Answers

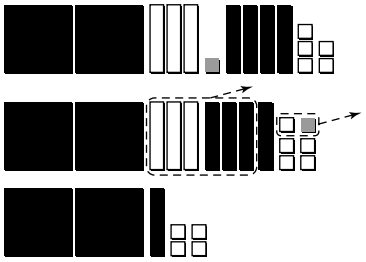
Get Ready, pages 362–363

1. Complete the table.

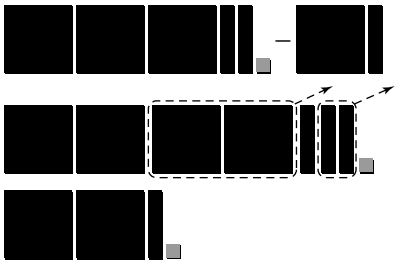
	Type of Polynomial (Monomial, Binomial, or Trinomial)	Degree of Polynomial
a) $x^2 - 2x + 5$	*trinomial*	*2*
b) $11c + 14$	*binomial*	*1*
c) $24d^2$	*monomial*	*2*

2. a) $3x^2 - x$ **b)** $2g^2 - 4n$

3. a) $2x^2 + x - 4$



b) $2x^2 + x + 1$



4. a) $3x^2 + 8x - 10$ **b)** $3y^2 + 10y + 7$

Math Link

1. 63.6 m^2

2. a) The area is 972 m^2. **b)** The area is 81 m^2.

c) The house takes up $\frac{1}{12}$ of the property.

3. The volume of water in the pool is 38.9 m^3.

4. The area of the driveway is 25.5 m^2.

5. The area of grass is 761 m^2.

7.1 Warm Up, page 366

1. a) 2^7 **b)** 5^3 **c)** 4^8 **d)** 10^5

2. a) 2^2 **b)** 4^0 **c)** 5^3 **d)** 7^4

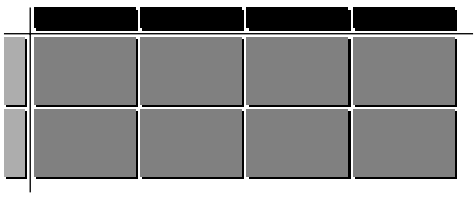
3. a) 6 **b)** –4 **c)** –3 **d)** 4

4. a) –30 **b)** 42 **c)** 40 **d)** –36

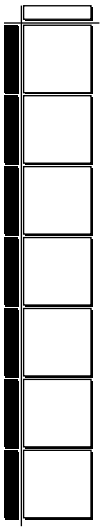
7.1 Multiplying and Dividing Monomials, pages 367–377

Working Example 1: Show You Know

a) $8xy$



b) $-7x^2$



Working Example 2: Show You Know

a) $-16x$ **b)** $22ab$ **c)** $8.8y^2$ **d)** $38.4h^2$ **e)** $6.2x^2$ **f)** $12.3yz$

Working Example 3: Show You Know

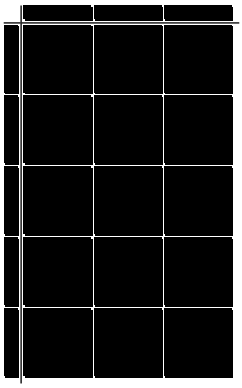
a) $4x$ **b)** $7x$

Working Example 4: Show You Know

a) $6x$ **b)** $-7y$ **c)** $2.1y$ **d)** $6.2m$

Communicate the Ideas

1. $(3x) \times (5x) = 15x^2$

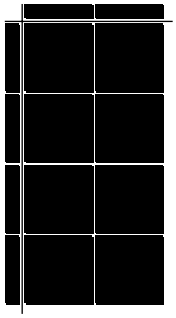


2. a) $(16 - 2)(n^2 - n)$ **b)** $\frac{16n^2}{2n} = 8n$

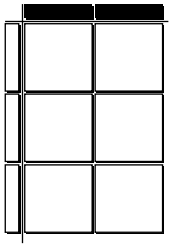
Practise

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

4. a) $8x^2$



b) $-6x^2$

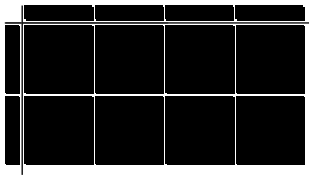


5. a) $10y^2$ **b)** $-18ab$ **c)** $5q^2$ **d)** $-4.5mn$

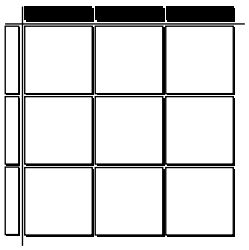
6. $(3.9x)(5x) = 19.5x^2$

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

8. a) $4x$;



b) $3x$;



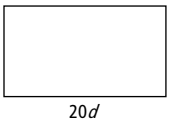
9. a) $5t$ **b)** $7x$ **c)** 4

Apply

10. a) $A = 33x^2$ **b)** The expression is $A = 20p^2$.

11. a) The missing dimension is $3x$. **b)** The missing dimension is $6w$.

12. a)



b) The width is $3.6d$.

Math Link

Answers will vary. Examples:

a) rectangle: pool; circle: garden

b) rectangle: $A = l \times w$; circle: $A = \pi r^2$

c) rectangular prism: water; cylinder: soil

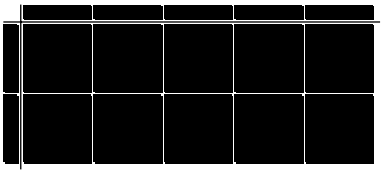
d) rectangular prism: 5 m; cylinder: 0.5 m

e) rectangular prism: $V = l \times w \times 5$; cylinder: $(\pi r^2)(0.5)$

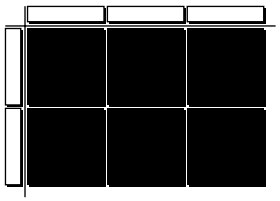
7.2 Warm Up, page 378

1. a) $(3x)(3x) = 9x^2$ **b)** $(-2x)(-2x) = 4x^2$

2. a) $10x^2$;



b) $6x^2$;



3. a) $15n^2$ **b)** $-24y^2$ **c)** $-6.4w^2$ **d)** $-7t^2$

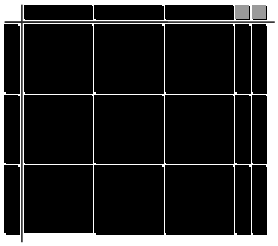
7.2 Multiplying Polynomials by Monomials, pages 379–386

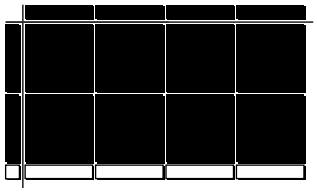
Working Example 1: Show You Know

a) $2x^2 + 6x$ **b)** $2c + c^2$

Working Example 2: Show You Know

a) $9x^2 + 6x$; **b)** $8x^2 - 4x$;



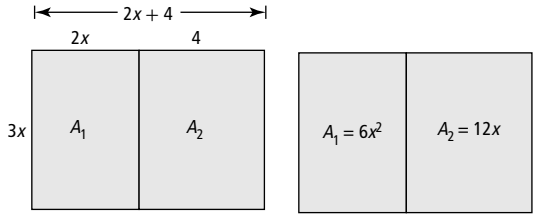


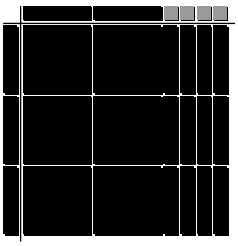
Working Example 3: Show You Know

a) $-6x^2 - 15x$ **b)** $55y - 5xy$ **c)** $-6a^2 + 16a$ **d)** $-30k - 18k^2$

Communicate the Ideas

1. Answers will vary. Examples:





$(3x)(2x + 4)$
$= (3x)(2x) + (3x)(4)$
$= 6x^2 + 12x$

2. a) NO **b)** Mahmoud did not multiply +1 by $5x$. **c)** $10x^2 + 5x$

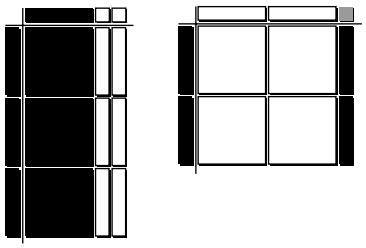
Practise

3. a) $(3x)(2x + 4)$ **b)** $(4k)(3k + 3.6)$

4. a) $8x^2 + 4x$ **b)** $3a^2 + 6a$

5. a) $(2x)(3x + 1) = 6x^2 + 2x$ **b)** $(-x)(-x - 3) = x^2 + 3x$
c) $(3x)(-x + 2) = -3x^2 + 6x$ **d)** $(-x)(x + 4) = -x^2 - 4x$

6. a) $3x^2 - 6x$; **b)** $-4x^2 + 2x$;

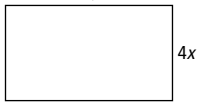


7. a) $6x^2 - 2x$ **b)** $6p^2 + 15p$ **c)** $8j^2 - 12j$ **d)** $3r^2 + r$

Apply

8. a) $12x^2 - 9x$ **b)** $P = 14x - 6$

9. a) $4x$ **b)**



c) The area of the field is $16x^2 + 8x$.

Math Link

Answers will vary. Examples:

a) $2w + 2$ **b)** 3 **c)** $V = 6w^2 + 6w$

d)

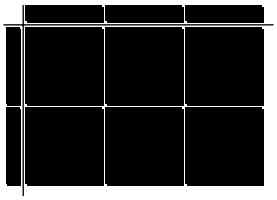
Width (w)	Length ($2w + 2$)	Depth (m)	$V = l \times w \times h$
Example: 1 m	$2(1) + 2$ $= 2 + 2$ $= 4$	0.8	$4 \times 1 \times 0.8$ $= 3.2$ m^3
2 m	*6*	*3*	*36 m^3*
3 m	*8*	*3*	*72 m^3*
4 m	*10*	*3*	*120 m^3*
5 m	*12*	*3*	*180 m^3*

5. The width of 5 m works best for my design because it's a pool.

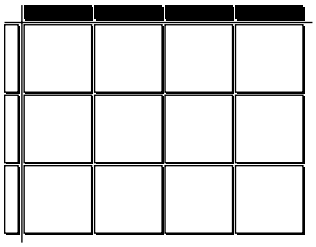
7.3 Warm Up, page 387

1. a) $6x^2 \div 2x = 3x$ **b)** $9x^2 \div (-3x) = (-3x)$ **c)** $-6x^2 \div (-2x) = 3x$ **d)** $4x^2 \div (-2x) = (-2x)$

2. a) $3x$;



b) $-3x$;

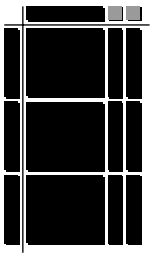


3. a) $-5p$ **b)** $5m^2$

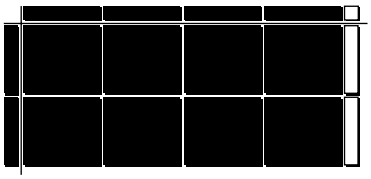
7.3 Dividing Polynomials by Monomials, pages 388–395

Working Example 1: Show You Know

a) $x + 2$;



b) $4x - 1$;



Working Example 2: Show You Know

a) $5x - 4$ **b)** $-t + 2$

Communicate the Ideas

1. Draw 2 positive x-tiles on the left side.

Draw 4 positive x^2-tiles and 6 positive x-tiles inside the frame.

Draw 2 positive x-tiles and 3 positive 1-tiles along the top.

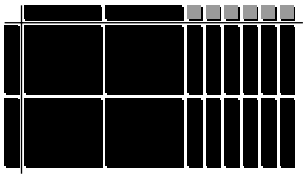
2. a) $3k - 1$ **b)** $9k^2$ divided by 3 is $3k^2$ and $3k$ divided by 3 is k.

Practise

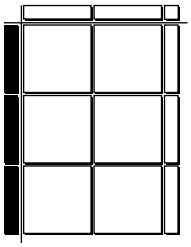
3. a) $\frac{6x^2 + 4x}{2x} = 3x + 2$ **b)** $\frac{4x^2 + 6x}{2x} = 2x + 3$

4. a) $\frac{6x^2 - 3x}{3x} = 2x - 1$ **b)** $\frac{-x^2 - 4x}{x} = -x - 4$

5. a) $2x + 6$;



b) $-2x - 1$;



6. a) $y + 2$ **b)** $3y + 1$ **c)** $2x + 8y$ **d)** $0.9c + 1$

Apply

7. The width is $3x - 1$.

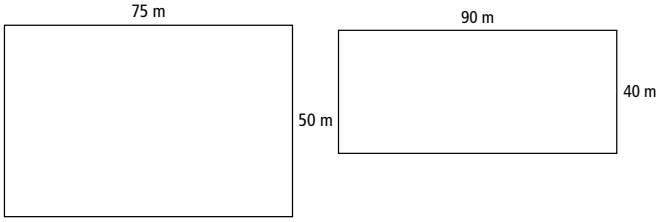
8. $9x + 4$ represents the number of sheets of poster paper needed.

9. a) $12.5w^2 - 5w$ represents the area of the base. **b)** $12.5w - 5$ represents the length. **c)** The length is 2.5 m. **d)** The volume is 0.9 m^3.

Math Link

Answers will vary. Examples:

a) *Parking Lot 1:* *Parking Lot 2:*



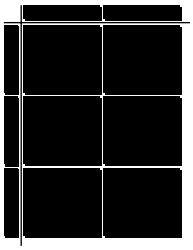
b) *Parking Lot 1:* 3750 m^2; *Parking Lot 2:* 3600 m^2 **c)** $V = x^2 + 4x$

d) $\frac{x^2 + 4x}{0.05}$ **e)** 240 m^2 **f)** *Parking Lot 1:* 16 loads;
Parking Lot 2: 15 loads

Graphic Organizer, page 396

Multiplying Polynomials:

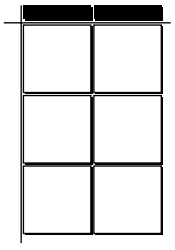
Use a model: $(3x)(2x) = 6x^2$



Use algebra: $(-4x)(5x) = -20x^2$

Dividing Monomials:

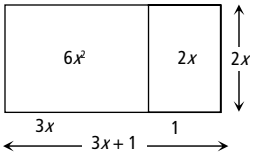
Use a model: $\frac{-6x^2}{2x} = -3x$



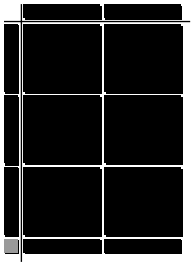
Use algebra: $\frac{16xy}{4x} = 4y$

Multiplying Polynomials by Monomials:

Draw a rectangle: $(2x)(3x + 1)$



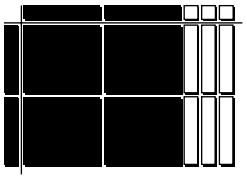
Use algebra tiles: $(2x)(3x + 1) = 6x^2 + 2x$



Use algebra: $(2x)(3x + 1) = 6x^2 + 2x$

Dividing Polynomials by Monomials:

Use algebra tiles: $\frac{4x^2 - 6x}{2x} = 2x - 3$

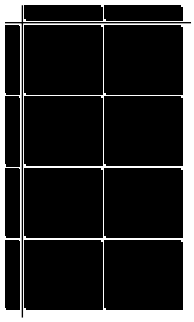


Use algebra: $\frac{4x^2 - 6x}{2x} = 2x - 3$

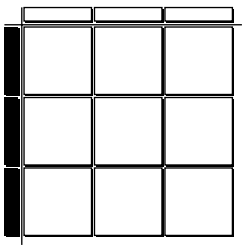
Chapter 7 Review, pages 397–400

1. $4y$ **2.** $4x - 2$ **3.** $4x^2 - 2x$ **4.** $4xy - 2x$ **5.** $4xy$ **6.** $2x^2 - 2x$

7. a) $(2x)(4x) = 8x^2$

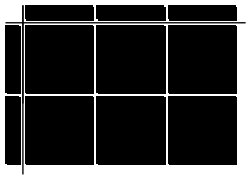


b) $(-3x)(3x) = -9x^2$

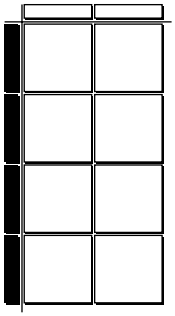


8. a) $-88x^2$ **b)** $5.5x^2$

9. a) $\frac{6x^2}{2x} = 3x$



b) $\frac{-8x^2}{4x} = -2x$



10. a) y **b)** $2.1r$

11. $6y^2 + 10y$

12. a) $(3x)(2x + 4) = 6x^2 + 12x$ **b)** $(2x)(-3x - 1) = -6x^2 - 2x$

13. a) $40x^2 - 20x$ **b)** $-3.6x^2 - 18x$

14. a) $(x^2 + 5x) \div x = x + 5$ **b)** $(-4x^2 + 12x) \div (-2x) = 2x - 6$

15. a) $6n - 1$ **b)** $5 - x$

16. The height of the triangle is $2x + 4$.

Key Word Builder, page 401

a) polynomial **b)** distributive property **c)** binomial **d)** monomial

L: $9x^2 - 9x$ I: $6xy$ O: $4x - 1$ A: $2x^2$ N: 18 M: 5

Mae's answer was a monomial when she divided.

Chapter 7 Practice Test, pages 402–404

1. B **2.** D **3.** C **4.** C **5.** B **6.** B

7. $5.2xy$

8. $-36h^2 + 24h$

9. $x - 1$

10. a) $A = (4x)(3.1x)$ or $A = 12.4x^2$ **b)** The area of the patio that will need paving stones is $8.9x^2$.

11. a) $2w + 15$ **b)** $(2w + 15)(w) = 2w^2 + 15w$

Math Link: Wrap It Up!, page 405

Answers will vary. Examples:

a) Beach volleyball court: length = 18 m; width = 9 m

Wading pool: radius = 5 m

b) Beach volleyball court: 0.5 m; Wading pool: 0.4 m

d) Beach volleyball court: $A = 2x^2 - 5x$; Wading pool: $A = 28.26y^2$

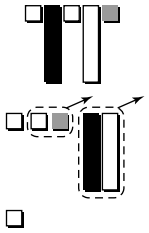
e) Beach volleyball court: $V = x^2 - 2.5x$; Wading pool: $11.3y^2$

Challenge, page 406

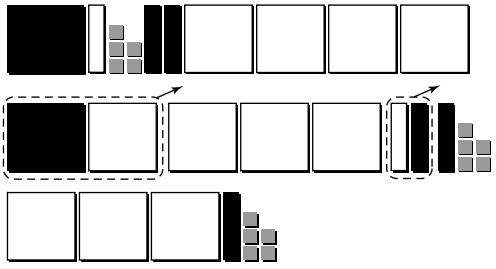
Answers will vary.

Chapters 5–7 Review, pages 407–411

1. a) -1



b) $-3g^2 + g + 5$



2. a) $7m - 2$ **b)** $4w^2 + w + 4$ **c)** $-3z - 2$ **d)** $2d^2 - 5$

3. a) $n + 4$ **b)** 10 **c)** $10(n + 4)$ **d)** $10n + 40$

4. a)

Type of income	Variable	Expression
Comic book	c	$10c$
Hardcover Book	h	$8h$
Paperback novel	p	$3p$

b) $I = 10c + 8h + 3p$

5. a) 4, 4

b)

Figure Number, n	Number of Tiles, t
1	*4*
2	*8*
3	*12*
4	*16*

c) $t = 4n$ **d)** 32 tiles

6. a)

Week, w	Amount in the Bank, A ($)
0	112
1	*137*
2	*162*
3	*187*
4	*212*
5	*237*

b) $A = 25w + 112$ **c)** It will take her 14 weeks.

7. a) $500 **b)** 3 h

8. a) $12x^2$ **b)** $-5y^2$

9. a) $-6h$ **b)** $8.4x$

10. a) $18x^2 - 15x$ **b)** $3w^2 + 1.5w$

11. a) Length = $2w + 3$ **b)** The expression is $2w^2 + 3w$.

12. a) $3g + 2$ **b)** $-2x + y$

13. The expression for the width is $2x - 1$.

Task, pages 412–413

1. a) The best size of TV is 110 cm. **b)** Answers will vary. **c)** Answers will vary. Example: 280 cm **d)** A 94 cm TV would be the best.

2. 8.3 m^2

3. Answers will vary. Example: NO. It is too big for the classroom.