

**Practice A**

For use with pages 625–632

Find the greatest common factor and factor it out of the expression.

1.  $3x + 18$

2.  $-2c + 10$

3.  $4y^2 + 4y + 8$

4.  $6x^3 - 2x^2 + 2x$

5.  $d^4 + d^3 - 2d^2$

6.  $10a^3 - 12a^2 + 4a$

Tell whether the expression is factored completely. If the expression is not factored completely, write the complete factorization.

7.  $2(x^2 + 1)$

8.  $2(n^2 + 4n + 4)$

9.  $3(x^2 - 1)$

10.  $m(m^2 + 5m + 2)$

11.  $2(x^2 + 5x + 6)$

12.  $3t(t^2 - t + 10)$

Factor the expression completely.

13.  $6(x + 1) + 7(x + 1)$

14.  $c(c - 2) + 2(c - 2)$

15.  $m(m + 3) - 5(m + 3)$

16.  $2x(x + 4) + 7(x + 4)$

17.  $14x - 28x^2$

18.  $45mn - 30m^2$

19.  $2x^2 + 16x + 14$

20.  $5x^2 - 45$

21.  $14t^2 - 35t - 21$

22.  $x^3 + 6x^2 + 9x$

23.  $x^3 + x^2 + 2x + 2$

24.  $d^3 + d^2 + 3d + 3$

Solve the equation. Tell which solution method you used.

25.  $x^2 + 4x + 3 = 0$

26.  $x^2 - 16 = 0$

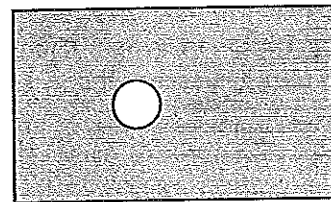
27.  $9x^2 + 49 = 0$

28.  $x^2 - 4x - 2 = 0$

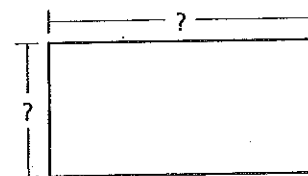
29.  $3x^2 + x + 1 = 0$

30.  $4x^2 + 2x - 1 = 0$

31. **Area** Find the area of the shaded region shown at the right. The area of the rectangle is  $5x^2 + 12x + 10$  and the area of the circle is  $x^2 + 2$ . Write the area in factored form.



32. **Rectangle Area** Find the dimensions of a rectangle if its area is  $xy - 4x + 2y - 8$ .



**Practice B**

For use with pages 625–632

Find the greatest common factor and factor it out of the expression.

1.  $6x^2 + 10x$

2.  $5c^3 - 25c^2 + 10c$

3.  $15y^3 + 6y^2 - 21y$

4.  $10x^4 + 16x^3 + 4x^2$

5.  $4d^4 + d^3 - 3d^2$

6.  $8a^5 - 10a^3 + 18a^2$

Tell whether the expression is factored completely. If the expression is not factored completely, write the complete factorization.

7.  $3(x^2 + 9)$

8.  $5(n^2 + 8n + 16)$

9.  $2(x^2 - 4)$

10.  $3m(m^2 + 9m + 27)$

11.  $2(x^2 + 7x + 6)$

12.  $3t(t^2 - 5t + 10)$

Factor the expression completely.

13.  $6x^3 + 18x^2$

14.  $3c^3 - 12c$

15.  $-10m^3 - 2m$

16.  $35a^3 - 28a^2$

17.  $32x - 48x^2$

18.  $35xy - 60x^2$

19.  $3m^2 + 24m + 36$

20.  $4x^2 + 4x - 80$

21.  $2t^3 + 2t^2 - 12t$

22.  $6x^3 + 24x^2 + 24x$

23.  $x^3 + x^2 + 4x + 4$

24.  $d^3 + 2d^2 + 3d + 6$

Solve the equation. Tell which solution method you used.

25.  $x^2 + 7x + 6 = 0$

26.  $x^2 - 5x + 9 = 0$

27.  $4x^2 - 28x + 49 = 0$

28.  $3x^2 - 6x + 2 = 0$

29.  $7x^2 - 2x + 5 = 0$

30.  $5x^2 + 4x - 3 = 0$

**Vertical Motion** In Exercises 31 and 32, use the vertical motion model  $h = 16t^2 - vt$ , where  $h$  is the initial height (in feet),  $v$  is the initial velocity (in feet per second), and  $t$  is the time (in seconds) the object spends in the air.

31. **Baseball** You toss a baseball from a height of 32 feet with an initial upward velocity of 16 feet per second. How long will it take the baseball to reach the ground?

32. **Rocket** You launch a rocket from a height of 64 feet with an initial upward velocity of 48 feet per second. How long will it take the rocket to reach the ground?

**Practice C**

For use with pages 625–632

Find the greatest common factor and factor it out of the expression.

1.  $3x^2 - 12x$

2.  $4c^3 - 12c^2 + 8c$

3.  $-7y^3 + 35y^2 - 7y$

4.  $\frac{10}{3}x^3 + \frac{5}{3}x^2 + 35x$

5.  $15d^4 - 6d^3 + 3d^2$

6.  $8a^4b + 48a^2b - 88ab$

Tell whether the expression is factored completely. If the expression is not factored completely, write the complete factorization.

7.  $3x(x^2 + 5)$

8.  $2n(2n^2 - 9n - 5)$

9.  $7x(9x^2 - 25)$

10.  $6m(m^3 + 6m + 5)$

11.  $8(6x^2 - 2x - 28)$

12.  $-4t(5t^2 - 2t + 6)$

Factor the expression completely.

13.  $21x^2 - 15x$

14.  $-4c^3 + 12c^2$

15.  $5m^3 + 50m^2 + 125m$

16.  $6y^3 + 2y^2 - 20y$

17.  $6t^3 + 9t^2 - 15t$

18.  $56x - 14x^2 - 21x^3$

19.  $x^3 - 2x^2 + 3x - 6$

20.  $5x^3 - 20x$

21.  $t^3 + 3t^2 - 4t - 12$

22.  $2x^3 + 3x^2 - 2x - 3$

23.  $x^3 - 4x^2 + 3x - 12$

24.  $2d^3 - 10d^2 + 3d - 15$

Solve the equation. Tell which solution method you used.

25.  $21x^2 - 57x - 18 = 0$

26.  $16x^2 + 25 = 0$

27.  $2x^2 + 6x - 3 = 0$

28.  $5x^2 + 4x + 3 = 0$

29.  $3x^2 - 5x - 1 = 0$

30.  $10x^2 - 38x + 36 = 0$

**Vertical Motion** In Exercises 31–33, use the vertical motion models, where  $h$  is the initial height (in feet),  $v$  is the initial velocity (in feet per second), and  $t$  is the time (in seconds) the object spends in the air.

Vertical motion model for Earth:  $h = 16t^2 - vt$

Vertical motion model for the moon:  $h = \frac{16}{6}t^2 - vt$

31. **Earth** You toss a baseball from a height of 64 feet with an initial upward velocity of 48 feet per second. How long will it take the baseball to reach the ground?
32. **Moon** On the moon, you toss a baseball from a height of 64 feet with an initial upward velocity of 48 feet per second. How long will it take the baseball to reach the surface of the moon?
33. Do objects fall faster on Earth or on the moon?