These answers are the same as in Exercise 1 because the only difference in obtaining the solution was the method used.

4. Look through the *Practice and Apply* sections in various lessons of Chapter 10. Find some equations that would be more efficiently solved by factoring and others that would be more efficiently solved by using the quadratic formula.

It is important to note that not all quadratic equations can be factored. For those equations that cannot be factored, the quadratic formula is essential. After this, it is up to the your child to decide how he/she feels about solving quadratic equations and where his/her strengths are. If a child's strength include simplifying radical expressions, then the quadratic formula is a good choice. If the student's strengths include factoring and the zero product property, then this method should be used, when applicable.

5. Discuss the advantages of knowing more than one method of solving an equation.

Knowing more than one method of solving an equation is important because it gives you more tools to use. It is similar to owning a toolbox. If your toolbox only has a hammer in it, then you are extremely limited in the problems that you can solve in your home or car. If your toolbox includes a hammer, screwdriver, wrench, nuts, and bolts, you are much better equipped to solve problems in your home or car.

The following are complete worked out solutions to selected exercises in the student textbook. These solutions are provided to you so that you can help your child with their homework. Your child's classroom notes, example problems in the text, and these worked out solutions are all useful tools to help you and your child work through their assignment.

Lesson 10.3

12.

+	−	−	−	−
−	+	+	+	+
−	+	+	+	+
−	+	+	+	+
−	+	+	+	+

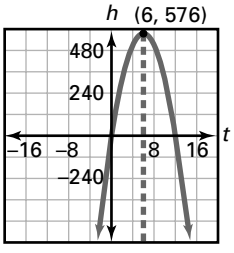
$x^2 - 8x + 16$

22. $y = x^2 + 20x + 100 - 100$
$y = (x^2 + 20x + 100) - 100$
$y = (x + 10)^2 - 100$

32. $x^2 + 20x$
$\left(\frac{20}{2}\right)^2 = 10^2 = 100$
$x^2 + 20x + 100$ or $(x + 10)^2$

57. $y = -5 + x^2$
$y = (x - 0)^2 - 5$
vertex: $(0, -5)$

65.



Lesson 10.4

17. $x^2 + 6x + 5 = 0$
$(x + 1)(x + 5) = 0$
$x + 1 = 0$ or $x + 5 = 0$
$x = -1$ or $x = -5$

24. $x^2 - 8x = -15$
$x^2 - 8x + 15 = 0$
$(x - 5)(x - 3) = 0$
$x - 5 = 0$ or $x - 3 = 0$
$x = 5$ or $x = 3$

33.
$$x^2 + x - 6 = 0$$
$$\left(x^2 + x + \frac{1}{4}\right) - 6 - \frac{1}{4} = 0$$
$$\left(x + \frac{1}{2}\right)^2 - 6\frac{1}{4} = 0$$
$$\left(x + \frac{1}{2}\right)^2 = \frac{25}{4}$$
$$x + \frac{1}{2} = \pm\frac{5}{2}$$
$$x = 2 \text{ or } -3$$

43.
$$p^2 - 5p - 3 = 0$$
$$\left(p^2 - 5p + \frac{25}{4}\right) - 3 - \frac{25}{4} = 0$$
$$\left(p - \frac{5}{2}\right)^2 - \frac{37}{4} = 0$$
$$\left(p - \frac{5}{2}\right)^2 = \frac{37}{4}$$
$$p - \frac{5}{2} = \pm\sqrt{\frac{37}{4}}$$
$$p = \frac{5}{2} \pm \sqrt{\frac{37}{4}}$$
$$p \approx 5.54 \text{ or } -0.54$$

48. $\begin{cases} y = x - 1 \\ y = x^2 - 3x + 3 \end{cases}$

Substitute $y = x - 1$ into the second equation.

$$x - 1 = x^2 - 3x + 3$$
$$x^2 - 4x + 4 = 0$$
$$(x - 2)^2 = 0$$
$$x - 2 = 0$$
$$x = 2$$

Substitute $x = 2$ into the first equation.

$y = 2 - 1 = 1$

Graphs intersect at $(2, 1)$.

51. Let w represent the width.

$$w(w + 4) = 140$$
$$w^2 + 4w - 140 = 0$$
$$(w + 14)(w - 10) = 0$$
$w = -14$ or $w = 10$

The width cannot be negative so

width $= 10$ yards, length $= 14$ yards.

Lesson 10.5

19. $a = 1, b = 4, c = -21$

$4^2 - 4(1)(-21)$

$= 16 - (-84)$

$= 100$

2 real solutions

29. $3m^2 = 2m + 1$

$3m^2 - 2m - 1 = 0$

$a = 3, b = -2, c = -1$

$$m = \frac{-(-2) \pm \sqrt{(-2)^2 - 4(3)(-1)}}{2(3)}$$

$$= \frac{2 \pm \sqrt{16}}{6}$$

$m = \frac{2 + 4}{6}$ or $m = \frac{2 - 4}{6}$

$m = 1$ or $m = -\frac{1}{3}$

33. $a = 4, b = 8, c = -12$

$$x = \frac{-8 \pm \sqrt{8^2 - 4(4)(-12)}}{2(4)}$$

$$= \frac{-8 \pm \sqrt{256}}{8}$$

$x = \frac{-8 + 16}{8}$ or $x = \frac{-8 - 16}{8}$

$x = 1$ or $x = -3$

Factored form: $4(x - 1)(x + 3)$

43. Let r = number of rows

$r - 16$ = number of seats in each row

$r(r - 16) = 1161$

$r^2 - 16r = 1161$

$r^2 - 16r - 1161 = 0$

$(r + 27)(r - 43) = 0$

$r + 27 = 0$ or $r - 43 = 0$

$r = -27$ or $r = 43$

There cannot be a negative number of rows, so $r = 43$. Since there are 43 rows, the number of seats in each row is $43 - 16 = 27$.

Lesson 10.6

16. $x^2 - 8x - 20 = 0$

$(x + 2)(x - 10) = 0$

$x + 2 = 0$ or $x - 10 = 0$

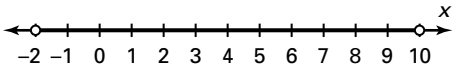
$x = -2$ or $x = 10$

Test a value between the solutions, such as 0.

$(0)^2 - 8(0) - 20 \stackrel{?}{<} 0$

$-20 < 0$ True

$-2 < x < 10$

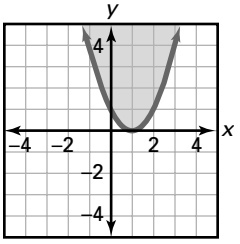


32. Test a point inside, (1, 1)

$1 \stackrel{?}{\geq} (1)^2 - 2(1) + 1$

$1 \geq 0$ True

Solution region is inside.



36. $-16t^2 + 320t < 1024$

First solve $-16t^2 + 320t - 1024 = 0$

$-16(t^2 - 20t + 64) = 0$

$(t - 16)(t - 4) = 0$

$t - 16 = 0$ or $t - 4 = 0$

$t = 16$ or $t = 4$

Test a value which is not between 4 and 16, such as 0.

$-16(0)^2 + 320(0) \stackrel{?}{<} 1024$

$0 < 1024$ True

$t < 4$ or $t > 16$