Name

Class

Date



Completing the Square

4-6

**Practice**

*Form G*

**Solve each equation by finding square roots.**

**1.** 3*x*2 = 75 **2.** 5*x*2 − 45 = 0 **3.** 4*x*2 − 49 = 0

**4.** 6*x*2 = 216 **5.** 2*x*2 = 14 **6.** 3*x*2 − 96 = 0

**7.** A box is 4 in. high. Its length is 1.5 times its width. The volume of the box is 1350 in.2. What are the width and length of the box?

**Solve each equation.**

**8.** *x*2 + 12*x +* 36 = 25 **9.** *x*2 − 10*x +* 25 = 144

**10. ** **11.** *x*2 *−* 22*x +* 121 = 225

**12.** 16*x*2 + 8*x +* 1 = 16 **13.** 25*x*2 − 30*x +* 9 = 81

**Complete the square.**

**14.** *x*2 + 22*x* + **15.** *x*2 − 30*x* + **16.** *x*2 + 5*x* +

**17. ** **18.** 25*x*2*+* 10*x* + **19.** 4*x*2*−* 12*x* +

**Solve each quadratic equation by completing the square.**

**20.** *x*2 + 10*x −* 1 = 0 **21.** *x*2 + 2*x −* 7 = 0

**22.** −*x*2 + 6*x +* 10 = 0 **23.** *x*2 + 5*x =* 3*x +* 11

**24.** 3*x*2 *+* 4*x* = 2*x*2 + 3 **25. **

**26.** −0.2*x*2 + 0.4*x +* 0.8 = 0 **27.** 4*x*2 + 20*x +* 1 = 0

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**53**

Name

Class

Date



4-6

**Practice** (continued)

# Completing the Square

*Form G*

**Rewrite each equation in vertex form.**

**28.** *y = x*2 − 6*x +* 4 **29.** *y = x*2 + 14*x +* 50

**30.** *y =* 3*x*2 + 8*x +* 2 **31.** *y = –*2*x*2 + 6*x −* 2

**Find the value of *k* that would make the left side of each equation a perfect square trinomial.**

**32.** *x*2 + *kx +* 196 = 0 **33.** 64*x*2 − *kx +* 1 = 0

**34.** *x*2 − *kx +* 16 = 0 **35.** 4*x*2 − *kx +* 9 = 0

**36.** 16*x*2 *+ kx* + 9 = 0 **37. **

**38.** The quadratic function *d =* −*t*2 + 4*t +* 33 models the depth of water in a flood channel after a rainstorm. The time in hours after it stops raining is *t* and *d* is the depth of the water in feet.

1. Solve the equation −*t*2 + 4*t +* 33 = 0.
2. Approximate the positive solution found in part (a) to two decimal places.
3. Interpret the answer to part (b) in terms of the problem.

**39.** While in orbit, a space scientist measures the pressure inside a container as it is being heated and then cooled. She records the information and discovers the pressure *p*, in pounds per square inch, is related to the time *t* in minutes after the experiment begins according to the equation *p = –*0.2*t*2 + 1.6*t*.

1. Complete the square in the expression −0.2*t*2 + 1.6*t*.
2. Rewrite the equation for *p* in vertex form.
3. What is a reasonable domain for this function? Explain.
4. When does the maximum pressure occur? What is the maximum pressure?

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**54**