



**15. Manufacturing** A machine is to fill each of several boxes with 16 ounces of sugar. After the boxes are filled, another machine weighs the boxes. If the box is more than 0.2 ounces above or below the desired weight, the box is rejected.

- Write an absolute value equation to find the heaviest and lightest box the machine will approve.
- Solve the equation.

## EXERCISES

**Practice** Evaluate each expression if  $x = -4$ ,  $y = 5$ , and  $z = 1.2$ .

- |                     |                     |                       |
|---------------------|---------------------|-----------------------|
| 16. $ -4x $         | 17. $ 2y - 5 $      | 18. $ 3z $            |
| 19. $ x + 5 $       | 20. $ -2y $         | 21. $- 2z - 4 $       |
| 22. $6 -  4y + 10 $ | 23. $7 -  3z + 10 $ | 24. $3 x + 4  +  3x $ |

**Solve each equation.**

- |                         |                         |
|-------------------------|-------------------------|
| 25. $ x - 3  = 17$      | 26. $ x + 6  = 18$      |
| 27. $ x + 11  = 42$     | 28. $3 x + 6  = 36$     |
| 29. $11 x - 9  = 121$   | 30. $ 2x + 9  = 30$     |
| 31. $8 x - 3  = 88$     | 32. $ 2x + 7  = 0$      |
| 33. $ 4x - 3  = -27$    | 34. $8 4x - 3  = 64$    |
| 35. $3 3x + 2  = 51$    | 36. $5 x + 4  = 45$     |
| 37. $4 6x - 1  = 29$    | 38. $ 3t - 5  = 2t$     |
| 39. $ 2a + 7  = a - 4$  | 40. $ x - 3  + 7 = 2$   |
| 41. $3 x + 6  = 9x - 6$ | 42. $5 3x - 4  = x + 1$ |

### Programming



43. The graphing calculator program at the right tests decimal values to estimate the solution for  $|x^2 - 2| = 0$ . Enter a possible solution for  $x$ . The program will test it, give you the value of  $|x^2 - 2|$ , and tell you if you need to try again. If you guess correctly, the program will give you both solutions.

```
PROGRAM: ABSVALUE
:Prompt X
:Disp "abs(X^2-2)=",abs(X^2-2)
:If abs(X^2-2)=0
:Then
:Goto 1
:End
:Disp "TRY AGAIN"
:Disp "PRESS ENTER"
:Stop
:Lb1 1
:Disp "SOLUTIONS ARE",X
:Disp "AND",-X
```

**Use the program to approximate to the nearest tenth the solutions for each equation. You will need to enter the equation into  $Y_1$  on the  $Y=$  list for each exercise. All solutions are between  $-10$  and  $10$ .**

- $x^2 - 2x - 4 = 0$ ; 2 solutions
- $x^3 - 3x = 0$ ; 3 solutions
- $|3x - 2| - 4 = 0$ ; 2 solutions
- $5x^3 + 3x^2 - 25x - 15 = 0$ ; 3 solutions