CHAPTER 1

Chapter Summary

Summarize the following key concepts you learned in this chapter.

Direct variation:

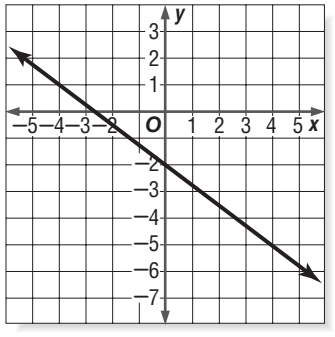
Slope:

Slope-intercept form:

Vocabulary

Look again at the vocabulary sentences on page 3. Using the vocabulary words, explain why the equation in the first sentence could also be written as $y = mx + 0$.

Explain how to find the slope of the line.



Write the equation of the line in slope-intercept form.

Explain what error was made in writing the equation $3x - 5y = 15$ in slope-intercept form.

$$3x - 5y = 15$$
$$5y = -3x + 15$$
$$y = -\frac{3}{5}x + 3$$

Think of an equation that could represent the relationship between interest and homework. Write your equation in slope-intercept and standard forms.

This cartoon is found on page 11.

Write the equation of a line for which the slope cannot be computed.

Tell how a slope of 0 can be determined from an equation and from the graph of the equation.

From Equation	From Graph

CHAPTER 2

Chapter Summary

Summarize the following key concepts you learned in this chapter.

Line of best fit:

Vertical angles:

Alternate interior angles and alternate exterior angles:

Vocabulary

Look back at the vocabulary exercise on page 13. Rewrite each false sentence so that it is correct.

Explain how to estimate a line of best fit.

If you found the equation of a line given a slope m, how would you find two other equations with the same slope.

If a diagram shows two parallel lines and a transversal, what would have to be true about these lines if all eight angles formed had the same measure?

Explain the difference between a drawing and a construction.

Explain why all rulers are straightedges but not all straightedges are rulers.

CHAPTER 3

Chapter Summary

Summarize the following key concepts you learned in this chapter.

The percent proportion:

Percent increase and decrease:

Vocabulary

Look back at the vocabulary exercise on page 22. Find each percent increase or decrease.

	Increased or Decreased by _____%
Zoe's phone calls	
Baseball card prices	
Number of employees	

Explain what is meant by a 100% decrease. Give an example.

Show that the final sale prices for the MP3 music player are not the same.

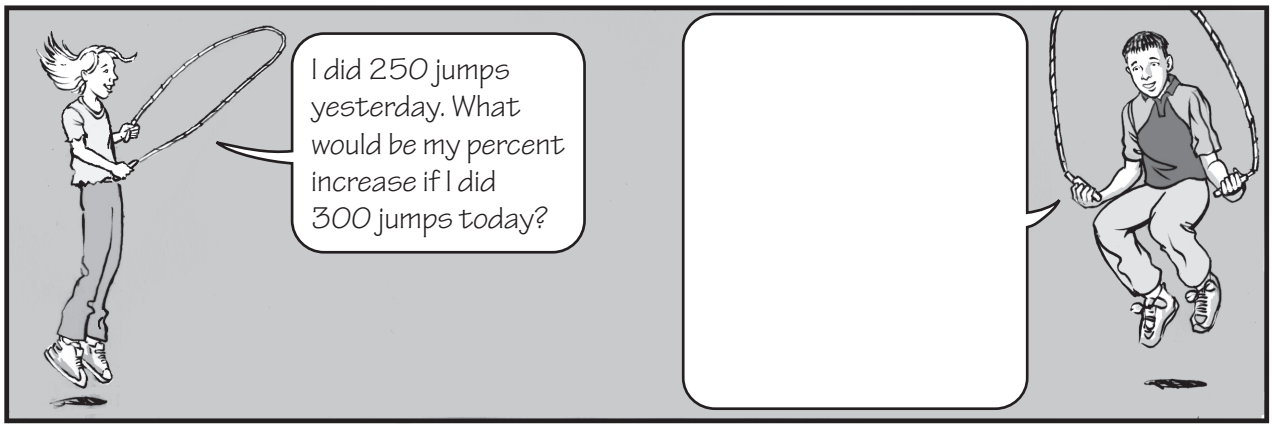
MP3 Music Player: Original Price of $145	
Sale A: The music player is discounted 20%.	Sale B: The music player is discounted 15% and then an additional 5% discount is taken.

In the proportion $\frac{x}{18} = \frac{12}{100}$, 18 represents the _____,

x represents the _____ and $\frac{12}{100}$ represents the _____.

This cartoon is found on page 125.

Write a sentence for Luis to explain how he found Zoe's percent increase.



CHAPTER 4

Chapter Summary

Summarize the following key concepts you learned in this chapter.

Exponential growth and decay:

Square root:

Radical expressions and equations:

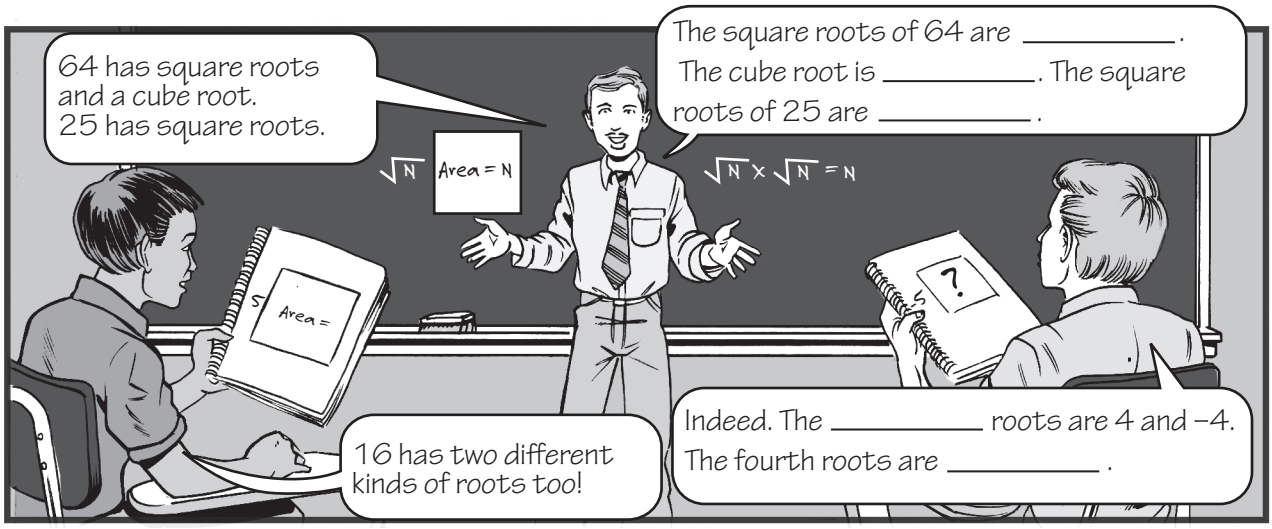
Vocabulary

Look back at the vocabulary exercise on page 28. Rewrite the statements that are false so that they are true.

Explain how to use the laws of exponents to multiply 2.7×10^{-2} by 4.2×10^{9}. Tell what you need to do so that the answer is also in scientific notation.

This cartoon is found on page 186.

Complete the cartoon by filling in the blanks.



Circle the expressions equivalent to $2x\sqrt{5x}$.

$\sqrt{10x^2}$ $\sqrt{20x^3}$

$8x\sqrt{5x} - 6x\sqrt{5x}$ $\sqrt[3]{40x^4}$

CHAPTER 5

Chapter Summary

Summarize the following key concepts you learned in this chapter.

Like terms:

The product $(x + a)(x + b)$:

The product $(x + a)^2$:

The product $(x + a)(x - a)$:

Vocabulary

Look back at the vocabulary exercise on page 39. Are there any items for which you would change your answer? Explain.

Would you classify $3x^2 - 5x^2$ as a binomial? Explain.

True or False?

$(x - 2)^2 = x^2 - 4$. Explain your answer.

Complete the cartoon by filling in the blanks.

This cartoon is found on page 248.

Explain how you would multiply 57 by 43.

Three students simplified the expression $x(1 - x) + (1 - x)(3 - x)$ as shown below. One student was correct. Who is correct? What errors did the other students make?

Student 1	Student 2	Student 3
$x - x + 3 - 3x + x^2$ $3 - 3x + x^2$	$x - x + 3 - 4x + x^2$ $3 - 4x + x^2$	$x - x^2 + 3 - 4x + x^2$ $-3x + 3$

CHAPTER 6

Chapter Summary

Summarize the following key concepts you learned in this chapter.

Types of transformations:

Types of symmetry:

Vocabulary

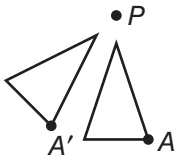
Look back at the vocabulary exercise on page 50. Suppose you divided the four tranfomations into two groups: *makes congruent figures* and *makes similar figures*. Which transformations would belong in each group?

Makes Congruent Figures	Makes Similar (Not Congruent) Figures

True or False? Tell if the following is true or false. Explain your answer.

If a figure is tranformed to make a new figure and the two figures are congruent, the scale factor used was 0.

Estimate the angle of rotation that is shown in the figure. Explain how you determined this angle measure.



A rule for translating a figure is $(x - 3, y + 2)$. Suppose an image point located at $(-9, 5)$ was created by using this rule. What were the coordinates of the original point? Tell how you determined these coordinates.

A triangle with vertices at (3, 5), (1, 7) and $(-1, 2)$ is translated 2 units to the right and 3 units down. Then the triangle is reflected over the x-axis. Find the vertices of the triangle's image. Explain how you found the coordinates.

Consider Exercise 12 on page 307. You found a way to transform Figure A into Figure Z using two transformations. How can you do this using three transformations?

How would you transform Figure Z into Figure A?

CHAPTER 7

Chapter Summary

Summarize the following key concepts you learned in this chapter.

Solving equations:

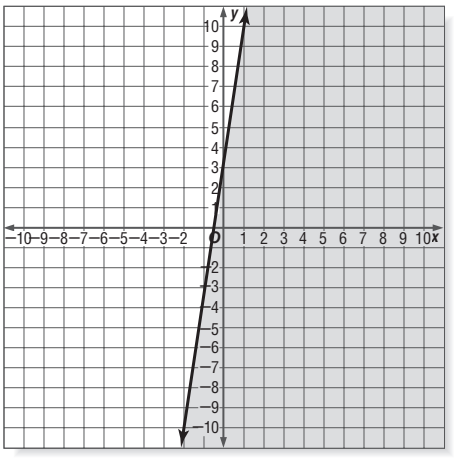
Compound inequalities:

Systems of equations:

Vocabulary

Look back at the vocabulary exercise on page 61. Give an example for each statement.

Explain why the graph to the right does not show the solutions of $y > 7x + 3$.



Tell how you determine what whole number values for x make the inequality below true.

$$13 < x \leq 17$$

Explain how and why the graphs of the two compound inequalities below differ.

$x > 3$ and $x > 4$ $\qquad$ $x > 3$ or $x > 4$

CHAPTER 8

Chapter Summary

Summarize the following key concepts you learned in this chapter.

Quadratic equations:

The effect of a, b, and c in $y = ax^2 + bx + c$ form:

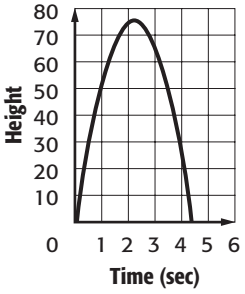
Inverse variation:

Vocabulary

Look back at the vocabulary exercise on page 72. Rewrite each false statement so that it is true.

Explain how you can tell if the vertex of a parabola will be either the lowest point or the highest point on the graph just by looking at the quadratic equation.

The graph below shows the height of a rocket t seconds after it is launched from the ground. What can you determine from the graph?



How would the graph of $y = -x^3 + 4$ differ from the graph of $y = x^3$?

Complete the cartoon by explaining how the total amount of time needed to paint the fence would change.

This cartoon is found on page 428.

CHAPTER 9

Chapter Summary

Summarize the key concepts you learned in this chapter.

Solving a quadratic equation by backtracking:

Solving a quadratic equation by factoring:

Solving a quadratic equation by completing the square:

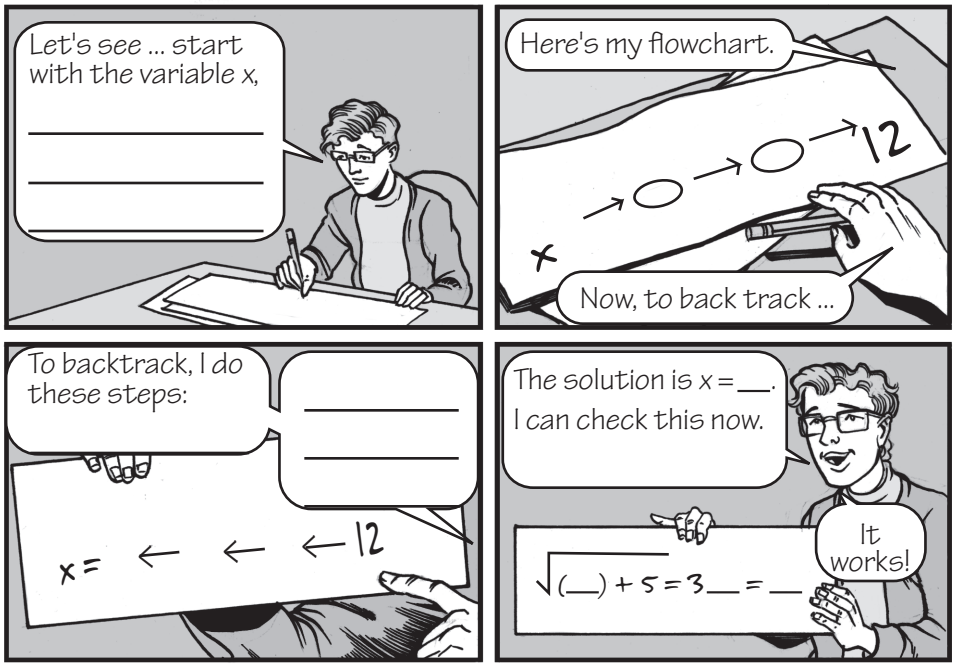
Solving a quadratic equation by using the Quadratic Formula:

Vocabulary

On page 87, some of the equations show factoring of numbers and monomials. Give an example of factoring a trinomial.

Complete the cartoon to show to solve $3\sqrt{x+5} = 12$ by backtracking.

This cartoon is found on page 467.



Tell how you know $x^2 + 5x + 3 = 0$ cannot be factored with integers. Then solve the equation by using the Quadratic Formula.

Explain the error made in solving by completing the square. Give the correct solution.

$$x^2 + 6x + 5 = 0$$
$$x^2 + 6x + 9 - 4 = 0$$
$$(x + 3)^2 - 4 = 0$$
$$(x + 3)^2 = 4$$
$$x + 3 = 2$$
$$x = -1$$

CHAPTER 10

Chapter Summary

Summarize the following key concepts you learned in this chapter.

Functions:

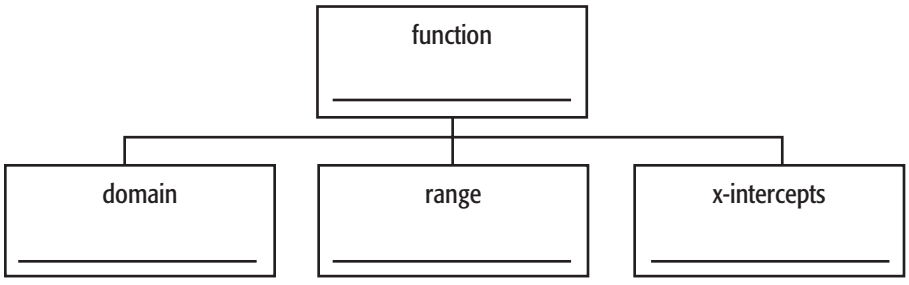
Domain and range of a function:

X-intercepts of any function:

X-intercepts of a quadratic function:

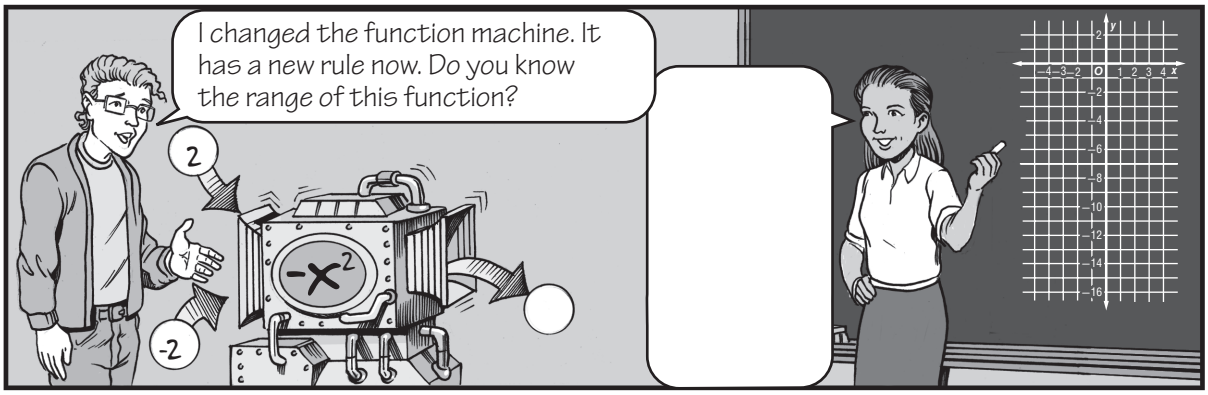
Vocabulary

On page 100, the domain, range, and x-intercepts for $f(x) = x^2 + 1$ are given. Complete a similar chart for $g(x) = (x + 1)^2 + 3$.



This cartoon is found on page 528.

Complete the function machine's output in the cartoon below. Give Lucita's response to Ben's question. Sketch a graph of the function on the board.



For the graph in the cartoon above, how many x-intercepts are there? Explain.

Explain and correct the error made in finding the vertex of $f(x) = x^2 - 4x - 12$.

The x-intercepts are the solutions of $x^2 - 4x - 12 = 0$.
Factor the left side: $(x - 2)(x - 6) = 0$
The solutions are 2 and 6.
The vertex is at (4, f(4)), which is (4, −12).

List a possible set of values for each relationship.

Function	

Not a Function	

CHAPTER 11

Chapter Summary

Summarize the following key concepts you learned in this chapter.

Determining sample space:

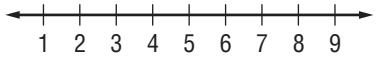
Finding probability:

Vocabulary

Look back at the vocabulary exercise on page 109. For the data set given, what are the values of the five points used in making a box-and-whisker plot?

Minimum	
First quartile	
Second quartile	
Third quartile	
Maximum	

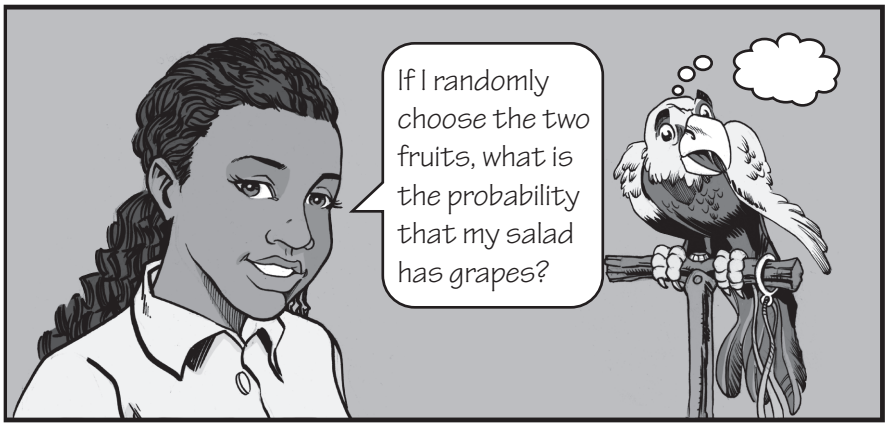
Create a box and whisker plot using the five numbers above.



A student has three types of fruit (apples, oranges, and grapes) and must choose two for a fruit salad. The student said that there are six possible combinations. Explain and correct the error this student made.

Use the information above to complete the cartoon.

This cartoon is found on page 617.



A six-digit computer password must be created from digits between 0 and 9, and no number can be repeated. Which student wrote the correct expression to find the number of possible passwords? Explain.

Student 1	Student 2	Student 3
$10(6) = 60$	$10(9)(8)(7)(6)(5)$	$10(10)(10)(10)(10)(10)$

CHAPTER 12

Chapter Summary

Summarize the key concepts you learned in this chapter.

Algebraic fractions that do not make mathematical sense or do not make sense in the context of the situation:

Simplifying algebraic fractions:

Adding and subtracting algebraic fractions:

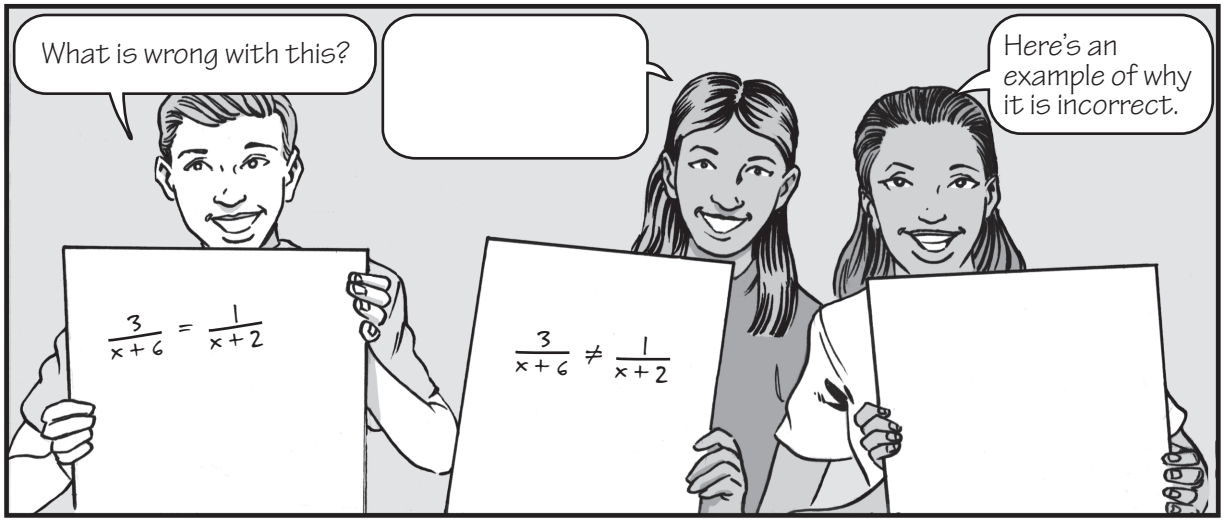
Solving equations with algebraic fractions:

Vocabulary

Look back at the vocabulary exercise on page 116. Which of the algebraic fractions can be simplified? Simplify it.

This cartoon is found on page 640.

Complete Tala's response in the cartoon below. Then substitute a value for x on Lucita's paper to show why the fraction cannot be simplified as Evan shows.



Find and correct the error made in the solution shown below.

Solve for x: $\frac{4}{x} + \frac{x}{3} = \frac{32}{2x}$.

$$6x \cdot \left(\frac{4}{x} + \frac{x}{3}\right) = \frac{32}{2x} \cdot 6x$$
$$24 + 6x = 96$$
$$6x = 72$$
$$x = 12$$

How can you check your answer to the equation in the previous exercise using a graphing calculator?