

9-5**Practice**

Form K

Completing the Square

Find the value of c such that each expression is a perfect-square trinomial.

1. $z^2 + 2z + c$ **1**

2. $h^2 + 14h + c$ **49**

3. $p^2 - 11p + c$ **$\frac{121}{4}$**

4. $n^2 + 26n + c$ **169**

Solve each equation by completing the square. If necessary, round to the nearest hundredth.

5. $t^2 - 17t = -52$ **4, 13**

6. $m^2 + 6m = 7$ **-7, 1**

7. $f^2 + 3f = 88$ **-11, 8**

8. $z^2 + 9z = 36$ **-12, 3**

9. $a^2 + 13a = 12$ **-13.87, 0.87**

10. $g^2 + 5g + 4 = 0$ **-4, -1**

11. $d^2 + 7d + 9 = 0$ **-5.3, -1.7**

12. $b^2 - 5b - 10 = 0$ **-1.53, 6.53**

Solve each equation by completing the square. If necessary, round to the nearest hundredth.

13. $6n^2 + 9n = 12$ **-2.35, 0.85**

14. $2t^2 - 4t = 1$ **-0.22, 2.22**

15. $3v^2 + 9v + 5 = 0$ **-2.26, -0.74**

16. $4c^2 - 8c = 1$ **-0.12, 2.12**

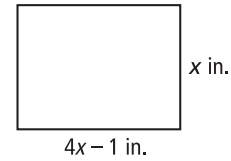
9-5

Practice (continued)

Form K

Completing the Square

17. The rectangle shown at the right has an area of 663 in^2 .
What is the value of x ? **13**



18. What are all of the values of b that will make $x^2 + bx + 64$ a perfect square? **± 16**
19. What are all of the values of b that will make $x^2 + bx + 144$ a perfect square? **± 24**
20. The product of two consecutive positive even integers is 168. What are the integers? **12 and 14**
21. **Writing** Discuss how you could use graphing, factoring, and completing the square for solving the quadratic equation $x^2 + 3x - 2 = 0$.
Factoring cannot be used because $x^2 + 3x - 2$ cannot be factored. Graphing will give you an answer that is not precise. Completing the square will give you a precise answer.
22. The height of a triangle is $6x \text{ cm}$ and the base is $(3x + 10) \text{ cm}$. The area of the triangle is 816 cm^2 . What are the dimensions of the base and height of the triangle?
height = 48 in.; base = 34 in.
23. **Writing** Does completing the square always give a solution for a quadratic equation that cannot be factored? Explain.
No, some quadratic equations do not have a solution.
24. **Reasoning** How do the solutions of the equation $x^2 - 6x + 9 = 16$ compare to the solutions of $x^2 - 6x + 9 = 25$? Explain how you can determine the relationship without solving both equations.
Solve each equation by factoring the left side as a perfect square trinomial and taking the square roots of both sides. The solutions are 3 ± 4 , or -1 and 7 . The solutions of the second equation are 3 ± 5 , or -2 and 8 .