Name _____ Period _____ Date _____

Practice

Solving Quadratic Equations by Completing the Square

Solve each equation by taking the square root of each side. Round to the nearest tenth if necessary.

1. $b^2 - 14b + 49 = 64$

2. $s^2 + 16s + 64 = 100$

3. $h^2 - 8h + 16 = 15$

4. $a^2 + 6a + 9 = 27$

5. $p^2 - 20p + 100 = 28$

6. $u^2 + 10u + 25 = 90$

Find the value of c that makes each trinomial a perfect square.

7. $t^2 - 24t + c$

8. $b^2 + 28b + c$

9. $y^2 + 40y + c$

10. $m^2 + 3m + c$

11. $g^2 - 9g + c$

12. $v^2 - v + c$

Solve each equation by completing the square. Round to the nearest tenth if necessary.

13. $w^2 - 14w + 24 = 0$

14. $p^2 + 12p = 13$

15. $s^2 - 30s + 56 = -25$

16. $v^2 + 8v + 9 = 0$

17. $t^2 - 10t + 6 = -7$

18. $n^2 + 18n + 50 = 9$

19. $3u^2 + 15u - 3 = 0$

20. $4c^2 - 72 = 24c$

21. $0.9a^2 + 5.4a - 4 = 0$

22. $0.4h^2 + 0.8h = 0.2$

23. $\frac{1}{2}x^2 - \frac{1}{2}x - 10 = 0$

24. $\frac{1}{4}x^2 + \frac{3}{2}x - 2 = 0$

BUSINESS For Exercises 25 and 26, use the following information.

Jaime owns a business making decorative boxes to store jewelry, mementos, and other valuables. The function $y = x^2 + 50x + 1800$ models the profit y that Jaime has made in month x for the first two years of his business.

25. Write an equation representing the month in which Jaime's profit is \$2400.

26. Use completing the square to find out in which month Jaime's profit is \$2400.

27. PHYSICS From a height of 256 feet above a lake on a cliff, Mikaela throws a rock out over the lake. The height H of the rock t seconds after Mikaela throws it is represented by the equation $H = -16t^2 + 32t + 256$. To the nearest tenth of a second, how long does it take the rock to reach the lake below? (*Hint:* Replace H with 0.)