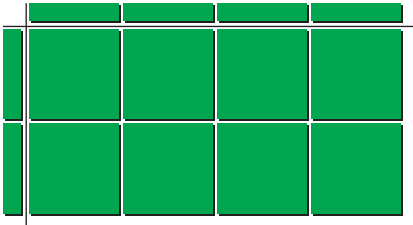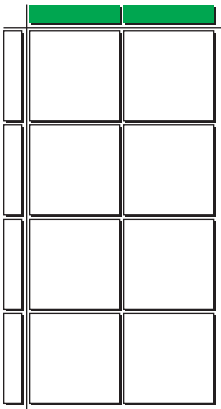**c)** $8x^2$

d) $-8x^2$

Chapter 7

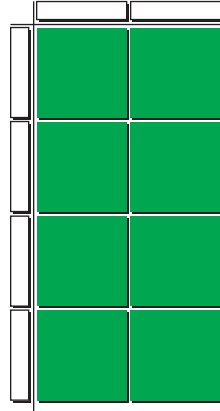### 7.1 Multiplying and Dividing Monomials, pages 260–263

3. a) $(2x)(3x) = 6x^2$ **b)** $(-2x)(3x) = -6x^2$
c) $(-2x)(-3x) = 6x^2$
4. a) $(3x)(3x) = 9x^2$ **b)** $(-2x)(-2x) = 4x^2$
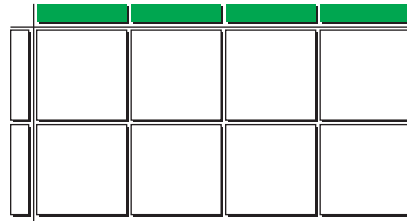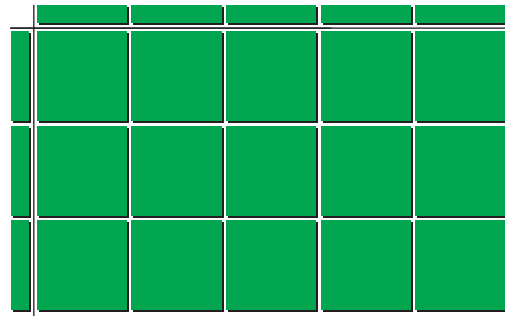**c)** $(2y)(x) = 2xy$
5. a) $8x^2$

b) $-8x^2$

6. a) $15x^2$

b) $-6x^2$

c) $-6x^2$

d) $-x^2$

d) $-2x$
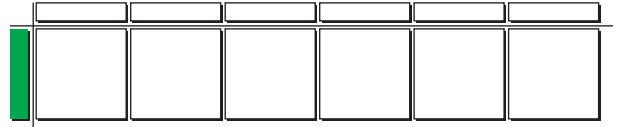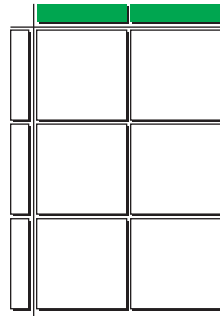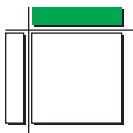
7. a) $10y^2$ **b)** $-18ab$ **c)** $9q^2$ **d)** $2x^2$ **e)** $6rt$ **f)** $-4.5p^2$
8. a) $6n^2$ **b)** $28k^2$ **c)** $-10w^2$ **d)** $-9x^2$ **e)** $-4mn$ **f)** $-7t^2$
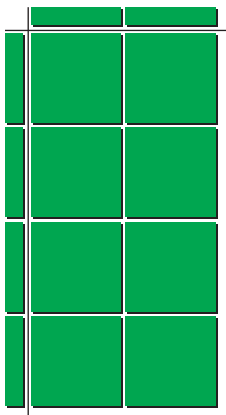**9.** $19.5x^2$
10. $34.02z^2$

11. a) $\dfrac{6x^2}{3x} = 2x$ **b)** $\dfrac{8xy}{2y} = 4x$ **c)** $\dfrac{-6x^2}{2x} = -3x$

12. a) $\dfrac{9x^2}{-3x} = -3x$ **b)** $\dfrac{-6x^2}{-2x} = 3x$ **c)** $\dfrac{15xy}{5y} = 3x$
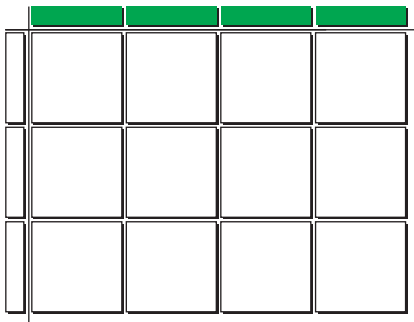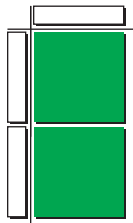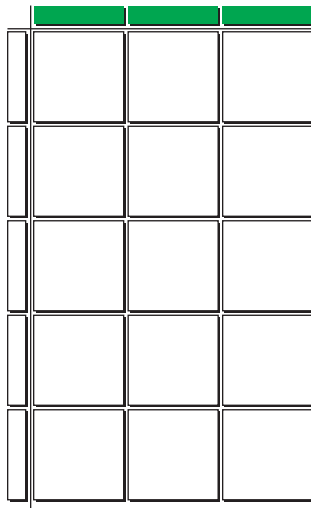
13. a) $4x$

b) x

c) $-3x$

14. a) $-5x$

b) $5y$
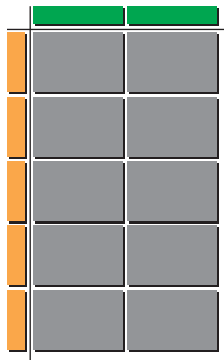
c) $-4x$
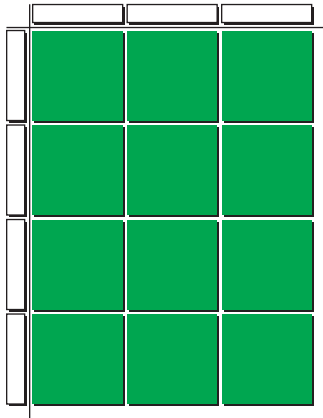
d) $3x$
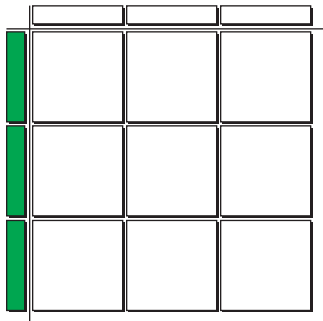
15. a) $7x$ **b)** $5t$ **c)** $25t$ **d)** 4 **e)** 27 **f)** $-1.5p$

16. a) $12.4x$ **b)** 3.75 **c)** 3 **d)** $-6p$ **e)** 0.25 **f)** $\frac{x}{3}$

17. a) $33x^2$ **b)** $20p^2$ **c)** $\frac{w^2}{4}$

18. a) $3x$ **b)** $6w$

19. a) $3.6d$

20. No, it will not fit. If x represents the width of Claire's space, then the length is $3x$ and the area is $x(3x) = 3x^2$. So $3x^2 = 48$, and by solving the equation, $x = 4$. The width of Claire's space is 4 m. The length is then 12 m, which is not long enough for a 12.5 m patio.

21. 4

22. a) $\frac{4}{\pi}$ **b)** $\frac{4}{\pi}$

23. If x represents the width of the dogsled, then the length is $4x$ and the area if $x(4x) = 4x^2$. So $4x^2 = 3.2$, and by solving the equation, $x \approx 0.89$. The width of the dogsled is about 0.89 m and the length is about 3.56 m. This is just barely long and wide enough for the equipment to fit.

24. a) 5 cm **b)** $SA = 24xy + 40x + 30y$

25. Example: They are similar because you have to divide 9 by 3 in each one. However, they differ because you get a fraction in the quotient for one, but not the other.

26. 1

27. a) $1.25x^2$ **b)** 9031.25 cm^2

7.2 Multiplying Polynomials by Monomials, pages 269–271

4. a) $(3x)(2x + 4) = 6x^2 + 12x$
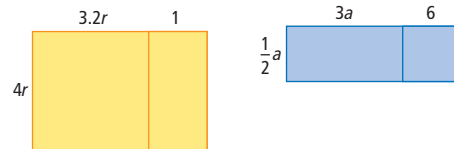**b)** $(4k)(3k + 3.6) = 12k^2 + 14.4k$
c) $(k)(3.2k + 5.1) = 3.2k^2 + 5.1k$
5. a) $(4y)(3y + 7) = 12y^2 + 28y$
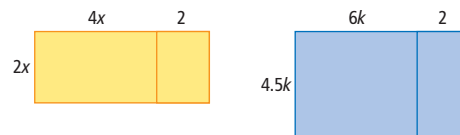**b)** $(3.5f)(f + 2) = 3.5f^2 + 7f$
c) $(2k)(7 + 0.9k) = 14k + 1.8k^2$

6. a) $12.8r^2 + 4r$ **b)** $\frac{3}{2}a^2 + 3a$

7. a) $8x^2 + 4x$ **b)** $27k^2 + 9k$

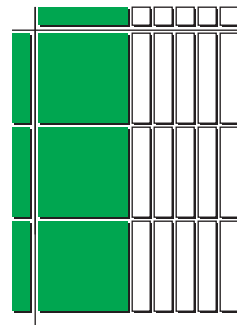**8. a)** $(2x)(3x + 1) = 6x^2 + 2x$
b) $(-x)(-x - 3) = x^2 + 3x$
c) $(3x)(-x + 2) = -3x^2 + 6x$
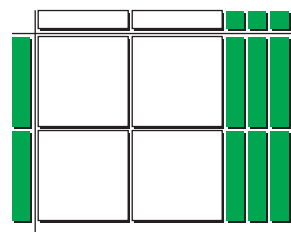**9. a)** $(-3x)(2x + 2) = -6x^2 - 6x$
b) $(3x)(-2x - 1) = -6x^2 - 3x$
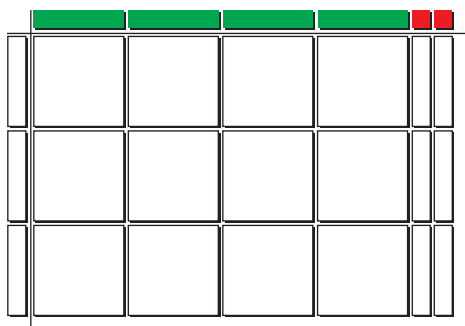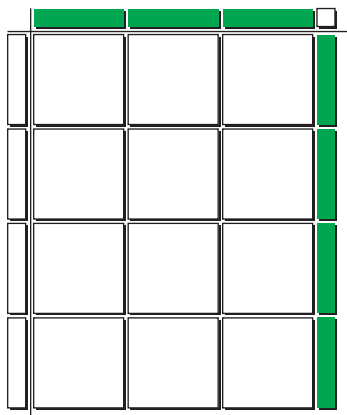**c)** $(-x)(x + 4) = -x^2 - 4x$
10. a) $3x^2 - 15x$

b) $-4x^2 + 6x$

11. a) $-12x^2 - 6x$

b) $-12x^2 + 4x$

12. a) $6x^2 - 2x$ **b)** $6p^2 - 2.4p$ **c)** $3.5m - 6m^2$
d) $-0.5r^2 + 2r$ **e)** $16.4n - 57.4$ **f)** $3x^2 + 6xy + 12x$
13. a) $8j^2 - 12j$ **b)** $-3.6w^2 + 8.4w$ **c)** $24x - 14.4x^2$
d) $-\dfrac{3}{7}v - 7$ **e)** $3y - 9y^2$ **f)** $-64a^2 - 56ab - 16a$
14. a) $12x^2 - 9x$ **b)** $P = 3x + 3x + 4x - 3 + 4x - 3$
$$P = 14x - 6$$
15. a) $w^2 - 2w$ **b)** 8 m^2
16. a) $1.5w^2 + 5.5w$ **b)** 420 m^2
17. $16x^2 + 8x$
18. a) $9x^2 - 12x$ **b)** 1845 m^2
19. a) $16x^2 + 12x$ **b)** $4x^3 + 4x^2$
20. $SA = 226.19$ cm^2
21. a)

2 m
4 m
$(12n - 4)$ m
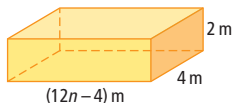
b) $(96n - 16)$ m^2 **c)** $(96n - 32)$ m^3

7.3 Dividing Polynomials by Monomials, pages 275–277
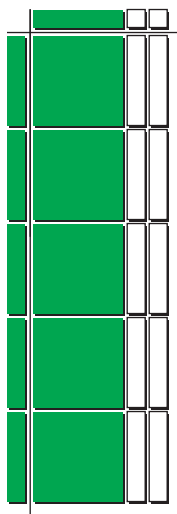
4. a) $\dfrac{(6x^2 + 4x)}{2x} = 3x + 2$ **b)** $\dfrac{4x^2 + 6x}{2x} = 2x + 3$
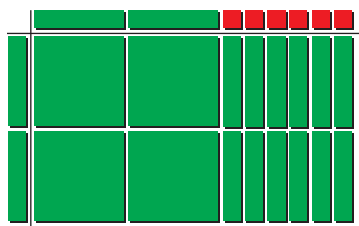**c)** $\dfrac{(6x^2 - 3x)}{3x} = 2x - 1$

5. a) $\dfrac{-x^2 - 4x}{x} = -x - 4$ **b)** $\dfrac{8x^2 + 12x}{-4x} = -2x - 3$
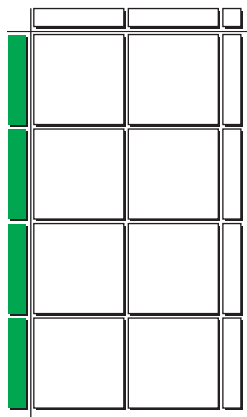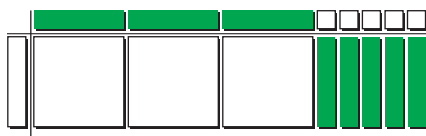**c)** $\dfrac{-3x^2 + 15x}{-3x} = x - 5$
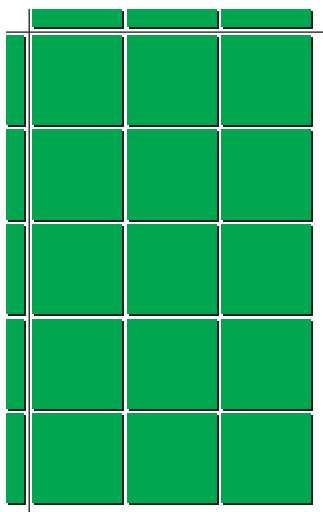**6. a)** $x - 2$

b) $2x + 6$

7. a) $-2x - 1$

b) $3x - 5$

8. a) $y + 2.1$ **b)** $6m^2 - 3.1m + 12$ **c)** $3y + 1$ **d)** $v - 0.9$
9. a) $0.9c + 1.2$ **b)** $2x + 8y$ **c)** $-0.2s - 0.3t$
d) $-28w^2 - 14w + 1$
10. $2x^2 + 3x$
11. a) $A = 12.5w^2 - 5w$ **b)** $l = 12.5w - 5$
c) $l = 2.5$ m, $V = 0.9$ m^3
12. $9x + 4$
13. The length is $(3x - 1)$ units.
14. a) $s = 4.9t + v$ **b)** 24.5 m/s
15. a) $12f + 3.1$ **b)** $2b - a + 1$ **c)** $-24x^2 + 18x - 2$
16. $3x + 1.5$
17. $x + 6 : 15x$
18. $12x + 4xy + 6y$

Chapter 7 Review, pages 278–279

1. C
2. F
3. B
4. A
5. a) $15x^2$

b) $-20xy$
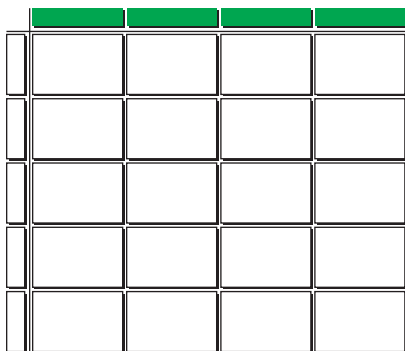
6. a) $8.64xy$ **b)** $-6a^2$
7. a) $3x$
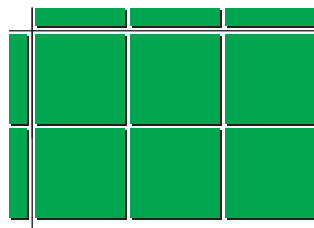
b) $-5a$
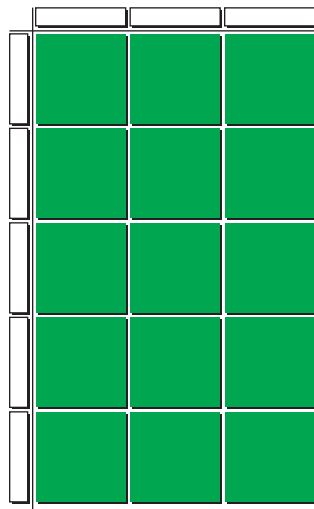
8. a) $4r$ **b)** y
9. 20 cm by 80 cm
10. $2 : \pi$
11. a) $(1.3y)(3y + 5) = 3.9y^2 + 6.5y$
b) $(1.2f)(f + 4) = 1.2f^2 + 4.8f$
12. a) $(3x)(2x + 4) = 6x^2 + 12x$
b) $(2x)(-3x - 1) = -6x^2 - 2x$
13. a) $46x^2 - 28x$ **b)** $\frac{2}{3}p^2 - \frac{1}{2}p$
14. $12x^2 + 6x$
15. a) $\frac{x^2 + 5x}{x} = x + 5$ **b)** $\frac{-4x^2 + 12x}{-2x} = 2x - 6$
16. a) $6n - 1$ **b)** $10 - 2x$
17. $2x + 4$
18. $x + \frac{1}{2}$
19. Naullaq will need 5 blocks of ice to fill the drinking tank. The answer must be rounded up because 4 blocks will not fill the tank and Naullaq is only cutting full blocks.