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Lesson 1 Reteach

Rational Numbers

To express a fraction as a decimal, divide the numerator by the denominator.

Example 1

Write $\frac{3}{4}$ as a decimal.

$\frac{3}{4}$ means $3 \div 4$.

The fraction $\frac{3}{4}$ can be written as 0.75, since $3 \div 4 = 0.75$.

Example 2

Write -0.16 as a fraction in simplest form.

$-0.16 = -\frac{16}{100}$ 0.16 is 16 hundredths.

$= -\frac{4}{25}$ Simplify.

The decimal -0.16 can be written as $-\frac{4}{25}$.

Example 3

Write $8.\overline{2}$ as a mixed number in simplest form.

Assign a variable to the value $8.\overline{2}$. Let $N = 8.222\ldots$. Then perform the operations on N to determine its value.

$N = 8.\overline{2}$ or $8.222\ldots$.

$10(N) = 10(8.222)$ Multiply each side by 10 because 1 digit repeats.

$10N = 82.222\ldots$ Multiplying by 10 moves the decimal point 1 place to the right.

$-N = \ \ 8.222\ldots$ Subtract $N = 8.222\ldots$ to eliminate the repeating part.

$9N = 74$ $10N - 1N = 9N$

$\frac{9N}{9} = \frac{74}{9}$ Divide each side by 9.

$N = 8\frac{2}{9}$ Simplify.

The decimal $8.\overline{2}$ can be written as $8\frac{2}{9}$.

Exercises

Write each fraction or mixed number as a decimal.

1. $\frac{2}{5}$
2. $\frac{3}{10}$
3. $\frac{7}{8}$
4. $2\frac{16}{25}$
5. $-\frac{2}{3}$
6. $-1\frac{2}{9}$
7. $6\frac{2}{3}$
8. $-4\frac{3}{11}$

Write each decimal as a fraction or mixed number in simplest form.

9. 0.8
10. -0.15
11. $0.\overline{1}$
12. $1.\overline{7}$

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Lesson 2 Reteach

Powers and Exponents

The product of repeated factors can be expressed as a **power**. A power consists of a **base** and an **exponent**. The exponent tells how many times the base is used as a factor.

Example 1

Write each expression using exponents.

a. $7 \cdot 7 \cdot 7 \cdot 7$

$7 \cdot 7 \cdot 7 \cdot 7 = 7^4$ The number 7 is a factor 4 times. So, 7 is the base and 4 is the exponent.

b. $y \cdot y \cdot x \cdot y \cdot x$

$y \cdot y \cdot x \cdot y \cdot x = y \cdot y \cdot y \cdot x \cdot x$	Commutative Property
$= (y \cdot y \cdot y) \cdot (x \cdot x)$	Associative Property
$= y^3 \cdot x^2$	Definition of exponents

To evaluate a power, perform the repeated multiplication to find the product.

Example 2

Evaluate $(-6)^4$.

$(-6)^4 = (-6) \cdot (-6) \cdot (-6) \cdot (-6)$	Write the power as a product.
$= 1{,}296$	Multiply.

The order of operations states that exponents are evaluated before multiplication, division, addition, and subtraction.

Example 3

Evaluate $m^2 + (n - m)^3$ if $m = -3$ and $n = 2$.

$m^2 + (n - m)^3 = (-3)^2 + (2 - (-3))^3$	Replace m with -3 and n with 2.
$= (-3)^2 + (5)^3$	Perform operations inside parentheses.
$= (-3 \cdot -3) + (5 \cdot 5 \cdot 5)$	Write the powers as products.
$= 9 + 125$ or 134	Add.

Exercises

Write each expression using exponents.

1. $8 \cdot 8 \cdot 8 \cdot 8 \cdot 8$
2. $a \cdot a \cdot a \cdot a \cdot a \cdot a$
3. $5 \cdot 5 \cdot 9 \cdot 9 \cdot 5 \cdot 9 \cdot 5 \cdot 5$

Evaluate each expression.

4. 2^4
5. $(-3)^5$
6. $\left(\frac{3}{4}\right)^3$

ALGEBRA **Evaluate each expression if $a = 5$ and $b = -4$.**

7. $a^2 + b^2$
8. $(a + b)^2$
9. $a + b^2$

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Lesson 3 Reteach

Multiply and Divide Monomials

The **Product of Powers** rule states that to multiply powers with the same base, add their exponents.

Example 1

Simplify. Express using exponents.

a. $2^3 \cdot 2^2$

$2^3 \cdot 2^2 = 2^{3+2}$ The common base is 2.

$= 2^5$ Add the exponents.

b. $2s^6(7s^7)$

$2s^6(7s^7) = (2 \cdot 7)(s^6 \cdot s^7)$ Commutative and Associative Properties

$= 14(s^{6+7})$ The common base is s.

$= 14s^{13}$ Add the exponents.

The **Quotient of Powers** rule states that to divide powers with the same base, subtract their exponents.

Example 2

Simplify $\frac{k^8}{k}$. Express using exponents.

$\frac{k^8}{k^1} = k^{8-1}$ The common base is k.

$= k^7$ Subtract the exponents.

Example 3

Simplify $\frac{(-2)^{10} \cdot 5^6 \cdot 6^3}{(-2)^6 \cdot 5^3 \cdot 6^2}$.

$\frac{(-2)^{10} \cdot 5^6 \cdot 6^3}{(-2)^6 \cdot 5^3 \cdot 6^2} = \left(\frac{(-2)^{10}}{(-2)^6}\right) \cdot \left(\frac{5^6}{5^3}\right) \cdot \left(\frac{6^3}{6^2}\right)$ Group by common base.

$= (-2)^4 \cdot 5^3 \cdot 6^1$ Subtract the exponents.

$= 16 \cdot 125 \cdot 6$ or $12{,}000$ Simplify.

Exercises

Simplify. Express using exponents.

1. $5^2 \cdot 5^5$
2. $e^2 \cdot e^7$
3. $2a^5 \cdot 6a$
4. $4x^2(-5x^6)$
5. $\frac{7^9}{7^3}$
6. $\frac{v^{14}}{v^6}$
7. $\frac{15w^7}{5w^2}$
8. $\frac{10m^8}{2m}$
9. $\frac{2^5 \cdot 3^7 \cdot 4^3}{2^4 \cdot 3^5 \cdot 4}$
10. $\frac{4^{15} \cdot (-5)^6}{4^{12} \cdot (-5)^4}$
11. $\frac{6^7 \cdot 7^6 \cdot 8^5}{6^5 \cdot 7^5 \cdot 8^4}$
12. $\frac{(-3)^6 \cdot 10^5}{(-3)^4 \cdot 10^3}$

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Lesson 4 Reteach

Powers of Monomials

Power of a Power: To find the power of a power, multiply the exponents.

Power of a Product: To find the power of a product, find the power of each factor and multiply.

Example 1

Simplify $(5^3)^6$.

$(5^3)^6 = 5^{3 \cdot 6}$ Power of a power

$= 5^{18}$ Simplify.

Example 2

Simplify $(-3m^2n^4)^3$.

$(-3m^2n^4)^3 = (-3)^3 \cdot m^{2 \cdot 3} \cdot n^{4 \cdot 3}$ Power of a product

$= -27m^6n^{12}$ Simplify.

Exercises

Simplify.

1. $(4^3)^5$

2. $(4^2)^7$

3. $(9^2)^4$

4. $(k^4)^2$

5. $[(6^3)^2]^2$

6. $[(3^2)^2]^3$

7. $(5q^4r^2)^5$

8. $(3y^2z^2)^6$

9. $(7a^4b^3c^7)^2$

10. $(-4d^3e^5)^2$

11. $(-5g^4h^9)^7$

12. $(0.2k^8)^2$

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Reteach

Problem-Solving Investigation: The Four Step Plan

Example 1

Inola's dad gave her three quarters on Monday. Each day after that, he gave her twice as many quarters as he gave her on the previous day. By the end of day Thursday, how many quarters had Inola received?

Understand Inola starts with three quarters and receives twice that amount the next day, and then twice that amount the following day, and so on. Use counters, coins, or play money to represent the quarters.

Plan Place the counters neatly; you can use different colors to show the difference from one day to the next.

Solve Find the sum of the counters once they are all placed.

Monday ○○○

Tuesday ○○○○○○

Wednesday ○○○○○○○○○○○○

Thursday ○○○○○○○○○○○○
○○○○○○○○○○○○

$3 + 6 + 12 + 24 = 45$

Inola received 45 quarters by the end of day Thursday.

Check The number of quarters can be written as the product of 3 and a multiple of 2. $3 + 3(2^1) + 3(2^2) + 3(2^3) = 45$.

Exercises

For Exercises 1–3, solve each problem using the four-step plan.

1. TILES Alistair has a red square tile, a blue square tile, a green square tile, and a yellow square tile. How many different ways can he arrange the tiles so that they form a larger square?

2. MONEY Ari wants to buy a comic book that costs $0.65. If he uses exact change, how many different combinations of nickels, dimes, and quarters can he use?

3. NUMBER LINE In a math class game, players are using a number line on the floor. Grace starts at zero and moves forward 7 numbers on her first turn and moves backward 4 numbers on her second turn. If this pattern continues, how many turns will it take for her to move forward to 16?

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Lesson 5 Reteach

Negative Exponents

Any nonzero number to the zero power is 1. Any nonzero number to the negative n power is the multiplicative inverse of the number to the nth power.

Example 1

Write each expression using a positive exponent.

a. 7^{-3}

$7^{-3} = \frac{1}{7^3}$ Definition of negative exponent

b. a^{-4}

$a^{-4} = \frac{1}{a^4}$ Definition of negative exponent

Example 2

Evaluate each expression.

a. 5^{-4}

$5^{-4} = \frac{1}{5^4}$ Definition of negative exponent

$= \frac{1}{625}$ $5^4 = 5 \cdot 5 \cdot 5 \cdot 5$

b. $(-3)^{-5}$

$(-3)^{-5} = \frac{1}{(-3)^5}$ Definition of negative exponent

$= \frac{1}{-243}$ $(-3)^5 = (-3) \cdot (-3) \cdot (-3) \cdot (-3) \cdot (-3)$

Example 3

Write $\frac{1}{6^5}$ as an expression using a negative exponent.

$\frac{1}{6^5} = 6^{-5}$ Definition of negative exponent

Example 4

Simplify. Express using positive exponents.

a. $x^{-3} \cdot x^5$

$x^{-3} \cdot x^5 = x^{(-3)+5}$ Product of Powers

$= x^2$ Add the exponents.

b. $\frac{w^{-5}}{w^{-7}}$

$\frac{w^{-5}}{w^{-7}} = w^{-5-(-7)}$ Quotient of Powers

$= w^2$ Subtract the exponents.

Exercises

Write each expression using a positive exponent.

1. a^{-8}
2. 6^{-3}
3. n^{-4}

Evaluate each expression.

4. 7^{-2}
5. 9^{-3}
6. $(-2)^{-5}$

Write each fraction as an expression using a negative exponent.

7. $\frac{1}{5^7}$
8. $\frac{1}{3^6}$
9. $\frac{1}{x^8}$

Simplify. Express using positive exponents.

10. $4^{-2} \cdot 4^{-4}$
11. $r^{-3} \cdot r^5$
12. $\frac{h^{-2}}{h^4}$

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Lesson 6 Reteach

Scientific Notation

A number in scientific notation is written as the product of a factor that is at least one but less than ten and a power of ten.

Example 1

Write 8.65×10^7 in standard form.

$8.65 \times 10^7 = 8.65 \times 10{,}000{,}000$ $10^7 = 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10$ or 10,000,000

$= 86{,}500{,}000$ The decimal point moves 7 places to the right.

Example 2

Write 9.2×10^{-3} in standard form.

$9.2 \times 10^{-3} = 9.2 \times 0.001$ The decimal point moves 3 places to the left.

$= 0.0092$

Example 3

Write 76,250 in scientific notation.

$76{,}250 = 7.625 \times 10{,}000$ The decimal point moves 4 places.

$= 7.625 \times 10^4$ Since 76,250 is >1, the exponent is positive.

Example 4

Write 0.00157 in scientific notation.

$0.00157 = 1.57 \times 0.001$ The decimal point moves 3 places.

$= 1.57 \times 10^{-3}$ Since 0.00157 is <1, the exponent is negative.

Exercises

Write each number in standard form.

1. 5.3×10^1
2. 9.4×10^3
3. 7.07×10^5
4. 2.6×10^{-3}
5. 8.651×10^{-2}
6. 6.7×10^{-6}

Write each number in scientific notation.

7. 561
8. 14
9. 56,400,000
10. 0.752
11. 0.0064
12. 0.000581

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Lesson 7 Reteach

Compute with Scientific Notation

You can use the Product of Powers and Quotient of Powers properties to multiply and divide numbers written in scientific notation.

Example 1

Evaluate $(3.4 \times 10^5)(2.3 \times 10^3)$. Express the result in scientific notation.

$(3.4 \times 10^5)(2.3 \times 10^3) = (3.4 \times 2.3)(10^5 \times 10^3)$ Commutative and Associative Properties

$= (7.82)(10^5 \times 10^3)$ Multiply 3.4 by 2.3.

$= 7.82 \times 10^{5+3}$ Product of Powers

$= 7.82 \times 10^8$ Add the exponents.

Example 2

Evaluate $\frac{2.325 \times 10^4}{3.1 \times 10^2}$. Express the result in scientific notation.

$\frac{2.325 \times 10^4}{3.1 \times 10^2} = \left(\frac{2.325}{3.1}\right)\left(\frac{10^4}{10^2}\right)$ Associative Property

$= (0.75)\left(\frac{10^4}{10^2}\right)$ Divide 2.325 by 3.1.

$= 0.75 \times 10^{4-2}$ Quotient of Powers

$= 0.75 \times 10^2$ Subtract the exponents.

$= 0.75 \times 10^2$ Write 0.75×10^2 in scientific notation.

$= 7.5 \times 10$ Since the decimal point moved 1 place to the right, subtract 1 from the exponent.

Example 3

Evaluate $(5.24 \times 10^5) + (8.65 \times 10^6)$. Express the result in scientific notation.

$(5.24 \times 10^5) + (8.65 \times 10^6) = (5.24 \times 10^5) + (86.5 \times 10^5)$ Write 8.65×10^6 as 86.5×10^5.

$= (5.24 + 86.5) \times 10^5$ Distributive Property

$= 91.74 \times 10^5$ Add 5.24 and 86.5.

$= 9.174 \times 10^6$ Write 91.74×10^5 in scientific notation.

Exercises

Evaluate each expression. Express the result in scientific notation.

1. $(6.7 \times 10^4)(2.9 \times 10^5)$

2. $(4.3 \times 10^4) + (5.21 \times 10^5)$

3. $\frac{5.46 \times 10^5}{8.4 \times 10^3}$

4. $(9.6 \times 10^5) - (3.7 \times 10^3)$

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Lesson 8 Reteach

Roots

A square root of a number is one of its two equal factors. A radical sign, $\sqrt{\ }$ is used to indicate a positive square root. Every positive number has both a negative and positive square root.

Examples

Find each square root.

1. $\sqrt{1}$ Find the positive square root of 1; $1^2 = 1$, so $\sqrt{1} = 1$.
2. $-\sqrt{16}$ Find the negative square root of 16; $(-4)^2 = 16$, so $-\sqrt{16} = -4$.
3. $\pm\sqrt{0.25}$ Find both square roots of 0.25; $0.5^2 = 0.25$, so $\pm\sqrt{0.25} = \pm 0.5$.
4. $\sqrt{-49}$ There is no real square root because no number times itself is equal to -49.

Example 5

Solve $a^2 = \frac{4}{9}$. Check your solution(s).

$a^2 = \frac{4}{9}$	Write the equation.
$a = \pm\sqrt{\frac{4}{9}}$	Definition of square root
$a = \frac{2}{3}$ or $-\frac{2}{3}$	Check $\frac{2}{3} \cdot \frac{2}{3} = \frac{4}{9}$ and $\left(-\frac{2}{3}\right)\left(-\frac{2}{3}\right) = \frac{4}{9}$.

The equation has two solutions, $\frac{2}{3}$ and $-\frac{2}{3}$.

Exercises

Find each square root.

1. $\sqrt{4}$
2. $\sqrt{9}$
3. $-\sqrt{49}$
4. $-\sqrt{25}$
5. $\pm\sqrt{0.01}$
6. $-\sqrt{0.64}$
7. $\sqrt{\frac{9}{16}}$
8. $\sqrt{\frac{-1}{25}}$

ALGEBRA **Solve each equation. Check your solution(s).**

9. $x^2 = 121$
10. $a^2 = 3{,}600$
11. $p^2 = \frac{81}{100}$
12. $t^2 = \frac{121}{196}$

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Lesson 9 Reteach

Estimate Roots

Most numbers are not perfect squares or cubes. You can estimate roots for these numbers.

Example 1

Estimate $\sqrt{204}$ to the nearest integer.

- The largest perfect square less than 204 is 196.
- The smallest perfect square greater than 204 is 225.

$196 < 204 < 225$	Write an inequality.
$14^2 < 204 < 15^2$	$196 = 14^2$ and $225 = 15^2$.
$\sqrt{14^2} < \sqrt{204} < \sqrt{15^2}$	Find the square root of each number.
$14 < \sqrt{204} < 15$	Simplify.

So, $\sqrt{204}$ is between 14 and 15. Since 204 is closer to 196 than 225, the best whole number estimate for $\sqrt{204}$ is 14.

Example 2

Estimate $\sqrt[3]{79.3}$ to the nearest integer.

- The largest perfect cube less than 79.3 is 64.
- The smallest perfect cube greater than 79.3 is 125.

$64 < 79.3 < 125$	Write an inequality.
$4^3 < 79.3 < 5^3$	$64 = 4^3$ and $125 = 5^3$.
$\sqrt[3]{64} < \sqrt[3]{79.3} < \sqrt[3]{125}$	Find the cube root of each number.
$4 < \sqrt[3]{79.3} < 5$	Simplify.

So, $\sqrt[3]{79.3}$ is between 4 and 5. Since 79.3 is closer to 64 than 125, the best whole number estimate for $\sqrt[3]{79.3}$ is 4.

Exercises

Estimate to the nearest integer.

1. $\sqrt{8}$	**2.** $\sqrt{37}$	**3.** $\sqrt{14}$
4. $\sqrt[3]{30}$	**5.** $\sqrt[3]{750}$	**6.** $\sqrt[3]{200}$
7. $\sqrt{103}$	**8.** $\sqrt{141}$	**9.** $\sqrt{14.3}$
10. $\sqrt{51.2}$	**11.** $\sqrt[3]{340.8}$	**12.** $\sqrt[3]{7.5}$

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Lesson 10 Reteach

Compare Real Numbers

Numbers can be classified by identifying to which of the following sets they belong.

Whole Numbers	0, 1, 2, 3, 4, ...	**Integers**	..., −2, −1, 0, 1, 2, ...
Rational Numbers	numbers that can be expressed in the form $\frac{a}{b}$, where a and b are integers and $b \neq 0$		
Irrational Numbers	numbers that cannot be expressed in the form $\frac{a}{b}$, where a and b are integers and $b \neq 0$		

Examples

Name all sets of numbers to which each real number belongs.

1. 5 — whole number, integer, rational number
2. 0.666... — Decimals that terminate or repeat are rational numbers, since they can be expressed as fractions. $0.666... \frac{2}{3}$
3. $-\sqrt{25}$ — Since $-\sqrt{25} = -5$, it is an integer and a rational number.
4. $\sqrt{11}$ — $\sqrt{11} \approx 3.31662479...$ Since the decimal does not terminate or repeat, it is an irrational number.

To compare real numbers, write each number as a decimal and then compare the decimal values.

Example 5

Replace ▢ with <, >, or = to make $2\frac{1}{4}$ ▢ $\sqrt{5}$ a true statement.

Write each number as a decimal.

$2\frac{1}{4} = 2.25$

$\sqrt{5} \approx 2.236067...$

Since 2.25 is greater than 2.236067..., $2\frac{1}{4} > \sqrt{5}$.

Exercises

Name all sets of numbers to which each real number belongs.

1. 30
2. -11
3. $5\frac{4}{7}$
4. $\sqrt{21}$
5. 0
6. $-\sqrt{9}$
7. $\frac{6}{3}$
8. $-\sqrt{101}$

Replace each ▢ with <, >, or = to make a true statement.

9. 2.7 ▢ $\sqrt{7}$
10. $\sqrt{11}$ ▢ $3\frac{1}{2}$
11. $4\frac{1}{6}$ ▢ $\sqrt{17}$
12. $3.\overline{8}$ ▢ $\sqrt{15}$

Chapter 0 Pretest

Determine whether you need an estimate or an exact answer. Then solve.

1. **SHOPPING** Addison paid $1.29 for gum and $0.89 for a package of notebook paper. She gave the cashier a $5 bill. If the tax was $0.14, how much change should Addison receive?

2. **DISTANCE** Luis rode his bike 1.2 miles to his friend's house, then 0.7 mile to the video store, then 1.9 miles to the library. If he rode the same route back home, about how far did he travel in all?

Find each sum or difference.

3. $20 + (-7)$

4. $-15 + 6$

5. $-9 - 22$

6. $18.4 - (-3.2)$

7. $23.1 + (-9.81)$

8. $-5.6 + (-30.7)$

Find each product or quotient.

9. $11(-8)$

10. $-15(-2)$

11. $63 \div (-9)$

12. $-22 \div 11$

Replace each ▒ with <, >, or = to make a true sentence.

13. $\frac{7}{20} \text{▒} \frac{2}{5}$

14. $0.15 \text{▒} \frac{1}{8}$

15. Order 0.5, $-\frac{1}{7}$, -0.2, and $\frac{1}{3}$ from least to greatest.

Find each sum or difference. Write in simplest form.

16. $\frac{5}{6} + \frac{2}{3}$

17. $\frac{11}{12} - \frac{3}{4}$

18. $\frac{1}{2} + \frac{4}{9}$

19. $-\frac{3}{5} + \left(-\frac{1}{5}\right)$

Find each product or quotient.

20. $2.4(-0.7)$

21. $-40.5 \div (-8.1)$

Name the reciprocal of each number.

22. $\frac{4}{11}$

23. $-\frac{3}{7}$

Find each product or quotient. Write in simplest form.

24. $\frac{2}{21} \div \frac{1}{3}$

25. $\frac{1}{5} \cdot \frac{3}{20}$

26. $\frac{6}{25} \div \left(-\frac{3}{5}\right)$

27. $\frac{1}{9} \cdot \frac{3}{4}$

28. $-\frac{2}{21} \div \left(-\frac{2}{15}\right)$

29. $2\frac{1}{2} \cdot \frac{2}{15}$

Express each percent as a fraction in simplest form.

30. 20%

31. 7.5%

Use the percent proportion to find each number.

32. 18 is what percent of 72?

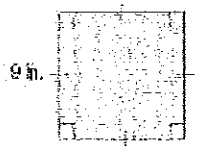
33. 35 is what percent of 200?

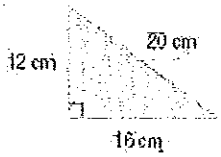
34. 24 is 60% of what number?

35. **TEST SCORES** James answered 14 items correctly on a 16-item quiz. What percent did he answer correctly?

36. **BASKETBALL** Emily made 75% of the baskets that she attempted. If she made 9 baskets, how many attempts did she make?

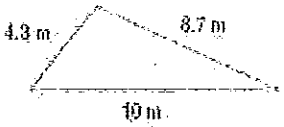
Find the perimeter and area of each figure.

37. 

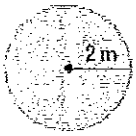
38. 

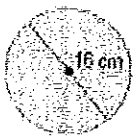
39. A parallelogram has side lengths of 7 inches and 11 inches. Find the perimeter.

40. **GARDENS** Find the perimeter of the garden.



Find the circumference and area of each circle. Round to the nearest tenth.

41. 

42. 

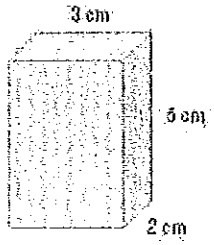
43. **BIRDS** The floor of a birdcage is a circle with a circumference of about 47.1 inches. What is the diameter of the birdcage floor? Round to the nearest inch.

Find the volume and surface area of each rectangular prism given the measurements.

44. $l = 3$ cm, $w = 1$ cm, $h = 3$ cm

45. $l = 6$ ft, $w = 2$ ft, $h = 5$ ft

46. Find the volume and surface area of the rectangular prism.



One pencil is randomly selected from a case containing 3 red, 4 green, 2 black, and 6 blue pencils. Find each probability.

47. P(green)

48. P(red or blue)

49. Use a tree diagram to find the sample space for the event *a die is rolled, and a coin is tossed.* State the number of possible outcomes.

One coin is randomly selected from a jar containing 20 pennies, 15 nickels, 3 dimes, and 12 quarters. Find the odds of each outcome. Write in simplest form.

50. a penny

51. a penny or nickel

52. A coin is tossed 50 times. The results are shown in the table. Find the experimental probability of heads. Write as a fraction in simplest form.

Coin's Face-Up	Number of Times
heads	22
tails	28

Find the mean, median, and mode for each set of data.

53. {10, 11, 18, 24, 30}

54. {4, 8, 9, 9, 10, 14, 16}

55. Find the range, median, lower quartile, and upper quartile for {16, 19, 21, 24, 25, 31, 35}.

56. **SCHOOL** Devonte's scores on his first four Spanish tests are 92, 85, 90, and 92. What test score must Devonte earn on the fifth test so that the mean will be exactly 90?

57. **MUSIC** The table shows the results of a survey in which students were asked to choose which of four instruments they would like to learn. Make a bar graph of the data.

Favorite Instrument	
Instrument	Number of Students
drums	8
guitar	17
piano	5
trumpet	7

58. Make a double box-and-whisker plot of the data.
A: 42, 50, 38, 59, 50, 44, 46, 62, 47, 35, 55, 56
B: 47, 49, 48, 49, 40, 54, 56, 42, 57, 45, 45, 46

59. **EXPENSES** The table shows how Dylan spent his money at the fair. Make a circle graph of the data.

Money Spent at the Fair	
How Spent	Amount ($)
rides	6
food	10
games	4