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1.1 Adding Integers with the Same Sign

Add.

1. $-8 + (-6)$ _____ 2. $-4 + (-7)$ _____ 3. $-9 + (-12)$ _____

1.2 Adding Integers with Different Signs

Add.

4. $5 + (-2)$ _____ 5. $-8 + 4$ _____ 6. $15 + (-8)$ _____

1.3 Subtracting Integers

Subtract.

7. $2 - 9$ _____ 8. $-3 - (-4)$ _____ 9. $11 - (-12)$ _____

1.4 Applying Addition and Subtraction of Integers

10. A bus makes a stop at 2:30, letting off 15 people and letting on 9. The bus makes another stop ten minutes later to let off 4 more people. How many more or fewer people are on the bus after the second stop compared to the number of people on the bus before the 2:30 stop?

11. Cate and Elena were playing a card game. The stack of cards in the middle had 24 cards in it to begin with. Cate added 8 cards to the stack. Elena then took 12 cards from the stack. Finally, Cate took 9 cards from the stack. How many cards were left in the stack?



ESSENTIAL QUESTION

12. Write and solve a word problem that can be modeled by addition of two negative integers.

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2.1 Multiplying Integers

Find each product.

1. $(-2)(3)$ _____
2. $(-5)(-7)$ _____
3. $(8)(-11)$ _____
4. $(-3)(2)(-2)$ _____
5. The temperature dropped 3°C every hour for 5 hours.
Write an integer that represents the change in temperature. _____

2.2 Dividing Integers

Find each quotient.

6. $\frac{-63}{7}$ _____
7. $\frac{-15}{-3}$ _____
8. $0 \div (-15)$ _____
9. $96 \div (-12)$ _____
10. An elephant at the zoo lost 24 pounds over 6 months.
The elephant lost the same amount of weight each month.
Write an integer that represents the change in the elephant's weight each month. _____

2.3 Applying Integer Operations

Evaluate each expression.

11. $(-4)(5) + 8$ _____
12. $(-3)(-6) - 7$ _____
13. $-27 \div 9 - 11$ _____
14. $\frac{-24}{-3} - (-2)$ _____



ESSENTIAL QUESTION

15. Write and solve a real-world problem that can be represented by the expression $(-3)(5) + 10$.

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3.1 Rational Numbers and Decimals

Write each mixed number as a decimal.

1. $4\frac{1}{5}$ _____

2. $12\frac{14}{15}$ _____

3. $5\frac{5}{32}$ _____

3.2 Adding Rational Numbers

Find each sum.

4. $4.5 + 7.1 =$ _____

5. $5\frac{1}{6} + (-3\frac{5}{6}) =$ _____

3.3 Subtracting Rational Numbers

Find each difference.

6. $-\frac{1}{8} - (6\frac{7}{8}) =$ _____

7. $14.2 - (-4.9) =$ _____

3.4 Multiplying Rational Numbers

Multiply.

8. $-4(\frac{7}{10}) =$ _____

9. $-3.2(-5.6)(4) =$ _____

3.5 Dividing Rational Numbers

Find each quotient.

10. $-\frac{19}{2} \div \frac{38}{7} =$ _____

11. $\frac{-32.01}{-3.3} =$ _____

3.6 Applying Rational Number Operations

12. Luis bought stock at \$83.60. The next day, the price increased \$15.35. This new price changed by $-4\frac{3}{4}\%$ the following day. What was the final stock price? Is your answer reasonable? Explain.



ESSENTIAL QUESTION

13. How can you use negative numbers to represent real-world problems?

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4.1 Unit Rates

Find each unit rate. Round to the nearest hundredth, if necessary.

1. \$140 for 18 ft² _____ 2. 14 lb for \$2.99 _____

Circle the better deal in each pair. Then give the unit rate for the better deal.

3. $\frac{\$56}{25 \text{ gal}}$ or $\frac{\$32.05}{15 \text{ gal}}$ _____ 4. $\frac{\$160}{5 \text{ g}}$ or $\frac{\$315}{9 \text{ g}}$ _____

4.2 Constant Rates of Change

5. The table shows the amount of money Tyler earns for mowing lawns. Is the relationship a proportional relationship? Why or why not?

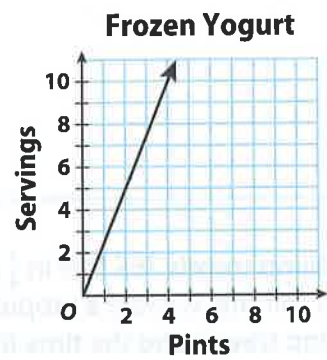
Number of Lawns	1	2	3	4
Amount Earned (\$)	15	30	48	64

6. On a recent day, 8 euros were worth \$9 and 24 euros were worth \$27. Write an equation of the form $y = kx$ to show the relationship between the number of euros and the value in dollars.

_____, where y is dollars and x is euros

4.3 Proportional Relationships and Graphs

7. The graph shows the number of servings in different amounts of frozen yogurt listed on a carton. Write an equation that gives the number of servings y in x pints.



8. A refreshment stand makes 2 large servings of frozen yogurt from 3 pints. Add the line to the graph and write its equation.

ESSENTIAL QUESTION

9. How can you use rates to determine whether a situation is a proportional relationship?

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5.1 Percent Increase and Decrease

Find the percent change from the first value to the second.

1. 36; 63 _____
2. 50; 35 _____
3. 40; 72 _____
4. 92; 69 _____

5.2 Rewriting Percent Expressions

Use the original price and the markdown or markup to find the retail price.

5. Original price: \$60; Markup: 15%; Retail price: _____
6. Original price: \$32; Markup: 12.5%; Retail price: _____
7. Original price: \$50; Markdown: 22%; Retail price: _____
8. Original price: \$125; Markdown: 30%; Retail price: _____

5.3 Applications of Percent

9. Mae Ling earns a weekly salary of \$325 plus a 6.5% commission on sales at a gift shop. How much would she make in a work week if she sold \$4,800 worth of merchandise? _____
10. Ramon earns \$1,735 each month and pays \$53.10 for electricity. To the nearest tenth of a percent, what percent of Ramon's earnings are spent on electricity each month? _____
11. James, Priya, and Siobhan work in a grocery store. James makes \$7.00 per hour. Priya makes 20% more than James, and Siobhan makes 5% less than Priya. How much does Siobhan make per hour? _____
12. The Hu family goes out for lunch, and the price of the meal is \$45. The sales tax on the meal is 6%, and the family also leaves a 20% tip on the pre-tax amount. What is the total cost of the meal? _____



ESSENTIAL QUESTION

13. Give three examples of how percents are used in the real-world. Tell whether each situation represents a percent increase or a percent decrease.

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6.1 Algebraic Expressions

1. The Science Club went on a two-day field trip. The first day the members paid \$60 for transportation plus \$15 per ticket to the planetarium. The second day they paid \$95 for transportation plus \$12 per ticket to the geology museum. Write an expression to represent the total cost for two days for the n members of the club. _____

6.2 One-Step Equations with Rational Coefficients

Solve.

2. $h + 9.7 = -9.7$ _____
3. $-\frac{3}{4} + p = \frac{1}{2}$ _____
4. $-15 = -0.2k$ _____
5. $\frac{y}{-3} = \frac{1}{6}$ _____
6. $-\frac{2}{3}m = -12$ _____
7. $2.4 = -\frac{t}{4.5}$ _____

6.3 Writing Two-Step Equations

8. Jerry started doing sit-ups every day. The first day he did 15 sit-ups. Every day after that he did 2 more sit-ups than he had done the previous day. Today Jerry did 33 sit-ups. Write an equation that could be solved to find the number of days Jerry has been doing sit-ups, not counting the first day.
- _____

6.4 Solving Two-Step Equations

Solve.

9. $5n + 8 = 43$ _____
10. $\frac{y}{6} - 7 = 4$ _____
11. $8w - 15 = 57$ _____
12. $\frac{g}{3} + 11 = 25$ _____
13. $\frac{f}{5} - 2.2 = -2.5$ _____
14. $-\frac{1}{4}(p + 16) = 2$ _____



ESSENTIAL QUESTION

15. How can you use two-step equations to represent and solve real-world problems?
- _____
- _____

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7.1 Writing and Solving One-Step Inequalities

Solve each inequality.

1. $n + 7 < -3$ _____

2. $5p \geq -30$ _____

3. $14 < k + 11$ _____

4. $\frac{d}{-3} \leq -6$ _____

5. $c - 2.5 \leq 2.5$ _____

6. $12 \geq -3b$ _____

7. Jose has scored 562 points on his math tests so far this semester. To get an A for the semester, he must score at least 650 points. Write and solve an inequality to find the minimum number of points he must score on the remaining tests in order to get an A.

7.2 Writing Two-Step Inequalities

8. During a scuba dive, Lainey descended to a point 20 feet below the ocean surface. She continued her descent at a rate of 20 feet per minute. Write an inequality you could solve to find the number of minutes she can continue to descend if she does not want to reach a point more than 100 feet below the ocean surface.

7.3 Solving Two-Step Inequalities

Solve.

9. $2s + 3 > 15$ _____

10. $-\frac{d}{12} - 6 < 1$ _____

11. $-6w - 18 \geq 36$ _____

12. $\frac{z}{4} + 22 \leq 38$ _____

13. $\frac{b}{9} - 34 < -36$ _____

14. $-2p + 12 > 8$ _____



ESSENTIAL QUESTION

15. How can you recognize whether a real-world situation should be represented by an equation or an inequality?

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8.1 Similar Shapes and Scale Drawings

1. A house blueprint has a scale of 1 in.:4 ft. The length and width of each room in the actual house are shown in the table. Complete the table by finding the length and width of each room on the blueprint.

	Living room	Kitchen	Office	Bedroom	Bedroom	Bathroom
Actual $\ell \times w$ (ft)	16 \times 20	12 \times 12	8 \times 12	20 \times 12	12 \times 12	6 \times 8
Blueprint $\ell \times w$ (in.)						

8.2 Geometric Drawings

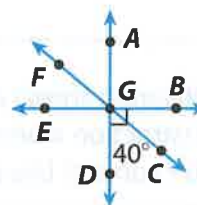
2. Can a triangle be formed with the side lengths of 8 cm, 4 cm, and 12 cm? _____
3. A triangle has side lengths of 11 cm and 9 cm. Which could be the value of the third side, 20 cm or 15 cm? _____

8.3 Cross Sections

4. Name one possible cross section of a sphere. _____
5. Name at least two shapes that are cross sections of a cylinder.

8.4 Angle Relationships

6. $\angle BGC$ and $\angle FGE$ are _____ angles, so $m\angle FGE =$ _____.
7. Suppose you know that $\angle S$ and $\angle Y$ are complementary, and that $m\angle S = 2(m\angle Y) - 30^\circ$. Find $m\angle Y$. _____



ESSENTIAL QUESTION

8. How can you model geometry figures to solve real-world problems?

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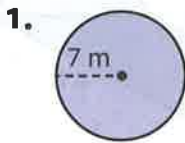
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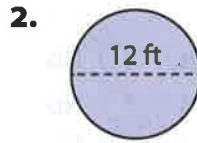
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9.1, 9.2 Circumference and Area of Circles

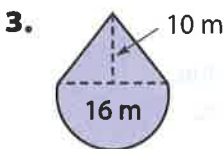
Find the circumference and area of each circle. Use 3.14 for π . Round to the nearest hundredth if necessary.

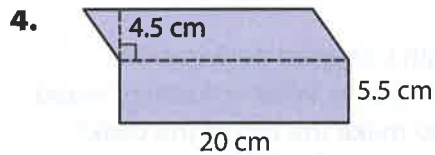




9.3 Area of Composite Figures

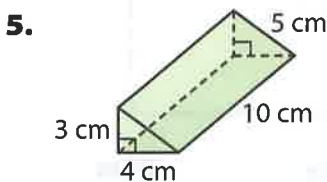
Find the area of each figure. Use 3.14 for π .

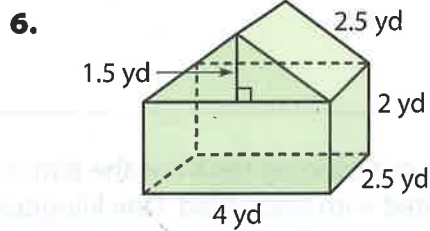




9.4, 9.5 Solving Surface Area and Volume Problems

Find the surface area and volume of each figure.







ESSENTIAL QUESTION

7. How can you use geometry figures to solve real-world problems?



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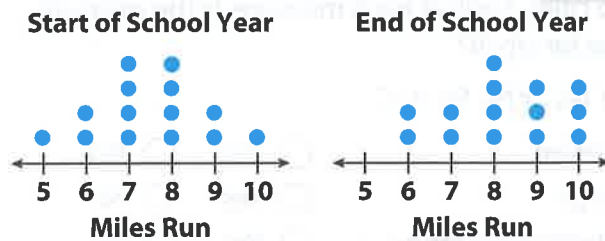
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10.1 Comparing Data Displayed in Dot Plots

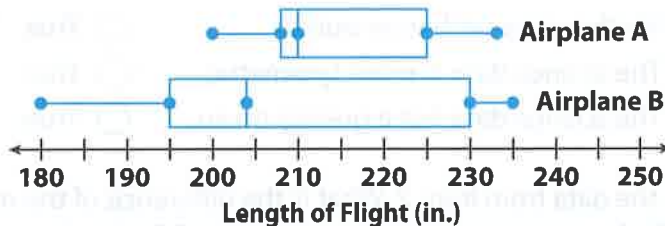
The two dot plots show the number of miles run by 14 students at the start and at the end of the school year. Compare each measure for the two dot plots. Use the data for 1–3.



- means _____
- medians _____
- ranges _____

10.2 Comparing Data Displayed in Box Plots

The box plots show lengths of flights in inches flown by two model airplanes. Use the data for 4–5.



- Which has a greater median flight length? _____
- Which has a greater interquartile range? _____

10.3 Using Statistical Measures to Compare Populations

- Roberta grows pea plants, some in shade and some in sun. She picks 8 plants of each type at random and records the heights.

Shade plant heights (in.)	7	11	11	12	9	12	8	10
Sun plant heights (in.)	21	24	19	19	22	23	24	24

Express the difference in the means as a multiple of their ranges.



ESSENTIAL QUESTION

- How can you use and compare data to solve real-world problems?

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11.1 Populations and Samples

1. A company uses a computer to identify their 600 most loyal customers from its database and then surveys those customers to find out how they like their service. Identify the population and determine whether the sample is random or biased.

11.2 Making Inferences from a Random Sample

2. A university has 30,330 students. In a random sample of 270 students, 18 speak three or more languages. Predict the number of students at the university who speak three or more languages.

11.3 Generating Random Samples

A store receives a shipment of 5,000 MP3 players. In a previous shipment of 5,000 MP3 players, 300 were defective. A store clerk generates random numbers to simulate a random sample of this shipment. The clerk lets the numbers 1 through 300 represent defective MP3 players, and the numbers 301 through 5,000 represent working MP3 players. The results are given.

13 2,195 3,873 525 900 167 1,094 1,472 709 5,000

3. Based on the sample, how many of the MP3 players might the clerk predict would be defective?

4. Can the manufacturer assume the prediction is valid? Explain.



ESSENTIAL QUESTION

5. How can you use random samples to solve real-world problems?

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12.1 Probability

1. Josue tosses a coin and spins the spinner at the right. What are all the possible outcomes?



12.2 Experimental Probability of Simple Events

2. While bowling with friends, Brandy rolls a strike in 6 out of 10 frames. What is the experimental probability that Brandy will roll a strike in the first frame of the next game? _____
3. Ben is greeting customers at a music store. Of the first 20 people he sees enter the store, 13 are wearing jackets and 7 are not. What is the experimental probability that the next person to enter the store will be wearing a jacket? _____

12.3 Experimental Probability of Compound Events

4. Auden rolled two number cubes and recorded the results.

Roll #1	Roll #2	Roll #3	Roll #4	Roll #5	Roll #6	Roll #7
2, 1	4, 5	3, 2	2, 2	1, 3	6, 2	5, 3

What is the experimental probability that the sum of the next two numbers rolled is greater than 5? _____

12.4 Making Predictions with Experimental Probability

5. A player on a school baseball team reaches first base $\frac{3}{10}$ of the time he is at bat. Out of 80 times at bat, about how many times would you predict he will reach first base? _____



ESSENTIAL QUESTION

6. How is experimental probability used to make predictions?

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13.1, 13.2 Theoretical Probability of Simple and Compound Events

Find the probability of each event. Write your answer as a fraction, as a decimal, and as a percent.

- You choose a marble at random from a bag containing 12 red, 12 blue, 15 green, 9 yellow, and 12 black marbles. The marble is red. _____
- You draw a card at random from a shuffled deck of 52 cards. The deck has four 13-card suits (diamonds, hearts, clubs, spades). The card is a diamond or a spade. _____

13.3 Making Predictions with Theoretical Probability

- A bag contains 23 red marbles, 25 green marbles, and 18 blue marbles. You choose a marble at random from the bag. What color marble will you most likely choose? _____

13.4 Using Technology to Conduct a Simulation

- Bay City has a 25% chance of having a flood in any given decade. The table shows the results of a simulation using random numbers to find the experimental probability that there will be a flood in Bay City in at least 1 of the next 5 decades. In the table, the number 1 represents a decade with a flood. The numbers 2 through 5 represent a decade without a flood.

Trial	Numbers generated	Trial	Numbers generated
1	2, 2, 5, 5, 5	6	4, 2, 2, 5, 4
2	3, 2, 3, 5, 4	7	1, 3, 2, 4, 4
3	5, 5, 5, 4, 3	8	3, 5, 5, 2, 1
4	5, 1, 3, 3, 5	9	4, 3, 3, 2, 5
5	4, 5, 5, 3, 2	10	5, 4, 1, 2, 1

According to the simulation, what is the experimental probability of a flood in Bay City in at least 1 of the next 5 decades? _____



ESSENTIAL QUESTION

- How can you use theoretical probability to make predictions in real-world situations?

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15.1 Integer Exponents

Find the value of each power.

1. 3^{-4} _____

2. 35^0 _____

3. 4^4 _____

Use the properties of exponents to write an equivalent expression.

4. $8^3 \cdot 8^7$ _____

5. $\frac{12^6}{12^2}$ _____

6. $(10^3)^5$ _____

15.2 Scientific Notation with Positive Powers of 10

Convert each number to scientific notation or standard notation.

7. 2,000 _____

8. 91,007,500 _____

9. 1.0395×10^9 _____

10. 4×10^2 _____

15.3 Scientific Notation with Negative Powers of 10

Convert each number to scientific notation or standard notation.

11. 0.02 _____

12. 0.000701 _____

13. 8.9×10^{-5} _____

14. 4.41×10^{-2} _____

15.4 Operations with Scientific Notation

Perform the operation. Write your answer in scientific notation.

15. $7 \times 10^6 - 5.3 \times 10^6$ _____

16. $3.4 \times 10^4 + 7.1 \times 10^5$ _____

17. $(2 \times 10^4)(5.4 \times 10^6)$ _____

18. $\frac{7.86 \times 10^9}{3 \times 10^4}$ _____

19. Neptune's average distance from the Sun is 4.503×10^9 km. Mercury's average distance from the Sun is 5.791×10^7 km. About how many times farther from the Sun is Neptune than Mercury? Write your answer in scientific notation.



ESSENTIAL QUESTION

20. How is scientific notation used in the real world?
