on Friday and 7 hours on Saturday. Which expression does *not* equal Mark's total earnings?

- A  $12 + (4 \cdot 7)$
- B  $(7 + 4) \cdot 12$
- C  $(12 \cdot 4) + (12 \cdot 7)$
- D  $12 \cdot (4 + 7)$

- 15** Write the number or expression that completes this illustration of the Distributive Property.

$$15 \times 4\frac{1}{3} = 15 \times (4 + \frac{1}{3})$$

$$15 \times 4\frac{1}{3} = (15 \times 4) + \underline{\hspace{2cm}}$$

**Answer:** \_\_\_\_\_

- 16** Simplify this expression using the Distributive Property.

$$-2(x + 3)$$

**Answer:** \_\_\_\_\_

## Opposites and Reciprocals

**Review Algebra I Standard 2.0** When you add  $+5$  to  $-5$ , you get  $0$ . The numbers  $+5$  and  $-5$  are **opposites**. The sum of a real number and its opposite is  $0$ .

When you multiply  $\frac{2}{3}$  times  $\frac{3}{2}$ , you get  $\frac{6}{6}$ , which equals  $1$ . The numbers  $\frac{2}{3}$  and  $\frac{3}{2}$  are **reciprocals**. The product of a real number and its reciprocal is  $1$ .

**Example E** What is the reciprocal of  $0.75$ ?

- A  $1\frac{5}{7}$                       C  $1\frac{1}{4}$   
 B  $1\frac{1}{3}$                          D  $1\frac{3}{4}$

### Remember . . .

An improper fraction can be written as a mixed number.

$$\frac{4}{3} = \frac{3}{3} + \frac{1}{3} = 1\frac{1}{3}$$

### Step-By-Step

- 1 Write  $0.75$  as a fraction in lowest terms.

$$0.75 = \frac{75}{100} = \underline{\hspace{2cm}}$$

- 2 Interchange the numerator and denominator to find the reciprocal.

The reciprocal of  $\frac{3}{4}$  is  $\underline{\hspace{2cm}}$ .

- 3 Change the fraction to a mixed number.

$$\frac{4}{3} = \underline{\hspace{2cm}}$$

**Try It** Now try these problems on your own.

- 17 What is the opposite of  $-6$ ?

- A  $0$                               C  $6$   
 B  $1$                               D  $-6$

- 18 Write the opposite of  $0.35$ .

**Answer:** \_\_\_\_\_

- 19 What is the reciprocal of  $\frac{1}{8}$ ?

- A  $1$                               C  $\frac{11}{8}$   
 B  $1\frac{1}{8}$                          D  $8$

- 20 Find the reciprocal of  $0.3$ .

**Answer:** \_\_\_\_\_

- 21 The product of a number and its opposite is \_\_\_\_\_.

- A equal to  $1$ .                      C less than  $0$ .  
 B equal to  $0$ .                      D greater than  $0$ .

- 22 Multiply the reciprocal of  $2\frac{1}{2}$  and the opposite of  $-5$ .

**Answer:** \_\_\_\_\_

## Rules of Exponents

### Review Algebra I Standard 2.0

Repeated factors can be shown with an exponent. The repeated factor is the **base**. An exponential expression is also called a **power**. If the exponent is 2, it is the second power. If the exponent is 3, it is the third power.

**Example F** Find the value of  $(4 + 1)^3$ .

- A 5                      C 44  
B 25                     D 125

### Remember . . .

Follow the order of operations.

- Do computations inside parentheses.
- Evaluate exponential expressions.
- Multiply and
- Divide from left to right.
- Add and
- Subtract from left to right.

### Step-By-Step

- 1 Follow the order of operations. First add inside the parentheses.

$$(4 + 1)^3 = (\underline{\quad})^3$$

- 2 Then use repeated factors to find the product.

$$5^3 = 5 \times 5 \times 5 = \underline{\quad}$$

To find the product of two powers with the same base, add the exponents.

**Example G** What is the value of  $10^3 \cdot 10^5$ ?

- A 1,500  
B 15,000  
C 100,000,000  
D 1,000,000,000,000,000

### Tip . . .

Always check that the base is the same before you add the exponents.

$$4^2 \cdot 3^4 \neq 7^6$$

To evaluate  $4^2 \cdot 3^4$ , evaluate each exponent separately.

$$4^2 \cdot 3^4 = (4 \cdot 4) \cdot (3 \cdot 3 \cdot 3 \cdot 3)$$

### Step-By-Step

In Example G, both factors have 10 as a base, so you can add the exponents.

- 1 What is the sum of the exponents?

- 2 When the base is 10, the exponent shows you the number of zeros in the standard form. For example,  $10^4 = 10,000$ . Write the standard form of  $10^8$ .

$$10^8 = \underline{\hspace{2cm}}$$

Go On →



## Roots and Fractional Powers

### Review Algebra I Standard 2.0

Fractions can be used as exponents.

The fraction  $\frac{1}{2}$  as an exponent indicates a square root; the fraction  $\frac{1}{3}$  shows a cube root.

$$68^{\frac{1}{2}} = \sqrt{68} \approx 8.25 \quad 125^{\frac{1}{3}} = \sqrt[3]{125} = 5$$

To evaluate an expression with the exponent  $\frac{3}{2}$ , first take the square root and then cube the answer.

$$36^{\frac{3}{2}} = (36^{\frac{1}{2}})^3 = (\sqrt{36})^3 = 6^3 = 216$$

### Example 1

Which of these is closest to  $\sqrt[3]{80}$ ?

- A 3.7                      C 5.1  
B 4.3                      D 8.9

### Remember . . .

The symbol  $\approx$  means  
"is approximately equal to."

### Step-By-Step

Use a calculator for problems like Example 1.

- If your calculator takes cube roots, find the cube root of 80 to two decimal places.
- If your calculator does not take cube roots, cube each answer choice to find the best answer.

$$3.7^3 = \underline{\hspace{2cm}} \quad 5.1^3 = \underline{\hspace{2cm}}$$

$$4.3^3 = \underline{\hspace{2cm}} \quad 8.9^3 = \underline{\hspace{2cm}}$$

### Try It

Now try these problems on your own. You may use a calculator.

29 Which of these is closest to  $\sqrt{150}$ ?

- A 12.2                      C 14.2  
B 12.4                      D 15

30  $729^{\frac{1}{3}} =$

Answer: \_\_\_\_\_

31  $\sqrt[3]{300} \approx$  \_\_\_\_\_

- A 6.1                      C 6.7  
B 6.6                      D 7.2

32  $3,364^{\frac{1}{2}} =$  \_\_\_\_\_

- A 48                      C 58  
B 56                      D 78

33  $49^{\frac{3}{2}} =$

Answer: \_\_\_\_\_

34  $64^{\frac{2}{3}} =$  \_\_\_\_\_

- A 8                      C 256  
B 16                      D 512

## Mastery Test 1

Estimated time: 20 minutes

Directions: For a multiple-choice question, choose the best answer.  
For a short answer question, write your answer on the line.

- 1 Which set of numbers includes  $-\frac{2}{3}$ ?
- A integers                      C rational numbers  
B whole numbers              D irrational numbers

- 2 Give an example to show that whole numbers are not closed under division.

Answer: \_\_\_\_\_

- 3 Under which operation is the set of rational numbers not closed?
- A subtraction                  C raising to a power  
B division                        D taking a square root

- 4 Use the Associative Property to complete this statement.
- $0.3 + (1.2 + 0.8) = (0.3 + 1.2) +$  \_\_\_\_\_

Answer: \_\_\_\_\_

- 5 Which property is illustrated by this number sentence?

$$6 \cdot (5 + 12) = (5 + 12) \cdot 6$$

- A Closure                        C Associative  
B Commutative                D Distributive

- 6 Complete this statement of the Distributive Property.
- $(0.2 + 3.1) \cdot 5 =$  (\_\_\_\_\_)  $+$  (\_\_\_\_\_)

Answer: \_\_\_\_\_

- 7 What is the reciprocal of 0.125?
- A  $\frac{1}{2}$                                 C 12  
B 8                                    D 15

- 8 Write the opposite of  $-\frac{1}{4}$ .

Answer: \_\_\_\_\_

- 9  $20 - 3^2 =$  \_\_\_\_\_
- A 11                                C 169  
B 14                                D 289

- 10  $4^{10} \div 4^7 =$

Answer: \_\_\_\_\_

- 11  $(4 + 2)^3 \cdot (6^4)^2 =$  \_\_\_\_\_
- A  $6^9$                                 C  $6^{24}$   
B  $6^{11}$                               D  $36^8$

- 12  $100^{\frac{5}{2}} =$

Answer: \_\_\_\_\_

- 13  $\sqrt{175} \approx$  \_\_\_\_\_
- A 12.6                              C 13.8  
B 13.2                              D 14.1

- 14  $\sqrt[3]{4,913} =$

Answer: \_\_\_\_\_



Total Correct: \_\_\_\_\_ / 14

Review,  
Practice,  
& Mastery of

Teacher Guide • Algebra I

# CALIFORNIA MATHEMATICS STANDARDS



PERFECTION LEARNING®

## For the Teacher

The *Review, Practice, and Mastery* program is a refresher course. It provides a self-directed approach to reviewing and practicing the California Content Standards. Use the following steps to incorporate *Review, Practice, and Mastery* into your classroom.

1. Have students take the Tryout Test and check their answers. Then have them use the reproducible Skills Chart on pages 12, 13, and 14 of this teacher guide to assess their strengths and weaknesses in the areas covered. (The chart below is also available in the student book.) You may also wish to have students enter their answers in the reproducible Student Information and Answer Sheet on pages 17 and 18 of this teacher guide.
2. Have students work through the lessons, paying close attention to the areas in which they need improvement. You will see that each lesson page correlates to one or more of the California Content Standards. Each lesson is followed by a Mastery Test that focuses on the skills covered in the lesson. Have students fill in the Charting Your Progress chart on page 127 of the student book after they complete each test.
3. After completing all the lessons, have students take the Final Mastery Test to check their progress. They can also enter their answers on the reproducible Student Information and Answer Sheet on pages 19 and 20 of this teacher guide.

The chart that begins on page 21 of this teacher guide correlates the lessons to the California Content Standards.

Lesson	Tryout Test Items	Final Mastery Test Items
<b>1</b> Real Numbers	9, 15, 19, 32, 41, 49, 59	9, 15, 19, 32, 41, 49, 59
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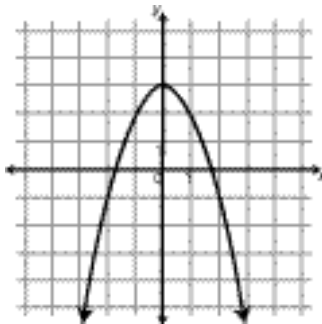
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# Answer Key

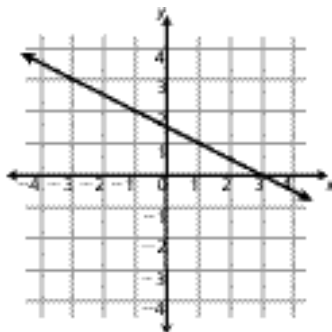
## Tryout Test (p. 5)

1. D
2.  $5\%(20) + 10\%(x) = 6\%(20 + x)$   
5 ounces
3. B
4.  $\frac{1}{3}$
5. 0
6. D
7. B
8. B
9. C

10.



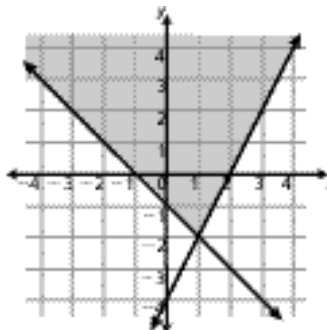
11. D
12.  $\{-2, \frac{1}{3}\}$
13. She lowers her prices.
14. A
15.  $\frac{4}{3}$
16. A
17. C
18. always
19. D
- 20.



21.  $\frac{1}{2x - 1}$
22. C
23.  $\{-3, -7\}$
24. C
25. C
26.  $y = -2x + 3$
27.  $h = -16t^2 + 144t; t = 9$   
9 seconds

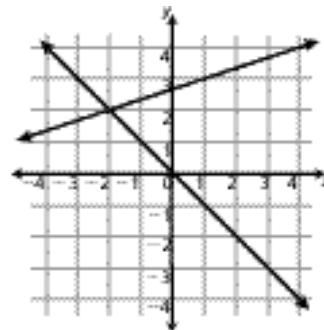
28.  $x = 6$
29.  $y^3 + 6y^2 + 5y + 5$
30. B
31. 0.23, -0.73
32. A
33. The number 0 is paired with two different values, 10 and 5.
34. -8, 5
35. A
36. a good pet
37. A
38. No. You can draw a vertical line that contains two points on the graph.
39. B
40.  $15 = 2 + \frac{1}{2}m; m = 26$   
26 miles
41. D
42.  $(a - 5)^2$
43. A
44. **Domain:** -15, -10, -5, -3, 0, 1, 5, 10  
**Range:** 0, 1, 2

45. B
- 46.



47. B
48.  $\frac{x}{15} + \frac{x}{10} = 1; x = 6$   
6 minutes
49.  $(\frac{1}{4} \cdot 3) + (\frac{1}{4} \cdot \frac{1}{2})$
50.  $\frac{3}{8}$
51. B
52. A
53.  $\frac{a}{5(a-2)}$  or  $\frac{a}{5a-10}$
54. C

55.



56.  $3w^2 + 13w - 10$
57. C
58.  $\frac{40}{2r} + \frac{40}{r} = 6; r = 10$   
10 mph
59. C
60.  $(5x - 4)(2x + 1)$

## LESSON 1 Real Numbers

### Sets of Numbers (p. 12)

Ex. A  $2.5 = \frac{5}{2}$

1. A
2. B
3. D
4. D

### Closure Property (p. 13)

Ex. B C

5. *Sample answer:*  
 $8 - 12 = -4$
6. C
7. B
8. *Sample answer:* average of 6 and 7 = 6.5

### Commutative and Associative Properties (p. 14)

Ex. C C

9. B
10.  $3 - 8 \neq 8 - 3$
11. Associative Property of Multiplication
12. B

### Distributive Property (p. 15)

Ex. D B

13. 4
14. A
15.  $(15 \times \frac{1}{3})$
16.  $-2x - 6$

**Opposites and Reciprocals** (p. 16)

Ex. E B

17. C  
 18.  $-0.35$   
 19. D  
 20.  $3\frac{1}{3}$   
 21. C  
 22.  $\frac{2}{5} \cdot 5 = 2$

**Rules of Exponents** (p. 17)

Ex. F D

Ex. G C

Ex. H C

23. C  
 24.  $9^2 = 81$   
 25. A  
 26.  $2^8 = 256$   
 27.  $8^3 = 512$   
 28. C

**Roots and Fractional Powers**

(p. 19)

Ex. I B

29. A  
 30. 9  
 31. C  
 32. C  
 33. 343  
 34. B

**Mastery Test 1** (p. 20)

1. C  
 2. *Sample answer:*  $5 \div 2 = 2.5$   
 3. D  
 4. 0.8  
 5. B  
 6.  $(0.2 \cdot 5) + (3.1 \cdot 5)$   
 7. B  
 8.  $\frac{1}{4}$   
 9. A  
 10. 64  
 11. B  
 12. 100,000  
 13. B  
 14. 17

**LESSON 2**  
**Solving Equations and Inequalities****Solving Equations** (p. 21)

Ex. A C

1. D  
 2.  $y = 3$   
 3. A  
 4.  $k = 4.3$   
 5. B  
 6.  $-9$   
 7. C  
 8.  $m = 2$   
 9.  $b = -6$   
 10. D  
 11.  $h = 2.2$   
 12. C  
 13.  $9 - 3t = 15$   
 $9 - 3(2) = 15$   
 $9 - 6 = 15$   
 $3 = 15$

No. Paul's solution is wrong.

**Solving Inequalities** (p. 24)

Ex. B B

Ex. C  $h > 5$ 

14. D  
 15.  $q \leq -2.7$   
 16. A  
 17. C  
 18.



- 19.

**Simplifying Before Solving** (p. 26)

Ex. D B

Ex. E B

20. A  
 21.  $-\frac{5}{2}p + 8$   
 22. B  
 23.  $d = \frac{3}{2}$   
 24. C  
 25.  $y \geq 5$   
 26. D  
 27. B

**Equations with Absolute Value**

(p. 28)

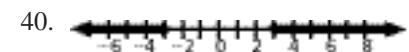
Ex. F C

29. C  
 30.  $-3$   
 31. A and C  
 32.  $\{\frac{3}{4}, -\frac{3}{4}\}$   
 33. D  
 34.  $\{3, -3\}$   
 35. A  
 36.  $\{39, -39\}$   
 37. B and D  
 38.  $\{5, -3\}$   
 39. D

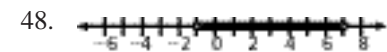
**Inequalities with Absolute Value**

(p. 30)

Ex. G C



42. B  
 43. B and C  
 44. D  
 45.  $3 + 6f > -1$   
 $3 + 6f < 1$

**Solving Word Problems** (p. 32)

Ex. H C

Ex. I A

Ex. J C

Ex. K C

49.  $(d - 1) + (d - 3) + d = 20$   
 8 dimes  
 C  
 50. C  
 51.  $9.5 = \frac{1}{3}a$   
 $\$28.50$