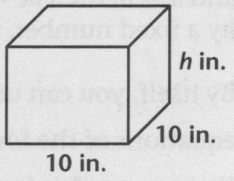
NAME _____ CLASS _____ DATE _____

Enrichment

3.3 Using Two-Step Equations to Solve Geometry Problems

The concepts of algebra can be applied to a wide range of geometry problems.

Suppose that you want to design a box. The base of the box will be a square that is 10 inches on each side, and the box will be h inches tall. The surface area of the box (that is, the area of cardboard needed to make the box, assuming no overlap) is given by $4 \cdot 10 \cdot h + 2 \cdot 10 \cdot 10$, or $40h + 200$. For a surface area of 360 square inches, you would solve $40h + 200 = 360$ in order to find the height of the box.



The base of a rectangular box is to be a square that is 10 inches on each side. For each given surface area, find the corresponding height of the box.

1. 360 square inches _____

2. 520 square inches _____

3. 240 square inches _____

4. 560 square inches _____

5. 800 square inches _____

6. 480 square inches _____

Now suppose that you want to design a cylindrical box whose base is a circle with a radius of 5 inches. The surface area of the cylindrical box is given by $50\pi + 10\pi h$.

The base of a cylindrical box will be a circle with a radius of 5 inches. For each given surface area, find the corresponding height of the box.

7. 80π square inches _____

8. 120π square inches _____

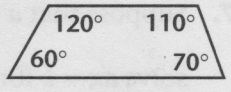
9. 110π square inches _____

10. 160π square inches _____

11. 200π square inches _____

12. 90π square inches _____

Another geometric application of two-step equations relates to the interior angles of a polygon. If the polygon has n sides, the sum of the measures of its angles is $180n - 360$ degrees.



For example, in a triangle, $n = 3$, so the measures of the angles add up to 180°. For a trapezoid, $n = 4$, so the measures of the angles add up to 360°.

In the following exercises, the sum of the measures of the interior angles of a polygon is given. Find the number of sides of the polygon.

13. 540° _____

14. 1800° _____

15. 900° _____

16. 2880° _____

NAME _____ CLASS _____ DATE _____

Practice Masters Level A

3.4 Solving Multistep Equations

Solve and check each equation.

1. $6y - 4 = y + 6$ _____
2. $8n + 5 = 6n - 3$ _____
3. $10y - 13 = 3y + 8$ _____
4. $3y + 4 = 5y + 6$ _____
5. $4x - 8 = 10 - 2x$ _____
6. $5x + 4 = 2x - 5$ _____
7. $3 - 12m = 15 - 8m$ _____
8. $6z - 6 = 3z + 9$ _____
9. $8y - 2 = 6 + 4y$ _____
10. $16m - 12 = 12 + 4m$ _____
11. $2h - 8 = 3h - 10$ _____
12. $5y + 8 = -7 - 10y$ _____
13. $3x - 4 = 5x + 6$ _____
14. $6z - 3 = 4z + 5$ _____
15. $2h + 8 = 5h - 7$ _____
16. $12a - 8 = 16 + 4a$ _____
17. $3x - 5 = 2x + 6$ _____
18. $9y - 6 = 12 + 3y$ _____
19. $7h + 2 = 3h - 10$ _____
20. $4 - 4x = 2x - 8$ _____
21. $2a - 5 = 3a - 3$ _____
22. $3 + 2x = 7x - 7$ _____
23. $5y - 14 = 2y + 7$ _____
24. $8m + 6 = m - 8$ _____
25. $6 - 9y = -12y - 6$ _____
26. $11x - 4 = 5 + 8x$ _____
27. $2x - 7 = 3 - 3x$ _____
28. $4m + 6 = 8m - 10$ _____
29. $5a + 9 = 2a - 3$ _____
30. $14x - 3 = 7 + 9x$ _____

Write and solve an equation for each situation.

31. The product of 8 and a number, then added to 5, is 3 less than the product of 4 and the same number. _____

32. Noelle needs to have her computer fixed. One company charges a $25 estimation fee plus $45 per hour. Another company charges a $10 estimation fee plus $60 per hour. Find the number of hours for which the two costs would be the same. _____

33. The difference of a number from 8 is 3 more than the product of the same number and 5. _____