

CHAPTER  
9**Chapter Test B***For use after Chapter 9***Find the sum or difference.**

- $(4a^3 - 2a + 1) - (a^3 - 2a + 3)$
- $(3x^3 + 4x + 14) + (-4x^2 + 21)$
- $(3d - 5d^3 + 2d^2) - (8d^3 + 6d - 1)$
- $(-3n + 7n) + (4n^3 - 2n^2 + 12)$

**In Exercises 5 and 6, use the following information.**

During the period 1985–2012, the projected enrollment  $B$  (in thousands of students) in public schools and the projected enrollment  $R$  (in thousands of students) in private schools can be modeled by

$$B = -18.53t^2 + 975.8t + 48,140 \quad \text{and} \quad R = 80.8t + 8049$$

where  $t$  is the number of years since 1985.

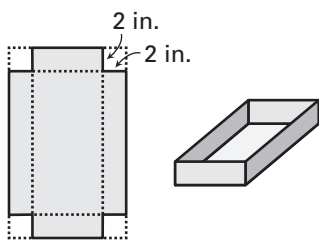
- Write an equation that models the difference in the projected enrollments for public schools and private schools as a function of the number of years since 1985.
- Find the difference in projected enrollments for public schools and private schools in 2005.

**Find the product.**

- $-4c(-9c^2 + 5c + 8)$
- $(y + 4)(5y - 3)$
- $(s^2 + 6s - 5)(5s + 2)$
- $(4p + 1)(4p - 1)$
- $(w - 5)^2$
- $(2b + 3)^2$

**In Exercises 13 and 14, use the following information.**

You are making an open box from a rectangular sheet of cardboard by cutting squares 2 inches in length from each corner and folding up the sides. The length of the sheet of cardboard is 8 inches more than the width.



- Write a polynomial that represents the total volume of the open box.
- Find the volume of the open box when the width of the sheet of cardboard is 6 inches.

**Answers**

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**Chapter Test B** *continued*  
*For use after Chapter 9***Solve the equation.**

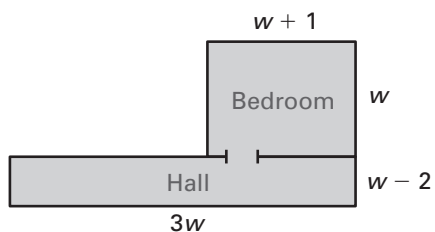
15.  $(h - 7)(2h + 1) = 0$

16.  $4g^2 - 32g = 0$

17.  $3m^2 = -6m$

**In Exercises 18 and 19, use the following information.**

The room and the hallway shown in the floor plan below have different dimensions but the same area.



18. Write an equation that relates the areas of the rooms.

19. Find the value of  $w$ .**Factor the trinomial.**

20.  $n^2 - 14n - 72$     21.  $-x^2 + 14x - 45$     22.  $6k^2 - k - 12$

**In Exercises 23 and 24, use the following information.**

A juggler throws a ball from an initial height of 4 feet with an initial vertical velocity of 30 feet per second. The height  $h$  (in feet) of the ball can be modeled by  $h = -16t^2 + vt + s$  where  $t$  is the time (in seconds) the ball has been in the air,  $v$  is the initial vertical velocity (in feet per second), and  $s$  is the initial height.

23. Write an equation that gives the height (in feet) of the ball as a function of the time (in seconds) since it left the juggler's hand.

24. If the juggler misses the ball, after how many seconds does it hit the ground?

**Factor the polynomial completely.**

25.  $x^6 - x^3$

26.  $5a(a - 3) - 7(a - 3)$

27.  $9t^4 + 30t^3 + 25t^2$

28.  $b^3 + 5b^2 - 3b - 15$

**Solve the equation.**

29.  $x^2 + 8x + 15 = 0$

30.  $7y - 2 = 5y^2$

31.  $72 = 32q^2$

32.  $u^3 + 6u^2 = 4u + 24$

**Answers**

15. \_\_\_\_\_

16. \_\_\_\_\_

17. \_\_\_\_\_

18. \_\_\_\_\_

19. \_\_\_\_\_

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31. \_\_\_\_\_

32. \_\_\_\_\_