ANSWERS TO EXERCISES AND ASSESSMENTS

CHAPTER 1

Exercises 1.1
1. a) 8,374 **b)** 8,678 **c)** 49,553 **d)** 79,676
2. a) 1,964 **b)** 25,227 **c)** 43,351
d) 12,458 **3. a)** 990 **b)** 30,765
c) 247,652 **d)** 16,664,535 **e)** 1,586,332
f) 3,128,250 **4. a)** 45 **b)** 55 **c)** 14 **d)** 45
e) 155 **f)** 504 **5.** 75 **6.** 624 **7.** $72

Exercises 1.2
1. About $260 **2.** About 1,050 hotdogs
3. About 15,000 pounds **4.** About $800
5. About $300

Exercises 1.3
1. a) 39.5 **b)** 127.97 **c)** 112.54 **d)** 635.76
2. 28.1 kg **3.** 17.7 cm **4. a)** 85.5 **b)** 173.02
c) 116.61 **d)** 100.232 **e)** 130.231
f) 1,131.006 **5.** 301 km **6.** 17.5 pounds
7. a) 3.4 **b)** 8.9 **c)** 4.7 **d)** 12.7 **8. a)** 35
b) 138 **c)** 143 **d)** 184 **e)** 56 **f)** 33 **9.** 11.2 in
10. 21.3 pounds

Exercises 1.4
1. a) 51 **b)** 22 **c)** 2 **d)** 32 **e)** 89 **f)** 41
g) 20 **h)** 18 **2. a)** 2 **b)** 48 **c)** 4 **d)** 4
e) 126 **f)** 129

Exercises 1.5
1. a) 12 **b)** 4 **c)** 4 **d)** 4 **e)** 1 **f)** 14
2. a) 72 **b)** 84 **c)** 208 **d)** 75 **e)** 945
f) 60 **3. a)** 60 minutes **b)** 3 **c)** 2

Exercises 1.6
1. a) 28 + 12 **b)** 300 + 200 **c)** 108 + 756
d) 72 + 108 **e)** 64 + 160 **f)** 36 + 45
2. a) 3(16 + 7) **b)** 2(11 + 13) **c)** 7(4 + 21)
d) 6(12 + 7) **e)** 3(16 + 13) **f)** 8(5 + 3)
3. a) 18(2 + 1) **b)** 4(5 + 9) **c)** 24(8 + 9)
d) 9(8 + 9) **e)** 8(2 + 9) **f)** 3(5 + 16)

Exercises 1.7
1. It is only divisible by 1 and itself
2. $2^2 \times 3$ **3.** 3^3 **4.** 2^4 **5.** $3^3 \times 5^2$
6. $2^3 \times 3^2 \times 7$

Exercises 1.8
1. a) = **b)** < **c)** < **d)** > **e)** < **f)** <
2. a) $1\frac{1}{3} > \frac{2}{3} > \frac{3}{5} > \frac{1}{5}$ **b)** $3\frac{1}{4} > 3 > \frac{7}{3} > \frac{3}{4}$
c) $\frac{8}{2} > 2\frac{3}{4} > 2\frac{1}{2} > 1\frac{3}{4}$ **d)** $\frac{7}{3} > \frac{3}{2} > \frac{5}{4} > \frac{1}{6}$
3. a) $\frac{1}{7} < \frac{1}{3} < \frac{2}{3} < \frac{5}{7}$ **b)** $\frac{7}{18} < \frac{5}{9} < \frac{2}{3} < \frac{7}{9}$

Exercises 1.9
1. a) $\frac{10}{11}$ **b)** $\frac{15}{25}$ or $\frac{3}{5}$ **c)** $\frac{3}{9}$ or $\frac{1}{3}$ **d)** $\frac{8}{12}$ or $\frac{2}{3}$
2. a) $\frac{19}{20}$ **b)** $\frac{4}{9}$ **c)** $\frac{15}{22}$ **d)** 1 **3. a)** $3\frac{5}{8}$ **b)** $2\frac{5}{6}$
c) $1\frac{1}{10}$ **d)** $3\frac{3}{10}$ **e)** $5\frac{3}{8}$ **f)** $15\frac{1}{3}$ **4.** $18\frac{3}{4}$ **5.** $\frac{5}{6}$ full

Exercises 1.10
1. a) 4 **b)** 3 **c)** $\frac{1}{2}$ **d)** 6 **e)** $\frac{10}{21}$ **f)** $\frac{8}{15}$ **g)** $\frac{4}{15}$
h) $\frac{1}{30}$ **i)** 1 **j)** $2\frac{1}{12}$ **k)** $\frac{11}{24}$ **l)** $1\frac{1}{32}$

Exercises 1.11
1. 4 **2.** 1 **3.** 2 **4. a)** $\frac{4}{3}$ **b)** $\frac{11}{2}$ **c)** $\frac{7}{4}$ **d)** $\frac{1}{5}$
e) $\frac{9}{2}$ **f)** $\frac{10}{3}$ **5. a)** $2\frac{4}{7}$ **b)** $\frac{15}{32}$ **c)** 1 **d)** $\frac{3}{16}$ **e)** $2\frac{1}{2}$
f) $\frac{5}{9}$ **6.** 22 **7.** 25 **8.** 4 **9.** 6 **10.** $3\frac{3}{4}$ pages
11. 2 **12.** $\frac{1}{5}$

Exercises 1.12
1. $96 **2.** $\frac{1}{3}$ **3.** $46\frac{1}{2}$ hours **4.** 33 metres
5. 140.3 grams **6.** $1 **7. a)** 91 pages remain
b) 52 pages remain **8.** 28 students
9. 38.79 kg

Self-Assessment – Chapter 1
1. a) 65,762 **b)** 16,227 **2.** 283 tickets
3. a) 36.16 **b)** 674.52 **4.** 15.2 pounds
5. a) 17 **b)** 36 **6. a)** 3 **b)** 1 **7. a)** 42 **b)** 54
8. a) 6(7 + 9) **b)** 3(13 + 15) **9.** $2^4 \times 3^2$
10. a) $1\frac{1}{4}, \frac{3}{4}, \frac{3}{8}, \frac{2}{16}$ **b)** $2\frac{1}{3}, \frac{8}{9}, \frac{5}{6}, \frac{4}{9}$ **11.** $13\frac{1}{12}$
12. a) $\frac{3}{28}$ **b)** $2\frac{1}{27}$ **13. a)** $\frac{8}{15}$ **b)** $1\frac{7}{9}$
14. 0.4 pounds **15.** $\frac{7}{32}$

Performance Task – Chapter 1
Hardcover = $63,635.15; eBook = $17,140.5
Total = $80,775.65 **1. a)** $6,363.52
b) $1,714.05 **c)** $8,077.57 **2. a)** $31,817.58
b) $8,570.25 **c)** $40,387.83 **3.** $10,770.08

CHAPTER 2

Exercises 2.1
1. -6 ºC **2.** -20 yds **3.** -5 ranks **4.** -2 floors

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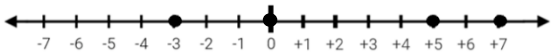
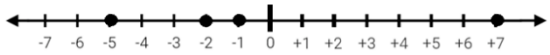
5. 2,500 feet **6.** 2 h **7. a)** -$12 **b)** -15°
c) -4 steps **d)** +22 points **e)** +8 yds **f)** 50°
g) 6,754 ft **h)** -398 ft
8. -255, -33, -20, -294, -86

Exercises 2.2
1.



2.



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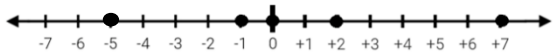


4. a) -6 **b)** -3 **c)** -1 **d)** 0 **e)** 4 **f)** 6
5. a) -7 **b)** -6 **c)** -4 **d)** -3 **e)** 1 **f)** 4
6. a) -125 **b)** 33 **c)** -1,042 **d)** 20 **e)** 225
f) -101

Exercises 2.3
1. a) < **b)** < **c)** < **d)** > **e)** > **f)** < **g)** > **h)** > **i)** > **j)** < **2. a)** -54 **b)** -78 **c)** -65 **d)** -98 **e)** -87 **f)** -86

Exercises 2.4
1. a) 4 > 0 > -4 **b)** -3 > -5 > -7
c) 2 > 1 > -4 **d)** 0 > -1 > -2
e) 5 > 4 > 3 > 2 **f)** -1 > -2 > -3
2. a) -33 < 0 < 57 **b)** -26 < -25 < 77
c) -78 < -56 < -39 **d)** -22 < 63 < 98
e) -87 < 0 < 12 **f)** -86 < -77 < -68 < 112
3. a) -52 < -27 < 267 **b)** -35 < -22 < 12
c) 15 > -12 > -20 and 37 > -21 > -52

Exercises 2.5
1. a) 3 **b)** 15 **c)** 12 **d)** 31 **e)** 21 **f)** 17
2. a) 2 **b)** -4 **c)** -12 **d)** 0 **e)** -57 **f)** -32
3. 137 m **4.** 28 ft

Exercises 2.6
1. a) |-7| **b)** |-23| **c)** |-28| **d)** |6| **e)** |7| **f)** |-36| **2. a)** = **b)** > **c)** < **d)** > **e)** > **f)** =
3. the mine **4. a)** July **b)** May

Exercises 2.7
1. a) -2 **b)** -1 **c)** -10 **d)** 1 **e)** -1 **f)** -8
2. a) 8, 7, 6, 5, 4, 3 **b)** -1, 0, 1, 2, 3, 4
3. a) -8 **b)** 5 **c)** 5 **d)** -2 **e)** -16 **f)** 4 **4. a)** 3 **b)** -7 **c)** -30 **d)** -41 **e)** -37 **f)** -20 **5.** 4 steps
6. -7 ºC **7.** -4 yds **8.** -5 °C

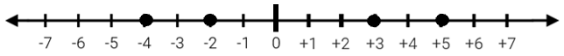
Exercises 2.8
1. a) -6 **b)** 11 **c)** 4 **d)** 7 **e)** 5 **f)** 2
2. a) 4 **b)** 12 **c)** 3 **d)** 8 **e)** 2 **f)** 10 **3. a)** 27 **b)** 7 **c)** -21 **d)** 13 **e)** -9 **f)** -1 **4.** 132 °F
5. 30,340 ft **6.** 6 yds

Exercises 2.9
1. a) -6 **b)** -9 **c)** 20 **2.** -15 **3.** -18 **4.** 21
5. -12 **6.** -36 **7.** 35 **8.** -54 **9.** -36 **10.** 10
11. -56 **12.** -72 **13.** 0 **14.** 15 **15.** -99
16. 12 **17.** -8 **18.** -6 **19.** 30 **20.** -20

Exercises 2.10
1. 3 **2.** -9 **3.** -4 **4.** 9 **5.** -9 **6.** -3 **7.** 16
8. -8 **9.** 3 **10.** -14 **11.** 5 **12.** -6 **13.** -10
14. 1

Exercises 2.11
1. 2^8 **2.** 7^6 **3.** -4^3 **4.** $(-12)^4$ **5.** $(-5)^5$
6. $(-9)^4$ **7.** -3^5 **8.** $(-13)^3$ **9.** 8 **10.** 64
11. -27 **12.** -125 **13.** -1,024 **14.** -36
15. -128 **16.** 81 **17.** 25 **18.** 49 **19.** 20
20. 4 **21.** 1,728 **22.** 72

Self-Assessment – Chapter 2
1. a) 27°F **b)** -378 ft
2.



3. 72 → -72 -27 → +27 0 → 0
-521 → 521 +372 → -372
4. a) > **b)** < **c)** < **d)** >
5. a) -5 < -1 < 0 < 5 **b)** -15 < -2 < 7 **6. a)** 7
b) 16 **c)** -3 **d)** -6 **7. a)** | -5 | **b)** | -23 |
8. a) < **b)** > **c)** = **d)** < **9.** 2 **10.** 3
11. -15 **12.** -12 **13.** 6 **14.** 2 **15.** -20
16. 27 **17.** 40 **18.** -2 **19.** -3 **20.** 5
21. -125 **22.** 256

Performance Task – Chapter 2
1.

Day	°F at 1 PM	°F at midnight	Change (°F)
May 1	59	51	-8
May 2	56	47	-9
May 3	52	45	-7
May 4	57	42	-15

May 5	54	45	-9
May 6	54	50	-4
May 7	65	48	-17
May 8	69	46	-23
May 9	85	57	-28
May 10	92	70	-22
May 11	91	77	-14
May 12	95	76	-19
May 13	93	71	-22
May 14	85	68	-17

2. May 9 **3.** May 6 **4.** 43° **5.** 35°

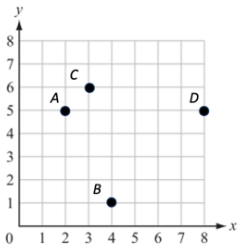
CHAPTER 3

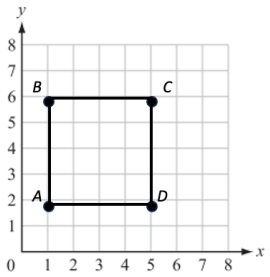
Exercises 3.1

1. The second number is 2 more than the first number. The second number is 2 less than the first number. The second number is 3 times the first number. **2. a)** The second number is 4 more than the first number. The second number is 5 more than the first number. The second number is 2 times the first number. **b)** 54, 56; 36, 48; 14, 50 **3. a)** The second number is 2 less than the first number. **b)** The second number is half the first number. **c)** The second number is double the first number plus 5. **4. a)** 1 **b)** 8 **c)** 6 **d)** 3.5
5. a) \$6.00, \$8.00, 5 bags cost \$10.00.
b) \$18.00 **c)** Answers will vary. The store only sells full bags.

Exercises 3.2

1. A(1, 2) B(2, 4) C(4, 5) D(3, 7) **2.** F; E
3. A(2, 2) B(4, 7) C(7, 4)
4. **5. a)**

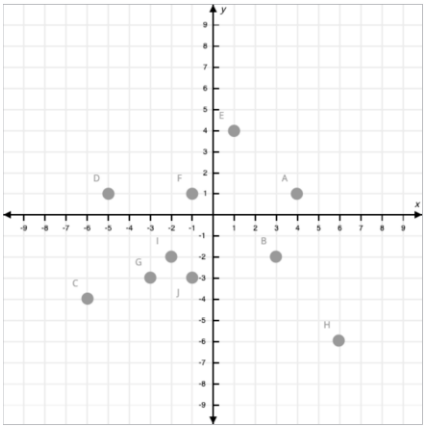




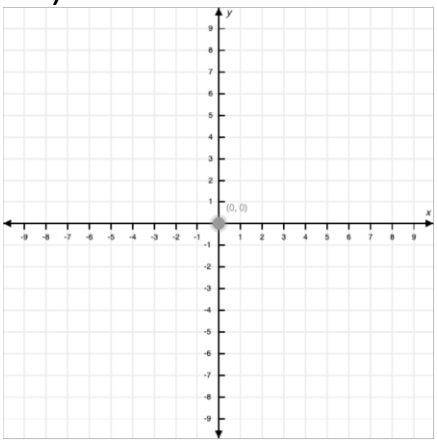
b) square **6.** Answers will vary.

Exercises 3.3

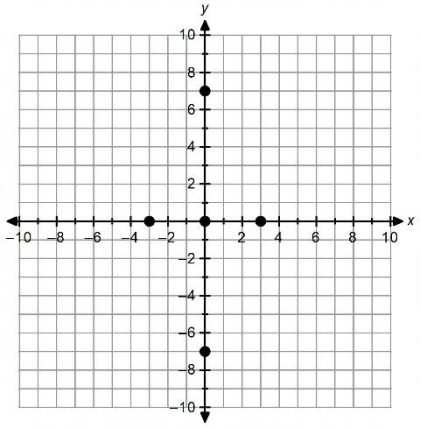
1. a) A(3, 6) **b)**B (6, 1) **c)**C (6, -4)
d) D(1, -2) **e)** E(-4, 5) **f)** F(-6, 3)
g) G(-2, -2) **h)** H(-6, -3)
2.



3. (-2,4), (5, 4), (5, -5), (-2, -5)
4. (-2, 5), (3, 5), (5, 1), (3, -3), (-2, -3), (-4, 1)
5. a)



b) The origin can be identified by the ordered pair (0, 0) since we go 0 units along the *x*-axis and 0 along the *y*-axis.
6. P(5, 0), Q(0, 5), R(-5, 0), S(0, -5)
7. Each point is the same distance from the origin, 5 units, but in opposite directions.
8.



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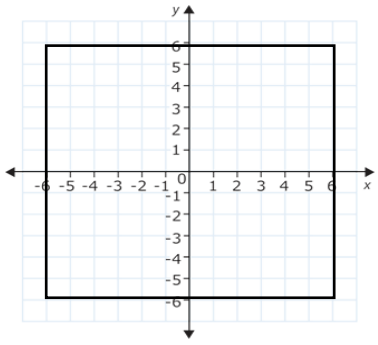
Exercises 3.4
1. 3 units **2.** 8 units **3.** AB = 10 units, BC = 10 units, CD = 10 units, AD = 10 units
4. AB = 8 units, BC = 8 units, CD = 8 units, AD = 8 units **b)** 32 units **c)** 64 units^2
5. a) 12 units, 8 units, 12 units, 8 units
b) 40 units **c)** 96 units^2 **6. a)** 5 units, 10 units, 5 units, 10 units **b)** 30 units
c) 50 units^2 **7. a)** 16 units **b)** 16 units^2
8. a) 22 units **b)** 30 units^2

Exercises 3.5
1. (6, 2), (6, 6) **2.** (-4, 5) **3.** Pair 1 (-2, -5), (3, -5); Pair 2 (-2, 5), (3, 5) **4.** (-3, 6), (1, 6)
5. Yes, Tatyana is correct. There are two possible answers. (-3, -4), (1, -4)
6. a) (-3, 6), (3, 6) or (-3, -6), (3, -6)
b) Yes, Carlo is correct.

Self-Assessment – Chapter 3
1. a) The second number is 4 more than the first. **b)** The second number is half the first number. **2. a)** 11 **b)** 20 **3.** A(2, 5), B(4, 7), C(7, 3) **4.** AB = 5 units, BC = 6 units **5.** A(5, 6), B(5, 2), C(5, -3), D(2, -3), E(-3, 5), F(-4, 3), G(-2, -2), H(-6, -3) **6. a)** A(-5, -4), B(-5, 4), C (6, 4), D (6, -4) **b)** 38 units **c)** 88 units^2
7. a) 20 units **b)** 24 units^2 **8. a)** 28 units
b) 45 units^2 **9.** (-4, -1), (4, -1) or (-4, 5), (4, 5)

Performance Task – Chapter 3
1. a) (-3, 3), (3, 3), (3, -3), (-3, -3)
b) 6 units each **c)** perimeter = 24 units, area = 36 units^2 **2. a)** (-6, 6), (6, 6), (6, -6), (-6, -6)



perimeter = 48 units

CHAPTER 4

Exercises 4.1
1. a) 4 : 6 **b)** 7 : 5 **c)** 6 : 3 **d)** 3 : 13
2.

Relationship	Word Form	Ratio	Fraction
a) 20 km to 3 hours	20 to 3	20 : 3	$\frac{20}{3}$
b) 12 hockey cards to 5 baseball cards	12 to 5	12 : 5	$\frac{12}{5}$
c) 5 homeruns to 30 times at bat	5 to 30	5 : 30	$\frac{5}{30}$
d) 24 students to 6 cars	24 to 6	24 : 6	$\frac{24}{6}$
e) 30 bags of groceries to 5 shopping carts	30 to 5	30 : 5	$\frac{30}{5}$

3. 2 : 6 **4.**

The ratio of	Word Form	Ratio	Fraction
a) goats to horses	4 to 5	4 : 5	$\frac{4}{5}$
b) cows to pigs	2 to 4	2 : 4	$\frac{2}{4}$
c) goats to sheep	4 to 6	4 : 6	$\frac{4}{6}$
d) horses to all animals	5 to 21	5 : 21	$\frac{5}{21}$
e) pigs to all animals	4 to 21	4 : 21	$\frac{4}{21}$
f) sheep to cows	6 to 2	6 : 2	$\frac{6}{2}$

5. a) 12 : 13 **b)** 13 : 12 **c)** 13 : 25 **d)** 25 : 13
e) 12 : 25 **f)** 25 : 12 **6. a)** 39 : 61 **b)** 29 : 39
c) 61 : 129 **d)** 39 : 90

Exercises 4.2
1. a) Equivalent **b)** Not equivalent
c) Equivalent **d)** Not equivalent
2. a) 9 : 12, 15 : 20, 6 : 8 **b)** 2 : 6, 5 : 15, 9 : 27
c) 8 : 20, 6 : 15, 12 : 30 **3. a)** 40 : 48
b) 1 : 4 **c)** 9 : 4 **d)** 4 : 5 **4.** Answers will vary.
5. 24 : 36 : 60 – Chart answers will vary.
6. 15 : 12 : 27 – Chart answers will vary.

Exercises 4.3

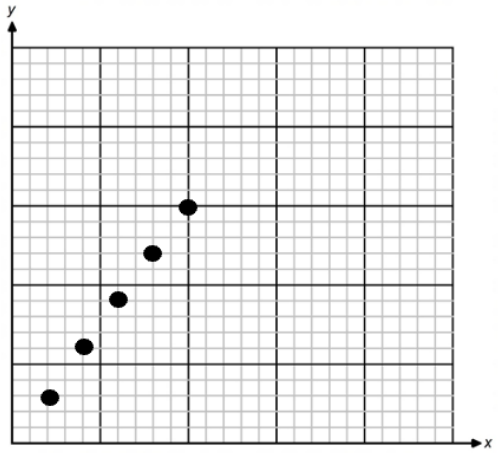
1.

Hammers (x)	Screwdrivers (y)
2	3
4	6
6	9
8	12
10	15

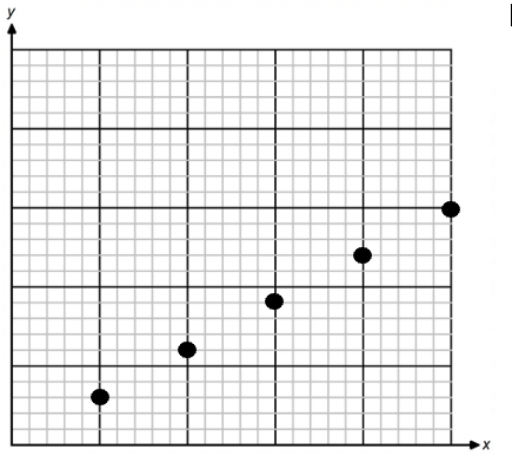
2.

Oak (x)	Maple (y)
5	3
10	6
15	9
20	12
25	15

3.

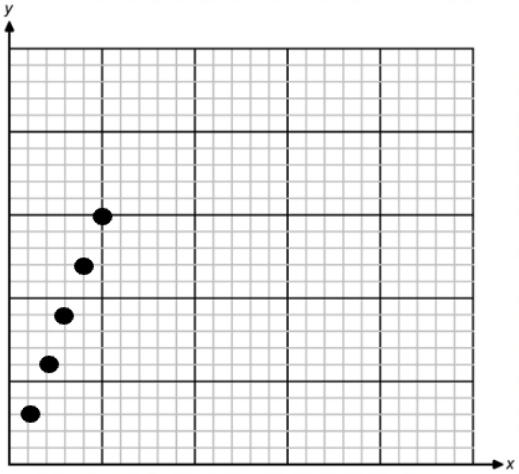


4.



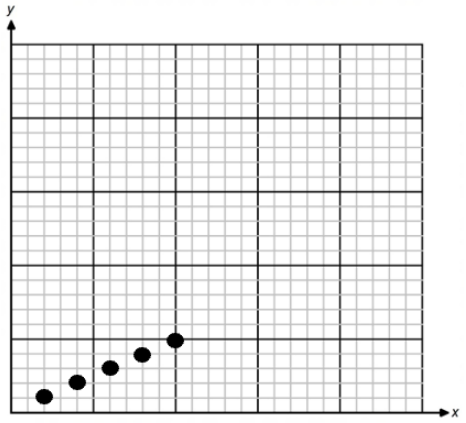
5.

Hours (x)	Miles (y)
1	3
2	6
3	9
4	12
5	15



6.

Books (x)	Weeks (y)
2	1
4	2
6	3
8	4
10	5



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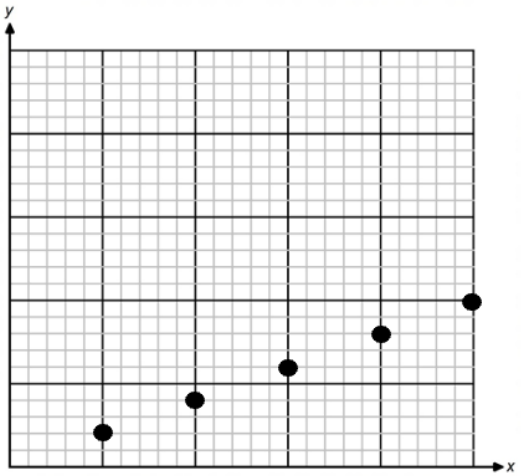
7.

Work (x)	Games (y)
5	2
10	4
15	6
20	8
25	10



Exercises 4.4

1. a) $\frac{45 \text{ points}}{3 \text{ games}}$ **b)** $\frac{48 \text{ cookies}}{4 \text{ batches}}$ **c)** $\frac{24 \text{ bananas}}{4 \text{ bunches}}$
d) $\frac{216 \text{ blueberries}}{6 \text{ baskets}}$ **e)** $\frac{4 \text{ burgers}}{15 \text{ dollars}}$ **f)** $\frac{12 \text{ miles}}{5 \text{ days}}$
2. $\frac{68 \text{ miles}}{2 \text{ hours}}$ **3.** $\frac{650 \text{ toasters}}{5 \text{ hours}}$ **4.** $\frac{1081 \text{ miles}}{3 \text{ hours}}$

Exercises 4.5

1. a) 6 pieces per bag **b)** 4 laps per mile **c)** 6 minutes per video **d)** 20 pages per chapter **e)** 16 flowers per bouquet **f)** 12 cookies per batch **2.** 6 miles per hour **3.** 5 gallons per minute **4.** $12 per hour **5.** 25 miles per hour **6. a)** $2.50 per box of cookies **b)** $1.65 per pound of apples **c)** $1.80 per pound of broccoli **d)** $2.50 per box of granola bars **7.** $4.78 per gallon of gas. **8.** $3.42 per pound of cereal.

Exercises 4.6

1. 250 pages **2.** 9.375 miles **3.** Freddie **4.** Lauren **5.** Gina **6.** 50 questions **7.** 60 miles **8.** $45

Self-Assessment – Chapter 4

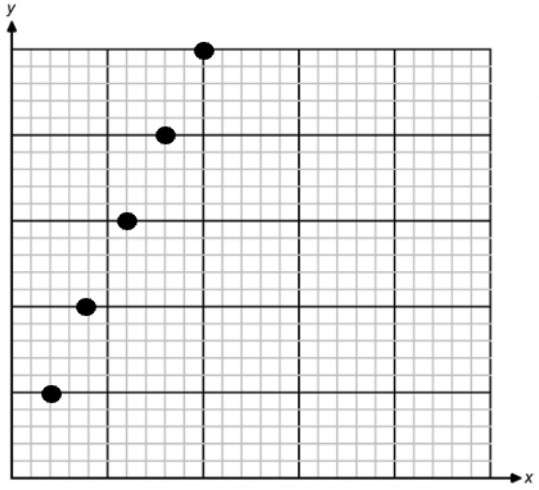
1.

The ratio of	Words	Ratio	Fraction
a) dogs to birds	4 to 5	4 : 5	$\frac{4}{5}$
b) fish to cats	6 to 3	6 : 3	$\frac{6}{3}$
c) cats to birds	3 to 5	3 : 5	$\frac{3}{5}$
d) dogs to all animals	4 to 18	4 : 18	$\frac{4}{18}$
e) fish to all animals	6 to 18	6 : 18	$\frac{6}{18}$
f) birds to cats	5 to 3	5 : 3	$\frac{5}{3}$

2. a) 10 : 4, 20 : 8, 25 : 10
b) 3 : 21, 5 : 35, 7 : 49 **3. a)** 60:15 **b)** 2:8
4. Answers will vary.
5.

Pansies (x)	Roses (y)
2	5
4	10
6	15
8	20
10	25

6.



7. a) $\frac{18 \text{ points}}{3 \text{ games}} \mid \frac{6\ points}{game}$ **b)** $\frac{\$27}{9 \text{ burgers}} \mid \frac{\$3}{1\ burger}$
8. 448 pages **9.** $4 **10.** Greg **11.** $72

Performance Task – Chapter 4

1. 2.8 miles **2.** 1.4 miles
3. 5.4 miles **4.** Shelly is the fastest turtle.

CHAPTER 5

Exercises 5.1
1. a) False **b)** True **c)** True **d)** False
e) False **f)** True **2. a)** $n = 15$ **b)** $n = 9$
c) $n = 10$ **d)** $n = 4$ **e)** $n = 7$ **f)** $n = 40$
3. $\frac{3}{2} = \frac{36}{n}, n = 24$

Exercises 5.2
1. a) 45% **b)** 77% **c)** 23% **d)** 0%
e) 145% **f)** 83% **2. a)** 50%, $\frac{1}{2}$, 0.5
b) 75%, $\frac{3}{4}$, 0.75 **c)** 38%, $\frac{38}{100}$, 0.38
d) 82%, $\frac{82}{100}$, 0.82 **e)** 7%, $\frac{7}{100}$, 0.07

Exercises 5.3
1. a) 0.21 **b)** 0.09 **c)** 0.67 **d)** 0.01
e) 1.75 **f)** 1.4 **2. a)** $\frac{8}{50}$ **b)** $\frac{37}{100}$ **c)** $\frac{1}{25}$ **d)** $\frac{98}{100}$
e) $\frac{3}{100}$ **f)** $\frac{18}{25}$ **3. a)** 3% **b)** 14% **c)** 76%
d) 8% **e)** 104% **f)** 123% **4. a)** 9% **b)** 11%
c) 133% **d)** 104% **e)** 12.5% **f)** 8.6%
5.

Fraction	Decimal	Percent
$\frac{29}{100}$	0.29	29%
$\frac{7}{100}$	0.07	7%
$1\frac{1}{4}$	1.25	125%
$\frac{3}{10}$	0.30	30%
$\frac{2}{5}$	0.4	40%
$\frac{3}{8}$	0.375	37.5%
$\frac{83}{100}$	0.83	83%
$1\frac{54}{100}$	1.54	154%

Exercises 5.4
1. a) 5 **b)** 50 **2. a)** 7 **b)** 70 **c)** 350
3. a) 30 **b)** 90 **c)** 150 **4. a)** 12 **b)** 7
c) 9 **d)** 8 **e)** 15 **f)** 120 **g)** 35 **h)** 155
5. a) \$17.50 **b)** \$367.50 **6. a)** Yes
b) Answers will vary.

Exercises 5.5
1. a) 16 **b)** 30 **c)** 100 **d)** 105 **e)** 72
f) 73.5 **g)** 13.5 **h)** 100 **i)** 3 **j)** 27

Exercises 5.6
1. 24 **2.** 150 **3.** 210 **4.** 20% **5.** 52.5
6. 25% **7.** 40 **8.** 84 **9.** 2 **10.** 18

Self-Assessment – Chapter 5
1. B & C **2. a)** $n = 28$ **b)** $n = 12$
3. a) 23% **b)** 87% **4.** 63%, $\frac{63}{100}$, 0.63
5.

Fraction	Decimal	Percent
$\frac{3}{100}$	0.3	3%
$\frac{28}{100}$	0.28	28%
$\frac{46}{100}$	0.46	46%
$\frac{154}{100}$	1.54	154%

6. a) 9 **b)** 3 **7.** 150 **8.** 300

Performance Task – Chapter 5
1. a) 85% **b)** 18 **c)** 15 **d)** 3 more
2. 42.5 points

CHAPTER 6

Exercises 6.1
1. a) $n + 2$ **b)** $n - 6$ **c)** $3 \times n$ **d)** $5 \times n$
e) $n \div 5$ **f)** $n \div 8$ **2. a)** $n + 9$ **b)** $9 + n$
c) Yes, Claire is correct. **3. a)** $n \times 4$ **b)** $4 \times n$
c) Yes, Claire is correct. **4. a)** $n - 5$ **b)** $5 - n$
c) No. The answers will be opposites for any given value of n. **5. a)** $n + 19$ **b)** $n + 21$
c) $3 \times n + 7$ **d)** $5 \times n - 17$
6. a) $12 + 9 \times (n - 1)$ **b)** 435
7. a) $16 - 3 \times (n - 1)$ **b)** -86
8. a) a number plus five **b)** a number plus eight
c) a number minus eleven
d) a number minus seven **e)** two times a number **f)** a number times eight
g) three times a number plus seven
h) six times a number minus nine

Exercises 6.2
1. a) 25 **b)** 35 **c)** 55
2. a) $100 - 10 \times (n - 1)$ **b)** 70 **c)** 10
3. a) $17 + 11 \times (n - 1)$ **b)** 61 **c)** 83
4. a) $208 - 7 \times (n - 1)$ **b)** 180 **c)** 96
5. a) 800, 400, 200 **b)** $800 \div 2^{n-1}$
c) 3.125 **6.** 178 **7.** 27

Exercises 6.3
1. a) $n + 19$ **b)** $19 + n$ **2. a)** $n - 8$
b) $8 - n$ **c)** $n \times 4$ **d)** $4 \times n$ **e)** $n \div 6$

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f) $6 \div n$ **3. a)** $n \times 19$ **b)** $n + 21$ **c)** $n \div 3$
d) $n - 17$ **e)** $15 \times n$ **f)** $25 - n$ **4. a)** $n \times -2$
b) $n - (-7)$ **c)** $-5 + n$ **d)** $n \div (-6)$ **e)** $-2 - n$
f) $-12 + n$ **5.** Yes, the order of the addends does not matter. The result will be the same.
6. a) The difference of a number and fourteen. **b)** The sum of a number and twelve. **c)** The product of two and a number. **d)** The quotient of five and a number. **e)** The difference of twenty-five and a number. **f)** The sum of fifty-four and a number. **g)** The product of a number and seven. **h)** The quotient of a number and eight.

Exercises 6.4
1. a) 26 **b)** 19 **c)** 24 **d)** 15 **e)** 18 **f)** 9 **g)** 5
h) 3 **2. a)** 16 **b)** 11 **c)** 2 **d)** 6 **e)** 0 **f)** 6
g) 18 **h)** 4 **3. a)** 6 **b)** 49 **c)** 15 **d)** 66 **e)** 2
f) 4 **g)** 32 **h)** 21 **i)** 16 **j)** 3 **4. a)** 80
b) 15 **c)** 12 **d)** 0 **e)** 5 **f)** 52 **g)** 23
h) 75 **5. a)** 17 **b)** 4 **c)** 17 **d)** 3

Exercises 6.5
1. a) 25 **b)** 16 **c)** 27 **d)** 8 **2. a)** 29 **b)** 5
c) 55 **d)** 15 **3. a)** 48 **b)** 162 **c)** 1 **d)** 8
4. a) 0 **b)** 0 **c)** 0 **d)** 0 **5. a)** 1 **b)** 1 **c)** 9
d) 2 **6. a)** 4 **b)** 0 **c)** 85 **d)** 0 **7. a)** 6 **b)** 5
c) 66 **d)** 1 **8. a)** s^2 **b)** 144 cm^2 **9.** 196 in^2
10 a) s^3 **b)** 64 cm^3 **11.** 27 in^3

Self-Assessment – Chapter 6
1. a) $155 - 4 \times (n - 1)$ **b)** 147 **c)** 127
2. a) $n - 15$ **b)** $n + 24$ **c)** $9 \times n + 6$
d) $7 \times n - 19$ **3. a)** The first number is twenty-one and each number is five more than the previous number.
b) $21 + 5 \times (n - 1)$ **4. a)** $n \times 16$ **b)** $n + 21$
c) $n \div 8$ **d)** $n - 50$ **5. a)** 10 **b)** 31 **c)** 10
d) 19 **6. a)** 44 **b)** 3 **c)** 18 **d)** 0 **e)** 10
f) 61 **7. a)** 162 **b)** 79 **c)** 2 **d)** 72
8. 64 ft^3

Performance Task – Chapter 6
1. $2.60 \times n$ **2.** $2.60; 2; $20.80 **3.** $14.60
4. $29.45

CHAPTER 7

Exercises 7.1
1. a) $4x, 5x$ **b)** $2m, -3m$ **c)** $5x, -3x$
d) $2y, -7y$ **2. a)** $9x$ **b)** $-m$ **c)** $2x$ **d)** $-5y$
3. a) $8x + 12$ **b)** $7c + 6$ **c)** $7m + 8$
d) $3y - 8$ **4. a)** b **b)** $16n$ **c)** x **d)** $-6y$
e) $2a$ **f)** $-10y$ **5. a)** $2x - 5$ **b)** $3m - 19$
c) $6n + 25$ **d)** $2 - 5x$ **e)** $15 + 2c$ **f)** $-6 - 5p$
6. a) $11x + 8$ **b)** $2n - 14$ **c)** $-2m + 3$ **d)** -1
e) $6p + 1$ **f)** $3a - 4$ **g)** $t - 6$ **h)** $-k - 3$
i) $-2x - 8$ **j)** $-5q - 15$

Exercises 7.2
1. a) $6m$ **b)** $20y$ **c)** $42p$ **d)** $8s$ **e)** $-6b$
f) $-15c$ **g)** $-14q$ **h)** $-24n$ **2. a)** $15x$ **b)** $14y$
c) $12y$ **d)** $-12m$ **e)** $-30x$ **f)** $-14q$
3. a) $8x + 20$ **b)** $21m + 42$ **c)** $10p + 35$
d) $18n + 24$ **e)** $10b - 6$ **f)** $27k - 36$
g) $48h - 16$ **h)** $36m - 4$ **4. a)** $-6x - 10$ **b)** $-8h - 28$ **c)** $-15m - 24$ **d)** $-14y + 21$ **e)** $-30n + 5$
f) $-6f + 48$

Exercises 7.3
1. a) 5 **b)** 7 **c)** 8 **d)** 6 **2. a)** 8 **b)** 3 **c)** 30
d) 32 **e)** 9 **f)** 9 **3. a)** $n + 6 = 9$ **b)** $n - 14 = 24$ **c)** $n - 6 = 3$ **4. b)** $5 \times n = 25$, $n = 5$
c) $n \times 3 = 24$; $n = 8$ **d)** $n \times 4 = 24$; $n = 6$
e) $35 \div n = 7$; $n = 5$

Exercises 7.4
1. a) 6 **b)** 6 **c)** 2 **d)** 2 **e)** 8 **f)** 12 **g)** 8
h) 11 **2. a)** 13 **b)** 20 **c)** 32 **d)** 13
3. a) 43 **b)** 37 **c)** 21 **d)** 43 **4. a)** -19
b) 24 **c)** -17 **d)** -1 **5.** 43 **6.** -27 **7.** -12
8. 6
9.

10. Answers will vary.
11. a) 2 **b)** 5 **c)** 10 **d)** 17

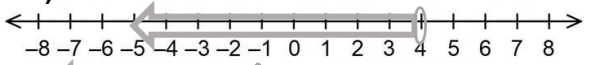
Exercises 7.5
1. a) 7 **b)** 6 **c)** 5 **d)** 7 **e)** 3 **f)** 5 **2. a)** 9
b) 6 **c)** 6 **d)** 7 **3. a)** -8 **b)** -7 **c)** -12 **d)** -6
e) -9 **f)** -12 **4. a)** 5 **b)** 9 **c)** 12 **d)** 8 **5.** 24
6. 22 **7.** 27 **8. a)** $60 \times h = 540$ **b)** The electrician worked 9 hours. **9. a)** $0.12 \times p = 9$
b) 75 newspapers were delivered.
10. a) $13 \times l = 1404$ **b)** Jeb mowed 108 lawns.
11. $x - 12 = 8$ **12.** $x + 7 = 15.5$ **13.** $\frac{3}{2}x = 4$

Exercises 7.6

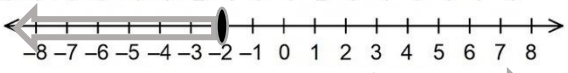
1. $\frac{11}{20}$ **2. a)** $\frac{1}{5}$ **b)** $\frac{7}{20}$ **c)** $\frac{1}{8}$ **d)** $-\frac{3}{8}$ **e)** $-\frac{5}{12}$
f) $-\frac{11}{40}$ **3. a)** $\frac{3}{5}$ **b)** $\frac{13}{20}$ **c)** $\frac{5}{8}$ **d)** $\frac{7}{8}$ **4. a)** $\frac{3}{5}$ **b)** $\frac{3}{4}$
c) $\frac{5}{6}$ **d)** $\frac{1}{3}$ **5. a)** $\frac{8}{15}$ **b)** $-\frac{11}{35}$ **c)** $\frac{7}{12}$ **d)** $\frac{31}{40}$

Exercises 7.7

1. a) $x \leq 1$ **b)** $x > -2$ **c)** $x \geq 0$
2. a)



b)



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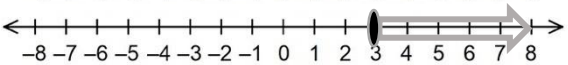
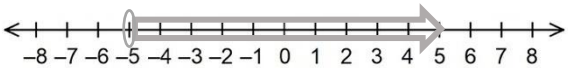
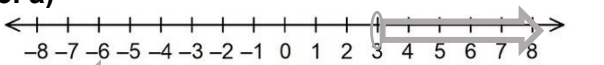


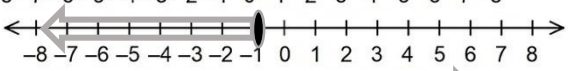
d)



3. a)



b)



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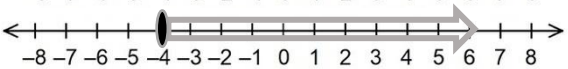
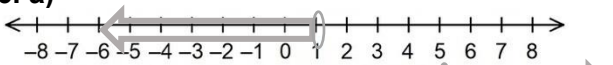
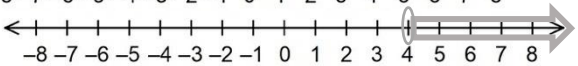


Self-Assessment – Chapter 7

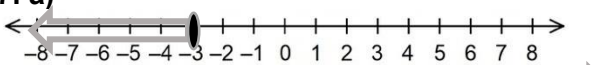
1. a) 8*b* **b)** 4*n* **c)** -16*x* **d)** -7*y* **e)** -18*a*
f) -10*y* **2. a)** 12*x* **b)** 10*y* **c)** -32*y* **d)** -18*m*
e) 5*m* – 35 **f)** 3*x* + 24 **g)** -4*b* – 24
h) -7*a* + 56 **3. a)** 22 **b)** 20 **c)** 14 **d)** -21
e) 12 **f)** 4 **g)** 3 **h)** 5 **4. a)** $\frac{8}{15}$ **b)** $\frac{1}{28}$ **c)** $\frac{19}{24}$
d) $\frac{13}{24}$ **5. a)** $x \geq -3$ **b)** $x < 0$
6. a)



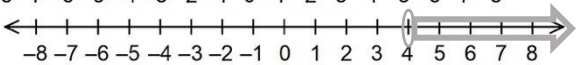
b)



7. a)



b)



Performance Task – Chapter 7

Mr. Bartek will take his class to the Art Studio.

CHAPTER 8

Exercises 8.1

1. a) 50° **b)** 68° **c)** 50° **d)** 90° **2. a)** 65°
b) 115° **c)** 90° **d)** 99° **3.** 69° **4.** 45°
5. 1555° **6.** 25° **7.** 1,080° **8.** 1,440°

Exercises 8.2

1. a) 12 ft^2 **b)** 17.5 in^2 **c)** 24 cm^2 **d)** 48 yds^2
2. a) 72 ft^2 **b)** 35 m^2 **c)** 5.44 in^2 **d)** 15 mi^2
3. a) 13.6 ft^2 **b)** 30 in^2 **c)** 20 m^2 **d)** 100 in^2
4. 9 m^2 **5.** 336 in^2 **6.** 36 yds^2 **7.** 6.25 m^2
8. 26.4 yds^2

Exercises 8.3

1. 91 in^2 **2. a)** 72 in^2 **b)** 270 ft^2
3. a) 94.5 ft^2 **b)** 77.5 yds^2 **c)** 370.5 in^2
4. a) h = 9 in **b)** h = 5 in

Exercises 8.4

1. a) 452.16 cm^2 **b)** 153.86 cm^2
c) 19.625 m^2 **d)** 45,216 m^2
2. a) 530.66 m^2 **b)** 153.86 m^2
c) 94.985 km^2 **d)** 7,850 km^2
3. 113.04 yds^2 **4.** 314 in^2 **5.** 10 inches

Exercises 8.5

1. a) 400 in^2 **b)** 216 ft^2 **2.** 30.75 yds^2
3. a) 220.5 yds^2 **b)** 103 ft^2

Self-Assessment – Chapter 8

1. a) 54° **b)** 48° **c)** 54° **d)** 104°
2. 3 cm **3.** 40.5 yds^2 **4.** 6 in **5.** 120 cm^2
6. 337.5 in^2 **7.** 615.44 in^2 **8.** 200 ft^2

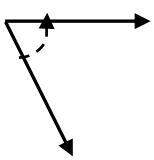
Performance Task – Chapter 8

1. 250 yds^2 **2.** Rectangles on left and right are 3 × 16 yards, and the rectangles on the top and bottom are 3 × 25 yards.
3. 246 yds^2

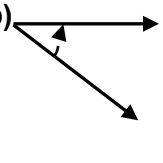
CHAPTER 9

Exercises 9.1

1. a) reflex **b)** right **c)** obtuse **d)** acute
2. a) 90° to 180° **b)** 0° to 45°
c) 270° to 360° **d)** 90° to 180°
3. a) 60° **b)** 300°
4. a)



b)



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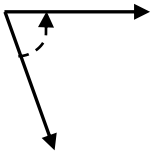
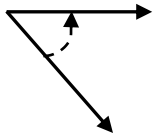
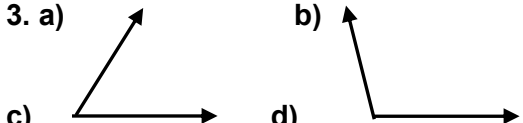
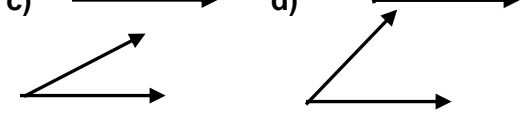
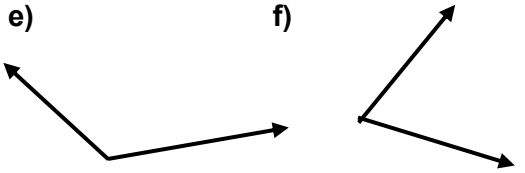
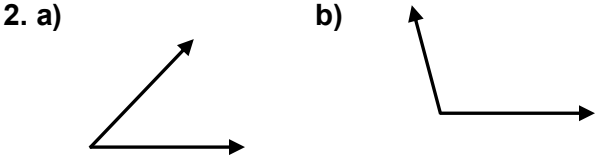
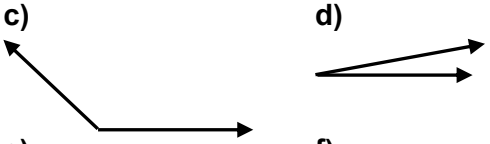
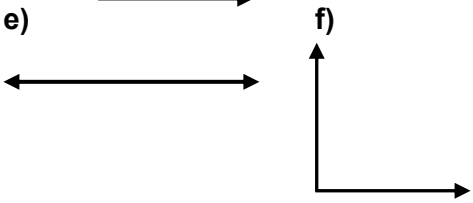
c)  **d)** 

Exercises 9.2
1. a) 50° **b)** 130° **2. a) 45°** **b)** 30° **c)** 109°
d) 179° **e)** 124° **f)** 90°
3. a) **b)** 
c) **d)** 
e) **f)** 
4. Estimates may vary. **a)** Actual: 25°
b) Actual: 70° **c)** Actual: 25° **d)** Actual: 115°

Exercises 9.3
1. a) 0º to 45°; 35° **b)** 0° to 45º; 22°
c) 155°; 25° **d)** 90°; 90°; 90° **2. a)** 35°
b) 75° **c)** 103° **d)** 122° **3. b)** 23° **c)** 83°
d) 36° **e)** 3° **f)** 45° **g)** 77.5° **4. a)** 130°
b) 55° **c)** 172° **d)** 5° **e)** 78° **f)** 124.5°

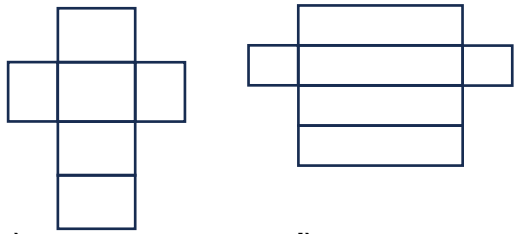
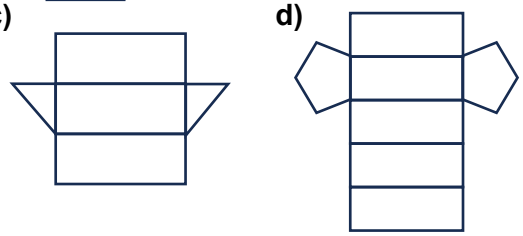
Self-Assessment – Chapter 9
1. a) 45° to 90°; 50° **b)** 0° to 45°; 30°
2. a) **b)** 
c) **d)** 
e) **f)** 
3. 90°, 180° **4. a)** 15° **b)** 137.3°
c) 44.5° **5. a)** 25° **b)** 17.7° **c)** 52.5°
6. No. The angles must add to 90°.

Performance Task – Chapter 9
Angle 1 = 45°, Angle 2 = 45°,
Angle 3 = 60°, Angle 4 = 30°,
Angle 5 = 60°, Angle 6 = 45°

CHAPTER 10

Exercises 10.1
1. a) Volume by counting = 16 cubes, length = 4 units, width = 1 unit, height = 4 units, length × width × height = 16 cubes
b) Volume by counting = 15 cubes, length = 5 units, width = 1 unit, height = 3 units, length × width × height = 15 cubes
c) Volume by counting = 13.5 cubes, length = 4.5 units, width = 1 unit, height = 3 units, length × width × height = 13.5 cubes
2. 120 in^3 **3. a)** 122.01 ft^3 **b)** 420.224 cm^3
4. a) $\frac{1}{64}$ cm^3 **b)** $\frac{9}{80}$ yd^3

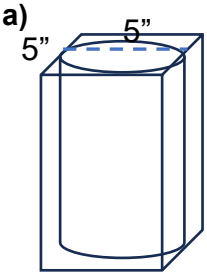
Exercises 10.2
1. a) 45 in^3 **b)** 24 ft^3 **c)** 49.3 ft^3 **d)** 14.08 yd^3
2. a) 63π in^3 or 197.82 in^3 **b)** 49.504 in^3
c) 24.057 ft^3 **d)** 0.952 yd^3 **3.** 92.4 ft^3
4. 232.16 in^3 **5.** 3.375 in^3 **6.** A

Exercises 10.3
1. a) **b)** 
c) **d)** 
2. a) 262 in^2 **b)** 25.52 in^2 **c)** 30.4 yd^2
d) 50.22 ft^2 **3. a)** 528 cm^2 **b)** 368 ft^2
c) 836 m^2 **d)** 271 cm^2

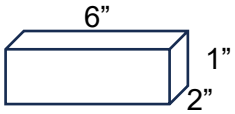
Exercises 10.4
1. 500π cm^2 or 1,570 cm^2 **2. a)** 448π ft^2 or 1,344 ft^2 **b)** 240π yd^2 or 753.6 yds^2
c) 22.5π m^2 or 70.65 m^2

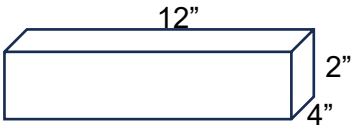
d) 64.4π in^2 or 202.216 in^2

Self-Assessment – Chapter 10
1. a) 77.32 ft^2; 41.976 ft^3 **b)** 886 cm^2; 1200 cm^3 **c)** 500π cm^2; 1500π cm^3
2. 125.55 ft^3 **3. a)** Can B has the greater volume. **b)** Can B has the greater surface area. **4. a)** **b)** 48.375 in^3



Performance Task – Chapter 10
1.





2. 8 small boxes can fit snugly into 1 medium box. **3. a)** 8” long, 12” wide and 4” high. **b)** 64 small boxes will fit snugly into the large box.

CHAPTER 11

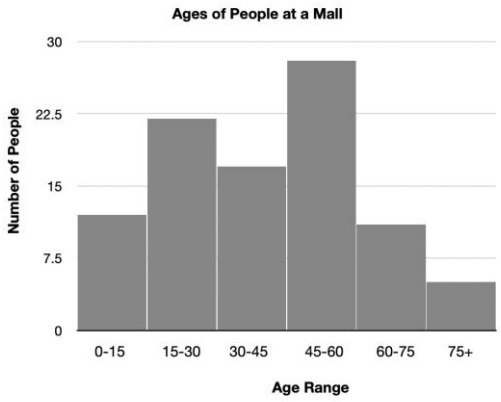
Exercises 11.1
1. population = 450, sample = 50
2. a) population **b)** population
c) sample **3.** Collect data from a sample of the population since there are too many teachers in the state to survey all of them.
4. a) No. Survey only the grade 7 students since they will be going on the field trip.
b) On which field trip would you like to go?
5. a) No. Student might think they are to guess Gary’s age. **b)** Ask 10 students in each class.

Exercises 11.2
1. a) 9.2 **b)** 34 **c)** 43 **d)** 28 **2. a)** 17
b) 45 **c)** 33 **d)** 31 **3. a)** 3 **b)** 12 **c)** 33
d) 17 **4. a)** 66, 67, 67, and 89 **b)** 64, 65, 79
c) 70.6, 67, 54 **5.** 8.28, 8, 8
6. $14.92, $14.75, $12.65
7. a) 77, 73, 73 **b)** Simran should use the median since mean is affected by the number 99.

Exercises 11.3
1. Yes, since not many students in the 6th grade are more than 6 ft tall.
2. No, since some grades more than 84 and some are less.
3. a) 8 **b)** The student didn’t study, missed the lessons for that quiz, or did not feel well when the student wrote the quiz.
4. 86, 88.5, 89 **5. a)** 78, 88, 89 **b)** The mean was affected by the greatest amount.
c) Yes, since it greatly affected the mean and it is quite a bit lower than the other marks. **6.** 149.125, 148.5, 125 **7. a)** 290, 149, 125
b) The mean was affected by the greatest amount. **c)** Yes, since it quite a lot more than the other amounts. **8. a)** $381,878, $316,750, $299,000 **b)** $921,500
c) $321,920, $312,500, $299,000; The mean was affected by the greatest amount when the outlier is removed.
d) The median would be used since its value is not greatly affected by any outliers.

Exciting Extras
9. a) $252,378, $272,890, $269,000
b) $1,500 **c)** $280,253.33, $276,780, $269,000; The mean is affected by the greatest amount when the outlier is removed.

Exercises 11.4
1. a) 1 mile **b)** 1.75 miles **c)** 2.25 hours
d) between 2 and 3 hours
2. a)



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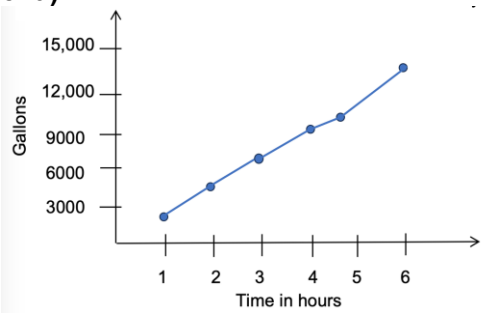
b) Very easy. The values are easy to see on the histogram. **c)** 79; 12 + 22 + 17 + 28 = 79

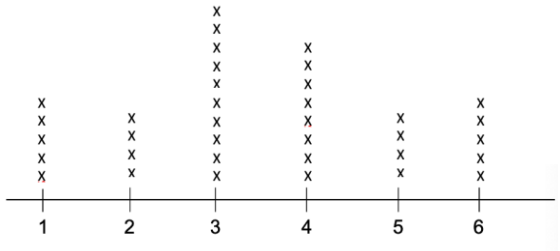
3. a)



b) 6,240 gal **c)** 3.5 hours **d)** No, the data shows how the number of gallons continuously changes over time. A line graph is designed to show the relationship between two variables. A histogram is designed to show how often data falls within a specified interval.

Exercises 11.5

1. a) **b)** 6



2. a) 43 **b)** 26 **3. a)** 34 **b)** 19

4. a) 5, 8, 9, 11, 12, 13, 14, 14, 25, 27, 32, 35

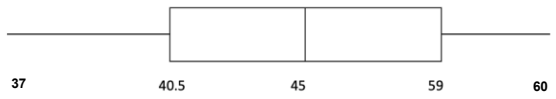
b) 30 **c)** 16 **5.** 7 **6.** 11 **7.** 5

Exercises 11.6

1. a) 45 **b)** 77 **c)** 50% **d)** 25% **e)** 25%

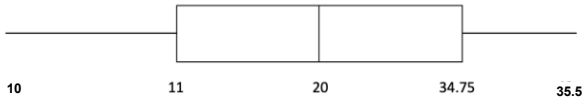
2. a) 45 **b)** 40.5 **c)** 59

d)



50% of the data are in the box part of the box plot. **3. a)** 23.75

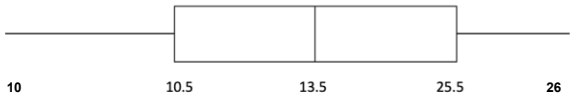
b)



4. a) 5, 8, 9, 11, 12, 13, 14, 14, 25, 27, 32, 35

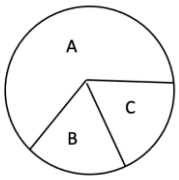
b) 15

c)



Exercises 11.7

1. a)



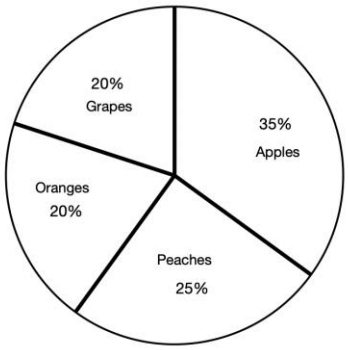
b) Company A is more than half and Companies B and C are about the same.

2. Answers will vary. **3. a)** AB-, B-

b) 275,650 **c)** 546,000,000

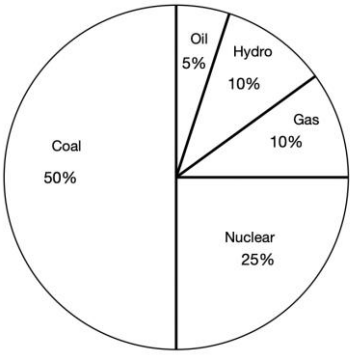
4. North America – 546 million, South America – 468 million, Oceania – 78 million, Asia – 4.68 billion, Africa – 1.248 billion, Europe – 780 million

5.



6. No. Each wedge is 25% of the circle.

7.



Exercises 11.8

1. a) $18.27, $17.90, $17.25 **b)** Answers will vary. **2. a)** 3 cm **b)** 4.5 cm **c)** 7 cm

d) 12 cm **e)** Answers will vary.

Exercises 11.9

1. a) There are 3 possible outcomes: a white marble, a red marble, and a blue marble. **b)** There are 10 possible outcomes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. **c)** There are 4 possible outcomes: 1, 2, 3, 4. **2. a)** P(1) = $\frac{17}{100}$ **b)** P(2) = $\frac{13}{50}$ **c)** P(3) = $\frac{39}{100}$ **d)** P(4) = $\frac{9}{50}$

3. a) P(club) = $\frac{11}{50}$ **b)** P(diamonds) = $\frac{27}{100}$ **d)** P(heart) = $\frac{13}{50}$ **e)** P(spade) = $\frac{1}{4}$

4. Answers will vary.

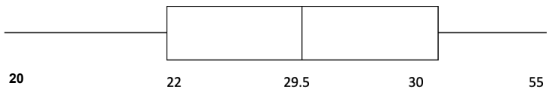
Exercises 11.10

1. a) 1 **b)** 0 **2. a)** $\frac{1}{2}$ **b)** $\frac{1}{2}$ **3. a)** $\frac{1}{2}$ **b)** $\frac{1}{13}$ **c)** $\frac{1}{4}$ **d)** $\frac{1}{4}$ **4. a)** $\frac{1}{6}$ **b)** $\frac{1}{2}$ **c)** $\frac{1}{2}$ **d)** 0 **5. a)** $\frac{1}{10}$ **b)** $\frac{1}{5}$ **c)** $\frac{3}{10}$ **d)** 0 **5. a)** $\frac{1}{2}$ **b)** $\frac{1}{2}$ **c)** $\frac{1}{10}$ **d)** $\frac{1}{5}$ **e)** $\frac{1}{2}$ **f)** $\frac{3}{5}$

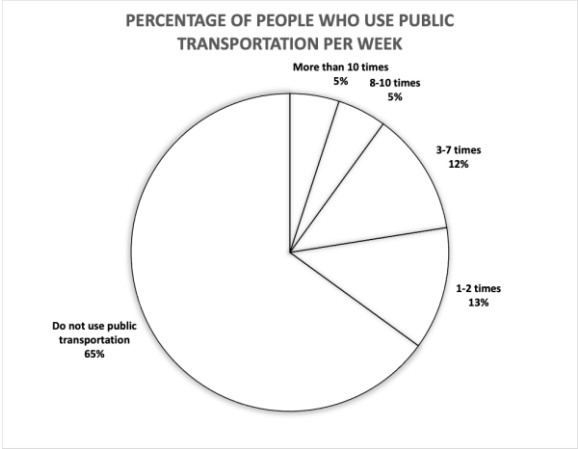
Self-Assessment – Chapter 11

1. a)

b) 6 km **c)** 4.5 hours **2.** 28.7, 29.5, 30; 40; 8;



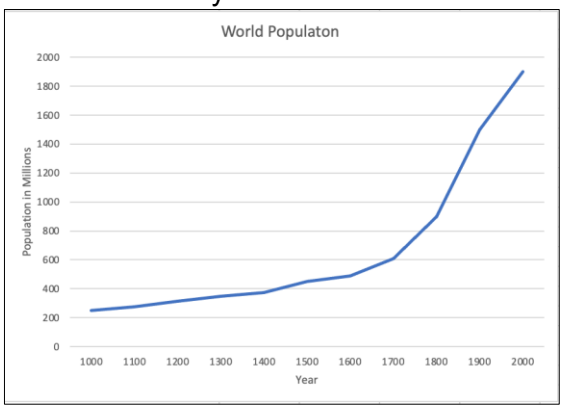
3.



4. a) $\frac{1}{4}$ **b)** $\frac{1}{2}$ **c)** $\frac{1}{13}$ **d)** $\frac{3}{16}$ **e)** $\frac{2}{5}$

Performance Task – Chapter 11

1. Answers will vary.



2. Answers will vary.

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