NAME

DATE

Module 13 Solving Quadratic Equations
of One Variable

Lesson 3 Solving Quadratic Equations
by Factoring

**independent
practice**

Solve by the factoring method.

1. $(x - 3)(x + 1) = 0$

2. $(x + 5)(x + 7) = 0$

3. $y(y + 4) = 0$

4. $4z(z - 3) = 0$

5. $(2x - 3)(x + 4) = 0$

6. $(2x + 3)(5x - 8) = 0$

7. $n^2 + 7n + 10 = 0$

8. $m^2 - 3m - 40 = 0$

9. $x^2 - 7x = 0$

10. $x^2 + 5x = 0$

11. $r^2 - 8r + 15 = 0$

12. $p^2 + 13p + 36 = 0$

13. $x^2 + 5x + 9 = -3x + 29$

14. $x^2 + 5x - 22 = 8x + 32$

15. $d^2 + 4d + 24 = 14d + 24$

16. $x^2 + 12x + 31 = 31$

17. $T^2 + 2T + 6 = 7T + 2$

18. $K^2 - 3K + 11 = -16K - 29$

19. $25x^2 - 3x - 12 = -18x - 12$

20. $3x^2 - 8x = -x^2$

410-467-3300

21. $5w^2 - 3w + 4 = 8w + 2$

22. $-V^2 + 2V - 3 = -4V^2 + V + 1$

23. $9y^2 + 3y + 28 = -7y^2 - 53y - 21$

24. $2x^2 + x + 49 = -2x^2 + 29x$

Journal

1. State the Zero Product Property and give a numerical example.
2. What are the steps used to solve a quadratic equation by factoring?
3. Is it possible to solve the equation $(x - 6)(x + 3) = 4$ by setting each factor equal to four and solving each equation? Why or why not?
4. Explain how to solve the equation $x^2 + 9x = -20$.
5. Solve $x^2 - 4 = 21$ by evaluating square roots and then again by factoring. Which method do you prefer? Why do you prefer this method?
6. A quadratic equation in one variable has the following roots: {−1, 5}. Using the variable x, write a quadratic equation in factored form that has these solutions. Then rewrite the equation in standard form. Why did you need to write the equation first in factored form?

Cumulative Review

Simplify.

1. $\dfrac{6x^2y^5z^8}{3xy^{-2}z^4}$

2. $(6x + 3y)(2x - y)$

3. $(2a + 4b - c) - (3a + 2b + 5c)$

4. $(6x^2 + 5x + 3) \div (2x + 1)$

Factor, if possible.

5. $3a^2 + 4a + 6ab + 8b$

6. $3a^3b + 6a^2b^2 - 12ab^3$

7. $c^2 - 13c + 36$

8. $3d^2 - 10d - 8$

9. Is $4(a + 2)^2 - 3 = 3a^2 + 1$ a quadratic equation, a linear equation, or neither?

10. Solve $(x - 4)^2 + 2 = 38$ by evaluating square roots.

Graphing Calculator Problem

Solve $x^2 + 35x + 124 = 0$ by graphing its associated quadratic function,
$y = x^2 + 35x + 124$ on a graphing calculator and by finding its x-intercepts.
To graph this function on the graphing calculator, press Y= and CLEAR (if needed).
Enter the expression by pressing X,T,θ,n , x² , + , 3 , 5 , X,T,θ,n , + , 1 , 2 , and 4 .

Press ZOOM. Then, move the cursor to 6 and press ENTER to set the calculator in the
standard viewing window and graph the function. There is not enough information
using this range.
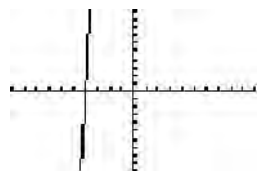
Press ZOOM. Then, move the cursor to 8 and press ENTER to view the graph
in integer mode. Move the cursor to the middle of the curve on the x-axis and
press ENTER.

Press TRACE. Then, press the left arrow key until the cursor is blinking at the left-most
x-intercept. Find the root on the bottom of the calculator screen. There is a root at
$x = -31$.
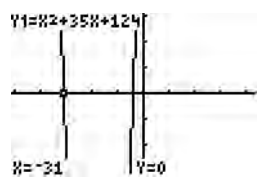
Press the right arrow key until the cursor is blinking at the other x-intercept. Find the
root on the bottom of the calculator screen. There is a root at $x = -4$.

The roots are $\{-31, -4\}$.

410-467-3300
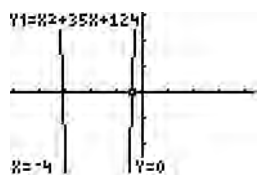
Solve by graphing on a graphing calculator.

1. $(x - 8)(x + 2) = 0$

2. $x^2 + 8x + 24 = 8$

3. $2x^2 - 7x = 3x$

4. $x^2 + 3x - 9 = -2x + 15$