

1.2

Solving Multi-Step Equations

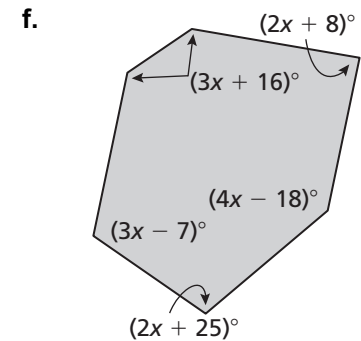
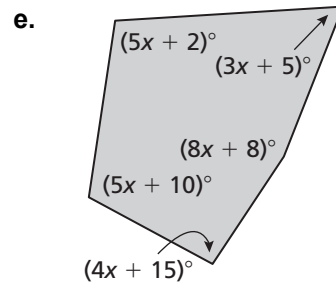
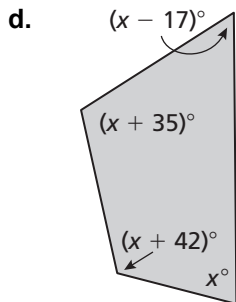
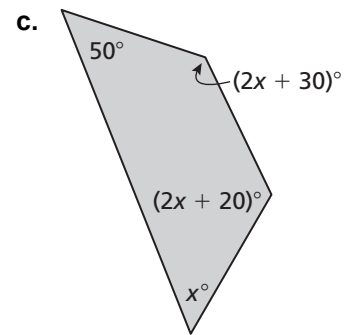
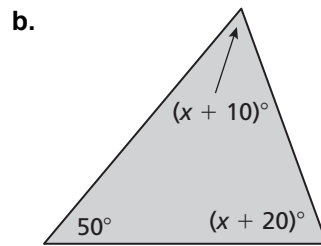
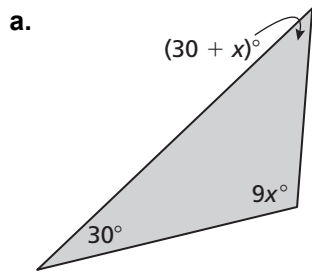
For use with Exploration 1.2

Essential Question How can you use multi-step equations to solve real-life problems?

1 EXPLORATION: Solving for the Angle Measures of a Polygon

Go to *BigIdeasMath.com* for an interactive tool to investigate this exploration.

Work with a partner. The sum S of the angle measures of a polygon with n sides can be found using the formula $S = 180(n - 2)$. Write and solve an equation to find each value of x . Justify the steps in your solution. Then find the angle measures of each polygon. How can you check the reasonableness of your answers?



1.2 Solving Multi-Step Equations (continued)**2 EXPLORATION:** Writing a Multi-Step Equation

Go to *BigIdeasMath.com* for an interactive tool to investigate this exploration.

Work with a partner.

- a. Draw an irregular polygon.

- b. Measure the angles of the polygon. Record the measurements on a separate sheet of paper.

- c. Choose a value for x . Then, using this value, work backward to assign a variable expression to each angle measure, as in Exploration 1.

- d. Trade polygons with your partner.

- e. Solve an equation to find the angle measures of the polygon your partner drew. Do your answers seem reasonable? Explain.

Communicate Your Answer

3. How can you use multi-step equations to solve real-life problems?

4. In Exploration 1, you were given the formula for the sum S of the angle measures of a polygon with n sides. Explain why this formula works.

5. The sum of the angle measures of a polygon is 1080° . How many sides does the polygon have? Explain how you found your answer.

1.2**Notetaking with Vocabulary**

For use after Lesson 1.2

In your own words, write the meaning of each vocabulary term.

inverse operations

mean

Core Concepts**Solving Multi-Step Equations**

To solve a multi-step equation, simplify each side of the equation, if necessary. Then use inverse operations to isolate the variable.

Notes:

1.2 Notetaking with Vocabulary (continued)**Extra Practice**

In Exercises 1–14, solve the equation. Check your solution.

1. $3x + 4 = 19$

2. $5z - 13 = -3$

3. $17 = z - (-9)$

4. $15 = 2 + 4 - d$

5. $\frac{f}{4} - 5 = -9$

6. $\frac{q + (-5)}{3} = 8$

7. $5x + 3x = 28$

8. $5z - 2z - 4 = -7$

9. $12x + 4 + 2x = 39$

10. $9z - 5 - 4z = -5$

1.2 Notetaking with Vocabulary (continued)

11. $3(z + 7) = 21$

12. $-4(z - 12) = 42$

13. $33 = 12r - 3(9 - r)$

14. $7 + 3(2g - 6) = -29$

15. You can represent an odd integer with the expression $2n + 1$, where n is any integer. Write and solve an equation to find three consecutive odd integers that have a sum of 63.

16. One angle of a triangle has a measure of 66° . The measure of the third angle is 57° more than $\frac{1}{2}$ the measure of the second angle. The sum of the angle measures of a triangle is 180° . What is the measure of the second angle? What is the measure of the third angle?

17. Your cousin is 8 years older than your brother. Three years ago, your cousin was twice as old as your brother. How old is your cousin now? How old is your brother now?