ANSWERS TO EXERCISES AND ASSESSMENTS

CHAPTER 1

Exercises 1.1

1. a) 7 is greater than 2 **b)** -5 is less than 4
c) 0 is greater than -3 **d)** -2 is less than -1
e) -3 is greater than -6
2. a) 4 is greater than or equal to x
b) -3 is less than or equal to x
c) x is greater than or equal to 2
d) x is greater than -3 **e)** x is less than or equal to -1 **3. a)** < **b)** > **c)** > **d)** >
e) = **f)** < **g)** > **h)** > **i)** > **j)** < **k)** <
l) > **4. a)** -11, -10, 0, 3, 6 **b)** -20, -6, 6, 12, 20 **c)** -10, -5, -2, 1, 2 **d)** -3, -1, 6, 7, 18
e) -100, -99, 0, 25, 75
5. a) 6, 3, 0, -10, -11 **b)** 20, 12, 6, -6, -20
c) 2, 1, -2, -5, -10 **d)** 18, 7, 6, -1, -3
e) 75, 25, 0, -99, -100 **6.** Answers may vary. **7.** Answers may vary.

Exercises 1.2

1. a) 99 **b)** 62 **c)** 22 **d)** 4 **e)** 77
f) 1000 **g)** -2 **h)** -3 **i)** -10 **2. a)** | -10 |
b) | -26 | **c)** | -10 | **d)** | -10 | **e)** | 73 |
f) | -100 | **3. a)** > **b)** > **c)** < **d)** =
e) < **f)** < **g)** = **h)** = **i)** > **j)** =
4. a) -|-6 |, -3, | 2|, 3, |-4 |, 10
b) -100, -| -25 |, 0, | -24 |, 25, | -99 |

Exercises 1.3

1. a) 5 **b)** -3 **c)** 2 **2. a)** 2 **b)** -5 **c)** 3
3. Answers may vary.

Exercises 1.4

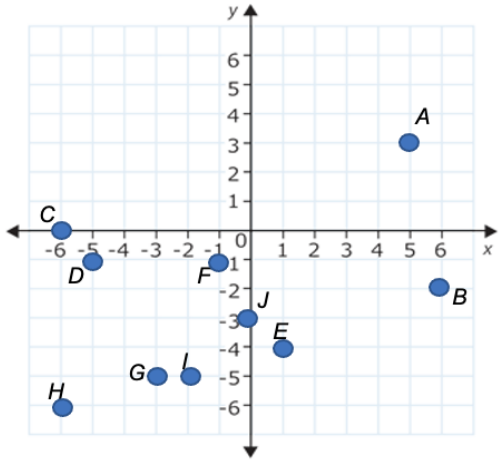
1. a) left **b)** left **c)** right **d)** right
e) left **f)** right **2. a)** 1 **b)** -2 **c)** -5
d) 2 **e)** 5 **f)** -6 **3. a)** -12 **b)** +55
c) -2 **d)** -25 **e)** -25 **f)** +27 **g)** +88
4. a) +3 **b)** +30 **c)** -56 **d)** -14
5. a) 27 **b)** -61 **c)** 80 **d)** -88
e) -97 **f)** 96 **g)** 76 **h)** -39
6. (top to bottom) **a)** 9, 3, 3, 9 | -3, -9, -9, -3 **b)** 10, -2, -2, 10 | 2, -10, -10, 2
7. a) -1 **b)** 3 **c)** -9 **d)** 16 **e)** -5 **f)** 5
g) -5 **h)** 25 **8. a)** -41 **b)** 40 **c)** 37
d) -152 **e)** -10 **f)** -20

Exercises 1.5

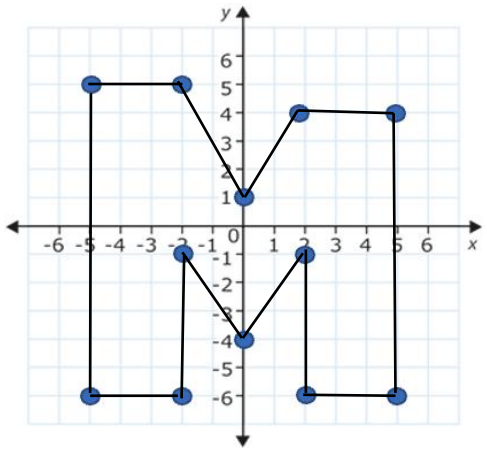
1. a) + **b)** - **c)** - **d)** - **e)** + **f)** – **2. a)** -14
b) -40 **c)** 32 **d)** -15 **e)** 70 **f)** 9 **g)** -200
h) 44 **i)** -60 **j)** -55 **k)** 144 **l)** -64 **m)** 45
n) -81 **3. a)** 10 **b)** 10 **c)** 2 **d)** -5 **e)** -9
f) -7 **g)** 7 **h)** -6 **i)** -7 **j)** -1 **k)** 8 **l)** -11
4. Incorrect answers are A, D, E, F, G, H, J.

Exercises 1.6

1. a) (2, 5) **b)** (6, 2) **c)** (6, -2) **d)** (2, -3)
e) (-3, 5) **f)** (-5, 2) **g)** (-3, -3) **h)** (-6, -1)
2. a) M **b)** N **c)** L **d)** K **3.** Answers will vary.
4.



5. a) Answers will vary. **b)** Q(0, 3) R(-3, 0) S(0, -3) **c)** Answers will vary.
6. D(-4, 6) E(-3, 2) F(-5, 1) G(-3, -3) H(-5, -5) I(2, -3) J(5, -2) K(1, 5) L(5, -5) M(0, 1) N(2, 0) O(5, 4) P(0, -6) Q(-5, -1)
a) 0 **b)** It sits on the x-axis.
7.

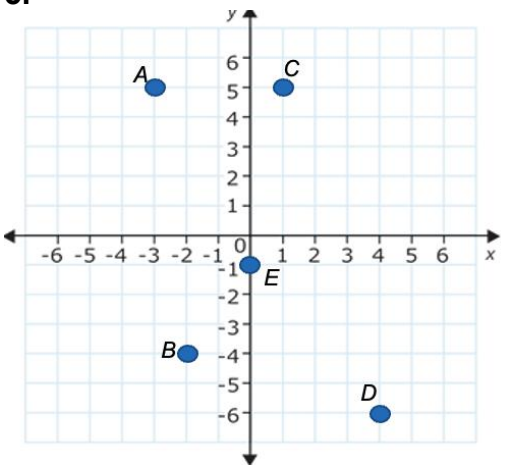


a) M **b)** 3 **c)** 2 **d)** 3 **e)** 4

Self-Assessment – Chapter 1

1. Answers will vary. **2.** A number's distance from zero **3.** Yes, they can. Answers will vary. **4.** 5, 3, 2, 0, -2, -6, -7

5.



C is in Quadrant I, A is in Quadrant II, B in is Quadrant III, and D is in Quadrant IV. E is in both Quadrant III and Quadrant IV (on the line between the two quadrants).

6. a) False **b)** True **c)** (0, 0) **d)** x-axis

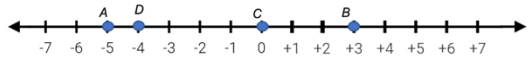
Performance Task – Chapter 1

Answers will vary.

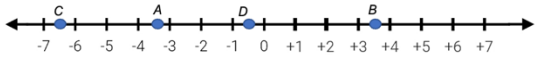
CHAPTER 2

Exercises 2.1

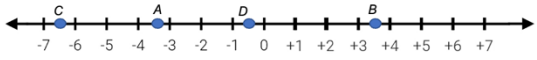
1.



2.



3.



4. a) They are identical. **b)** Answers may vary. **5.** A = $-6\frac{1}{4}$, -6.25; B = $-3\frac{1}{4}$, -3.25; C = $1\frac{1}{4}$, 1.25; D = $5\frac{3}{4}$, 5.75. **6.** Answers may vary. **7. a)** +3 **b)** +7 **c)** -5 **d)** $3\frac{1}{2}$ **e)** $-2\frac{1}{2}$ **f)** $9\frac{1}{2}$ **g)** +2.75 **h)** -4.25 **i)** +5.65 **8. a)** > **b)** > **c)** < **d)** < **e)** < **f)** < **g)** < **h)** < **i)** > **9. a)** < **b)** > **c)** < **d)** < **e)** < **f)** <

Exercises 2.2

1. a) $\frac{4}{7}$ **b)** $\frac{1}{5}$ **c)** $\frac{4}{9}$ **2. a)** $\frac{2}{7}$ **b)** $\frac{3}{5}$ **c)** $\frac{4}{9}$

3. a) $\frac{19}{28}$ **b)** $-\frac{1}{15}$ **c)** $-\frac{29}{36}$ **d)** $1\frac{8}{21}$ **e)** $-\frac{3}{20}$ **f)** $-\frac{8}{9}$

4. a) $\frac{1}{8}$ **b)** $\frac{13}{20}$ **c)** $-\frac{5}{9}$ **d)** $-\frac{1}{6}$ **e)** $1\frac{3}{20}$ **f)** $\frac{2}{9}$

5. a) $1\frac{9}{20}$ **b)** $-\frac{9}{10}$ **c)** $\frac{1}{12}$ **d)** $\frac{11}{21}$ **e)** $\frac{17}{20}$ **f)** $-\frac{1}{9}$

6. a) 3.7 **b)** -9.1 **c)** 6 **d)** -8.1 **e)** -1.9

Exercises 2.3

1. a) $\frac{3}{35}$ **b)** $-\frac{2}{15}$ **c)** $\frac{5}{27}$ **2. a)** $\frac{12}{35}$ **b)** $\frac{2}{5}$ **c)** $-\frac{2}{27}$

d) $-\frac{4}{15}$ **e)** $\frac{2}{21}$ **f)** $-\frac{1}{10}$ **g)** $-\frac{2}{45}$ **h)** $-\frac{10}{21}$ **i)** $\frac{3}{20}$

3. a) $\frac{15}{18}$ **b)** $-\frac{5}{6}$ **c)** $\frac{9}{20}$ **d)** $-\frac{14}{25}$ **e)** $-\frac{5}{8}$ **f)** $\frac{4}{5}$

g) $\frac{3}{4}$ **h)** $\frac{1}{4}$ **i)** $\frac{2}{3}$ **Exciting Extras** Answers will vary.

Exercises 2.4

1. a) $6\frac{26}{35}$ **b)** $-\frac{14}{15}$ **c)** $-1\frac{1}{9}$ **d)** $\frac{11}{15}$ **e)** $-2\frac{4}{15}$

f) $5\frac{16}{63}$ **2. a)** $1\frac{2}{15}$ **b)** $-3\frac{9}{20}$ **c)** $-6\frac{5}{12}$ **d)** $-1\frac{4}{35}$

e) $-4\frac{3}{20}$ **f)** $-1\frac{1}{6}$ **g)** $-6\frac{13}{20}$ **h)** $-12\frac{5}{6}$ **i)** $-1\frac{1}{3}$

3. a) $3\frac{11}{15}$ **b)** $-8\frac{2}{3}$ **c)** $-7\frac{1}{2}$ **d)** $-3\frac{3}{20}$ **e)** $-3\frac{2}{3}$

f) $-6\frac{40}{63}$ **g)** $12\frac{4}{15}$ **h)** $-1\frac{31}{35}$ **i)** $-7\frac{1}{24}$ **4. a)** $\frac{5}{12}$

b) $-1\frac{13}{32}$ **c)** $-1\frac{23}{49}$ **d)** $-\frac{56}{95}$ **e)** $-\frac{65}{148}$ **f)** $-\frac{10}{19}$

g) $\frac{33}{52}$ **h)** $\frac{1}{2}$ **i)** $-5\frac{10}{17}$

Exercises 2.5

1. a) $-\frac{1}{6}$ **b)** $-\frac{8}{15}$ **c)** $\frac{29}{45}$ **d)** $\frac{1}{5}$ **e)** 3 **f)** $\frac{11}{60}$

2. a) $-1\frac{1}{4}$ **b)** $\frac{1}{5}$ **c)** $-\frac{5}{18}$ **d)** $-\frac{2}{15}$ **e)** -5 **f)** $\frac{1}{60}$

3. a) $\frac{1}{12}$ **b)** $-\frac{5}{6}$ **c)** $\frac{4}{15}$ **d)** $\frac{1}{5}$ **e)** $\frac{4}{15}$ **f)** $\frac{2}{15}$

4. Answers will vary. **5.** Answers will vary.

Self-Assessment – Chapter 2

1. a) > **b)** < **c)** < **d)** > **e)** < **f)** >

2. a) $\frac{5}{28}$ **b)** $\frac{7}{15}$ **c)** $-\frac{4}{45}$ **d)** $-\frac{13}{28}$ **e)** $\frac{1}{21}$ **f)** $\frac{53}{72}$

3. a) $\frac{12}{35}$ **b)** $-1\frac{1}{6}$ **c)** $\frac{27}{32}$ **d)** $-\frac{2}{7}$ **e)** $-\frac{7}{8}$ **f)** $\frac{5}{9}$

4. a) $\frac{3}{7}$ **b)** $\frac{1}{7}$ **c)** $\frac{7}{60}$ **d)** $1\frac{7}{60}$ **5. a)** -4 **b)** $\frac{11}{60}$
6. a) Error is in the second row.
Solution = 40 **b)** Error is in the third row.
Solution = 33

Performance Task – Chapter 2
1. Answers will vary. **2.** $\$14\frac{1}{8}$

CHAPTER 3

Exercises 3.1
1.

Description	Words	Colon	Fraction
a) 10 dogs *to* 20 cats	10 to 20	1:2	$\frac{1}{2}$
b) 75 dollars *to* 35 dollars	75 to 35	15 : 7	$\frac{15}{7}$
c) 22 cars *to* 55 bikes	22 to 55	2 : 5	$\frac{2}{5}$
d) 25 apples *to* 25 oranges	25 to 25	1 : 1	$\frac{1}{1}$

2. a) \$1200 to \$250, 24 : 5, $\frac{24}{5}$
b) \$250 to \$1200, 5 : 24, $\frac{5}{24}$
3. a) 14 to 2, 7 : 1, $\frac{7}{1}$ **b)** 2 to 8, 1 : 4, $\frac{1}{4}$
c) 2 to 24, 1 : 12, $\frac{1}{12}$ **d)** 22 to 2, 11 : 1, $\frac{11}{1}$
4. a) \$2 **b)** 15 : 13 **c)** 13 : 15
d) No, because 13 is a prime number.
5. a) \$10 to \$30, 1 : 3, $\frac{1}{3}$
b) -\$45 to \$35, -9 : 7, $\frac{-9}{7}$
c) \$45 to -\$15, 3 : -1, $\frac{3}{-1}$

Exercises 3.2
1. a) $\frac{5\ toys}{1\ hour}$ **b)** $\frac{50\ miles}{1\ hour}$ **c)** $\frac{\$24}{1\ hour}$
2. $\frac{2.5\ pages}{1\ hour}$ **3.** $\frac{5\ hours}{1\ course}$ **4. a)** $\frac{12\ blinks}{1\ minute}$
b) $\frac{0.2\ blinks}{1\ second}$ **5. a)** $\frac{\$11.81}{1\ hour}$ **b)** \$11.81/h
6. 54mph **7.** \$5/lb

Exercises 3.3
1. a) A=$\frac{\$2}{1\ bottle}$ B = $\frac{\$2.33}{1\ bottle}$, store A is the better buy **b)** A = $\frac{\$0.60}{1\ can}$ B = $\frac{\$0.69}{1\ can}$, store A is the better buy **2. a)** Store B **b)** Store A
c) Store B **d)** Store B **3.** Jean had better mileage.

Exercises 3.4
1. a) True **b)** False **c)** True **2. a)** n = 5
b) n = 1 **c)** n = 7 **3. a)** n = 1 **b)** n = 1
c) n = 5 **4. a)** n = 5 **b)** n = 5 **c)** n = 49
d) n = 1 **e)** n = 50 **f)** n = 56 **5. a)** n = 27
b) n = 2.5 **c)** n = 493 **d)** n = 0.56
e) n = 492 **f)** n = 76

Exercises 3.5
1. a) $\frac{4}{100} = \frac{5}{n}$ **b)** Answers may vary.
c) n = \$125 **2. a)** $\frac{3}{5} = \frac{9}{n}$ **b)** Answers may vary. **c)** n = 15 ft **3.** Miguel has 45 red marbles. **4.** You will pay \$25.
5. Kim worked 6 hours. **6.** The car used 5 gallons of gas.

Exercises 3.6
1. a) 16 : 100 **b)** 38 : 100 **c)** 4 : 100
d) 98 : 100 **e)** 3 : 100 **f)** 7 : 100
2. a) 30% **b)** 14% **c)** 76% **d)** 8%
e) 12% **f)** 95% **3. a)** 0.21 **b)** 0.09
c) 0.67 **d)** 0.12 **e)** 0.48 **f)** 0.99
4. a) 9% **b)** 11% **c)** 33% **d)** 14%
5. a) 90% **b)** 55% **c)** 6% **d)** 56%
6. a) $\frac{33}{100}$ **b)** $\frac{3}{25}$ **c)** $\frac{3}{4}$ **d)** $\frac{19}{50}$ **7. a)** 0.2
b) 0.47 **c)** 0.23 **d)** 0.94 **8. a)** 0.35
b) 0.2 **c)** 0.26 **d)** 0.4
9.

Ratio	Fraction	Decimal	%
29 : 100	$\frac{29}{100}$	0.29	29%
7 : 100	$\frac{7}{100}$	0.07	7%
3 : 5	$\frac{3}{5}$	0.6	60%
2 : 8	$\frac{1}{4}$	0.25	25%
20 : 80	$\frac{1}{4}$	0.25	25%
35 : 50	$\frac{7}{10}$	0.70	70%

Exercises 3.7
1. a) percent = 25, amount = 20, base = 80
b) percent = 20, amount = 18, base = 90
c) percent = 10, amount = 20, base = 200
d) percent = 60, amount = 54, base = 90
2. a) base **b)** amount **c)** percent
d) percent **e)** base **f)** amount **3. a)** 27
b) 99 **c)** 72 **d)** 52 **4. a)** 23 **b)** 96 **c)** 18
d) 36 **5. a)** 2400 **b)** 384 **c)** 200 **d)** 1000
6. a) 2625 **b)** 27 **c)** 38% **d)** 30 **e)** 33
f) 125

Exercises 3.8
1. Rex answered 60% of questions correctly. **2.** There were 56 questions.
3. There were 700 salmon in the river.
4. Janelle spent 9% of the budget.
5. a) $7.77 **b)** $137.26

Self-Assessment – Chapter 3
1. a) ten dollars to forty dollars, 1 : 4, $\frac{1}{4}$
b) 15 marbles to 5 marbles, 3 : 1, $\frac{3}{1}$
c) 27 cards to 9 cards, 27 : 9 = 3 : 1, $\frac{3}{1}$
d) 3 cards to 3 cards, 1 : 1, $\frac{1}{1}$
2. a) $\frac{5\ posters}{1\ hour}$ **b)** $\frac{50\ miles}{1\ hour}$ **c)** $\frac{5\ outlines}{1\ hour}$
3. Option B **4. a)** n = 10 **b)** n = 2
c) n = 87 **5.** About 12.96 gallons of fuel.
6.

Decimal	Fraction	%
045	$\frac{9}{20}$	45%
0.25	$\frac{5}{20}$	25%
0.6	$\frac{3}{5}$	60%
0.24	$\frac{6}{25}$	24%
0.76	$\frac{19}{25}$	76%

7. 90 **8.** 20% **9.** 72 **10.** The second pole is 9 ft long. **11.** 5.5 ounces **12. a)** $70 : $9
b) $2 : $1 **c)** $97 : $18 **13.** $17/h

Performance Task – Chapter 3
Sofia → 72
Theresa → $2.17
Maria → $76.30
Injila → $113.00
Omar → 525
The school → $617.50

CHAPTER 4

Exercises 4.1
1. a) 12, 20, 28, 36, 44, 52, 60 **b)** 68
2. a) 20, 14, 8, 2, -4, -10 **b)** -16
3. a) 48, 24, 12, 6, 3 **b)** 1.5
4. a) 5, 6, 8, 12, 20, 36, 68 **b)** 132
5. a) -8, -6, -4, -2, 0 **b)** 2
6. a) -10, -10, -10, -10, -10 **b)** -10
7. All answers are the same.
8. a) 18, 9, 6, 5, 4.67 **b)** 4.56
9. a) -2, -4, -8, -16, -32 **b)** -1,073,741,824
c) Answers will vary.

Exercises 4.2
1. a) 15 **b)** 8 **c)** 4 **2. a)** 55 **b)** 9 **c)** 3
3. a) -10 **b)** -1 **c)** -3 **d)** 5 **4. a)** 11 **b)** 46
c) 14 **d)** 2 **5. a)** -6 **b)** -9 **c)** -3 **d)** -3
e) -20

Exercises 4.3
1. a) $3x + 8$ **b)** $3x - 12$ **c)** $x \div 2$
2. a) $3 + 0.05m$ **b)** $2750 - 3d$
c) $4.75 + 0.06p$ **d)** $20 + 0.5c$ **e)** $7 + 1h$
3. a) $14.75 + 2h$ **b)** $30.75
4. a) $8.40 - 0.01p$ **b)** $6.16
5. a) 5, 13, 21, 29, 37, 45 **b)** 5 + 8(n – 1)
c) 837

Exercises 4.4
1. a) like **b)** like **c)** unlike **d)** like
e) unlike **2. a)** $9x$ **b)** $8y$ **c)** $4a$ **d)** $6m$
3. a) $14x$ **b)** $5m$ **c)** $12a - 11b$ **d)** $19n$
4. a) $22x$ **b)** $12y$ **c)** $-2m$ **d)** $3b$
5. a) $8x - 9$ **b)** $2m + 12$ **c)** $7y + 9$
d) $9a - 12$ **e)** $7n - 9$ **f)** $16 + 6z$ **g)** $8 + 3p$
h) 11 + q **i)** $15k + 12$ **j)** $19c - 9$
6. a) $7x + 18$ **b)** $5y + 3$ **c)** $3k + 4$
d) $5m + 6$ **7. a)** $-2x$ **b)** $-3y$ **c)** $2m + 11$
d) $-2k - 4$ **e)** $12 - 5m$ **f)** $-3 - 6z$

Exercises 4.5
1. a) 20*m* **b)** 14*y* **2. a)** 15*x* **b)** 28*y*
c) 12*m* **d)** 36*n* **e)** -10*b* **f)** -14*g*
3. a) 12*m* **b)** 14*x* **c)** 15*y* **d)** 16*t*
4. a) 6*x* + 15 **b)** 8*m* + 12 **c)** 30*y* + 36
d) 21*m* + 84 **e)** 8*n* – 14 **f)** 15*b* – 6
g) 63*h* – 27 **h)** 6*d* – 18 **5. a)** *42* – 24*b*
b) 6 – 10*x* **c)** 3 – 12*w* **d)** 15 – 10*c*
e) -6 + 12*y* **f)** -20 – 32*t* **6. a)** -9*x* – 15
b) -8*y* – 12 **c)** -14*m* – 21 **d)** -24*s* + *4*
e) -6 + 4*n* **f)** -35 + 28*a*

Self-Assessment – Chapter 4
1. a) 10 **b)** -19 **c)** 13 **d)** 3 **2. a)** 3, 6, 12, 24, 48 **b)** 1,610,612,736 **c)** Answers will vary. **3. a)** *x* + 6 **b)** 2*x* + 3 **c)** 7*x* +1
d) 4.50 + 0.15*m* **4. a)** 5*x* + 13 **b)** 7*y* + 2
c) *k* + 5 **d)** 2*m* + 1 **e)** 3*n* + 9 **f)** 3*a* + 6
5. a) -5*x* **b)** -8*y* **c)** -4*m* + 1 **d)** -4*k* – 7
e) 12 – *15b* **f)** -13 – 8*z* **6. a)** 24*b* **b)** 10*x*
c) 12*w* **d)** -10*c* **e)** -6*y* **f)** -32*t*
7. a) 15*x* + 6 **b)** 8*y* + 14 **c)** 14*m* – 7
d) -20*s* + 8 **e)** -10 + 6*n* **f)** -14 + 21*a*

Performance Task – Chapter 4
1. 243 calories. **2. a)** 280.5 calories
b) 1.63*p* + 24*t* + 151*c* **3.** 28 French Fries.

CHAPTER 5

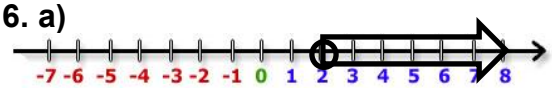
Exercises 5.1
1. a) 68 **b)** 51 **2. a)** n = 5 **b)** m = -7
c) x = -7 **d)** y = -7 **e)** p = 2 **f)** a = 6
g) c = 7 **h)** k = 8 **3. a)** n = 19 **b)** m = 14
c) x = 15 **d)** y = 18 **e)** p = 22 **f)** a = 26
g) c = 8 **h)** k = 19 **4. a)** n = 4 **b)** m = 2
c) x = 3 **d)** y = 7 **e)** p = 6 **f)** a = 11
g) c = 7 **h)** k = 3 **5. a)** x = 88 **b)** m = 40
c) f = 21 **d)** y = 54 **e)** p = 36 **f)** a = 77
g) c = 38 **h)** k = 72

Exercises 5.2
1. a) n = 2 **b)** m = 3 **c)** x = 5 **d)** y = -1
e) p = 1 **f)** a = -2 **g)** c = -7 **h)** k = -2
2. a) n = 4 **b)** m = 7 **c)** x = 3 **d)** y = 2
e) p = -1 **f)** a = -1 **g)** c = -1 **h)** k = 2
3. a) x = 100 **b)** m = 5 **c)** f = 9 **d)** y = 99
e) p = 60 **f)** a = -22 **g)** c = 14 **h)** k = -45

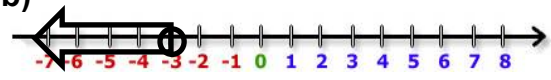
Exercises 5.3
1. a) n = $2\frac{1}{2}$ **b)** y = $6\frac{4}{5}$ **c)** m = $7\frac{1}{3}$
d) x = $7\frac{5}{8}$ **e)** a = $3\frac{5}{7}$ **f)** p = $1\frac{2}{3}$
2. a) n = $5\frac{1}{2}$ **b)** y = $2\frac{1}{3}$ **c)** m = $4\frac{2}{3}$
d) x = $1\frac{2}{5}$ **e)** a = $\frac{3}{7}$ **f)** p = $9\frac{1}{8}$ **3. a)** n = 0
b) y = 0 **c)** m = $\frac{2}{15}$ **d)** x = $\frac{3}{8}$ **e)** a = $-\frac{5}{28}$
f) p = $\frac{13}{24}$ **g)** z = $\frac{5}{56}$ **h)** p = $\frac{5}{12}$ **4. a)** n = $1\frac{1}{3}$
b) y = $\frac{4}{5}$ **c)** m = $\frac{13}{15}$ **d)** x = $\frac{5}{8}$ **e)** a = $\frac{14}{15}$
f) p = $\frac{7}{9}$ **g)** z = $\frac{15}{28}$ **h)** p = $\frac{11}{12}$

Exercises 5.4
1. a) x = 4 **b)** m = 3 **c)** z = -1 **d)** m = 3
e) m = 9 **f)** k = 6 **g)** m = 9 **h)** m = 5
2. a) x = 1 **b)** p = 2 **c)** z = 2 **d)** m = 1
e) y = 2 **f)** k = 1 **g)** m = 2 **h)** a = 2
3. a) x = 4 **b)** y = 2 **c)** z = 2 **d)** a = 5
e) m = 5 **f)** k = 1 **g)** m = 5 **h)** p = 4
4. a) x = 10 **b)** a = 1 **c)** m = 5 **d)** y = 1
5. Answers will vary.

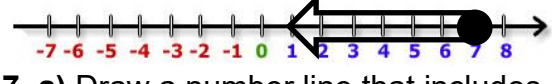
Exercises 5.5
1. 7 > 4, 16 ≥ 16, -12 ≤ -12,15 ≤ 15, -12 ≥ -12 **2.** Answers will vary. **3. a)** true **b)** true **c)** true **d)** false **4.** Yes, they are the same. The inequality symbol just points in the opposite direction, but the meaning is the same.
5. a) x < -1 **b)** x > 0 **c)** x ≤ 6 **d)** x ≤ 0
6. a)



b)



c)



7. a) Draw a number line that includes -15. Put an open circle at -15 and draw an arrow

to the left to show all numbers less than -15. **b)** Draw a number line that includes 21. Put a closed circle at 21 and draw an arrow to the left to show all numbers less than or equal to 21. **c)** Draw a number line that includes -28. Put a closed circle at -28 and draw an arrow to the right to show all numbers greater than or equal to -28. **d)** Draw a number line that includes -18. Put an open circle at -18 and draw an arrow to the right to show all numbers greater than -18. **8.** Answers will vary.

Exercises 5.6
1. a) $x > 2$ **b)** $x \leq 8$ **2. a)** $x > 2$ **b)** $x \geq 2$
c) $x < 5$ **d)** $x \leq 2$ **3. a)** $x \leq 1$ **b)** $x > 5$
c) $x \leq 4$ **d)** $x < 6$ **4. a)** $x < -2$ **b)** $s > -7$
c) $r \leq -9$ **d)** $a \geq -7$ **5.** Answers will vary.
6. Reverse the inequality.

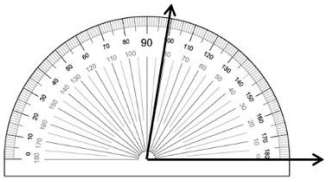
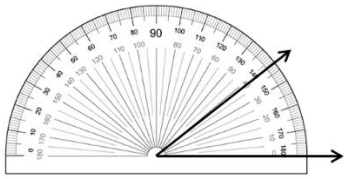
Exercises 5.7
1. 35 and 36 **2.** 108 and 109 **3.** Keli is 24.
4. 55 and 60 **5.** Shahla has 7 DVDs.

Self-Assessment – Chapter 5
1. a) $y = 29$ **b)** $x = 8$ **c)** $m = 16$ **d)** $a = 23$
e) $t = 20$ **f)** $n = 28$ **g)** $y = 15$ **h)** $c = 9$
i) $g = 9$ **j)** $x = 13$ **2. a)** $n = 0$ **b)** $y = \frac{4}{7}$
c) $m = \frac{11}{15}$ **d)** $x = \frac{1}{8}$ **e)** $a = -\frac{3}{20}$ **f)** $p = \frac{5}{9}$
3. a) $x = 2$ **b)** $y = 0$ **c)** $z = 7$ **d)** $a = 2$
e) $m = 2$ **f)** $k = 2$ **4. a)** $x \leq 4$ **b)** $x > 2$
c) $x \leq 3$ **d)** $x < 0$ **e)** $x < 9$

Performance Task – Chapter 5
1. Equation **2.** $125 + (m \times 10) = 205$
3. Yes. From question 2, we found that Bill needs 8 months until the competition. If he trains consistently, he will be able to lift the minimum 200 lbs in time for the competition.

CHAPTER 6

Exercises 6.1
1. a) 40° **b)** 75° **c)** 45° **d)** 25° **e)** 160°

2. a)

b)

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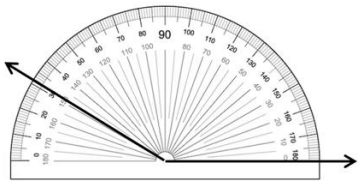
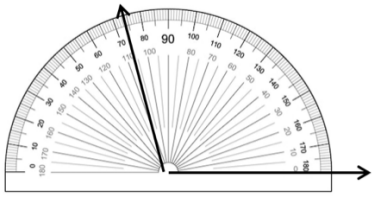
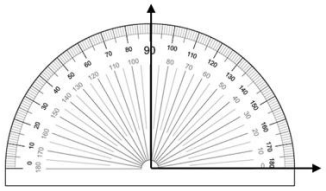

d)

3. a)

b) No, 90° come to the same point.
c) Answers will vary. **4.** Answers will vary.

Exercises 6.2
1. Obtuse | Right | Acute
2. Acute | Obtuse | Right
3. Obtuse | Straight | Acute
4. a) 145º, 35º, 145º **b)** 80º, 100º, 80º
c) 25º, 155º, 25º **d)** 90°, 90º, 90º, 90º
5. a) 28° **b)** 73° **6. a)** 43° **b)** 81° **c)** 7°
d) 23° **e)** 86° **f)** 87.5° **7. a)** 150° **b)** 55°
c) 32° **d)** 105° **e)** 169.8° **f)** 24.5°

Exercises 6.3
1. a) Obtuse **b)** Acute **c)** Right **d)** Acute or isosceles **e)** Acute or equilateral **f)** Right **g)** Obtuse or scalene **h)** Obtuse **2.** Both are correct. Since this triangle has a 90º and two equal angles, it is both a right triangle and an isosceles triangle. **3.** Carlene is correct. Since there is an angle greater than 90º, the triangle cannot be acute. **4.** All angles are less than 90°.

Exercises 6.4
1. a) 50° **b)** 98° **c)** 55° **d)** 27° **2. a)** 53° **b)** 68° **3.** 73° **4.** 54° **5.** 80° and 60° **6.** 27°, 27°, and 126° **7. a)** 90°, 45° and 45° **b)** Yes, because two angles are equal. **8.** 100°, 40°, and 40°

Exercises 6.5
1. a) All angles are right angles, opposite sides are parallel, opposite sides are the same length **b)** Not all sides are the same length in the rectangle. **c)** Yes. Since a square meets all the requirements of a rectangle, it is rectangle. **d)** Answers will vary. **2.** Opposite sides and opposite angles are the same. **3. a)** Not all angles are the same. **b)** Yes. Since a square meets the definition of a parallelogram, it is a parallelogram. **c)** Answers may vary. **4. a)** Opposite sides are parallel, opposite angles are equal, opposite sides are the same length. **b)** Not all sides are equal. **c)** Answers may vary. **5.** Answers may vary.

Exercises 6.6
1. a) 12” **b)** 10” **2. a)** P = 20 in, A = 24 in^2 **b)** P = 18.6 in, A = 20.9 in^2 **3. a)** P = 56m, A = 100 m^2 **b)** P = 62 cm, A = 154 cm^2 **4. a)** P = 38m, A = 60 m^2 **b)** P = 41.8 cm, A = 67.31 cm^2 **5. b)** 119.5 yards

Exercises 6.7
1. a) 66m **b & c)** Method may vary. **d)** 148 m^2 **2. a)** P = 51”, A = 153 in^2 **b)** P = 26 yds, A = 32 yd^2 **c)** P = 37”, A = 87 in^2 **d)** P = 84”, A = 294 in^2

Exercises 6.8
1. a) 10 yds **b)** 9” **2. a)** 50.24” **b)** 25.12 yds **c)** 59.7 ft **d)** 50.87 cm **3. a)** 56.5” **b)** 37.7 yds **c)** 29.8 ft **d)** 56.8 cm **4.** 78.5” **5.**

Radius	Diameter	Circ.
15’	30’	94.2’
11”	22”	69.1”
13.8m	27.6m	86.7m
7.2cm	14.4cm	45.2cm

Table values rounded to the nearest tenth.
6. 157 yards **7.** Approximately 24,900 miles.

Exercises 6.9
1. a) 200.96 in^2 **b)** 50.24 yd^2 **c)** 283.39 ft^2 **d)** 206.02 cm^2 **2. a)** 254.3 in^2 **b)** 113 yd^2 **c)** 70.8 ft^2 **d)** 257.2 cm^2 **3.** 1075 ft. **4.**

Radius	Diameter	Area
12’	24’	452.2 ft^2
14”	28”	615.4 in^2
3.8m	7.6m	45.3 m^2
2.2	4.4cm	15.2 cm^2

Table values rounded to the nearest tenth.
5. 452.16 in^2 of glass is needed.

Exercises 6.10
1. a) 30 in^3 **b)** 68.55 ft^3 **c)** 45 in^3 **d)** 26.45 ft^3 **2. a)** 69,764.52 cm^3 **b)** 8.14 ft^3 **3.** 15 in^3 **4.** 12.36 ft^3 **5.** 0.08 in^3

Self-Assessment – Chapter 6
1. ∠1 = 137.5°, ∠2 = 45.5°, ∠3 = 137.5° **2. a)** 43° & 133° **b)** 81° & 171° **c)** 7° & 97° **3. a)** Right, 22° **b)** Obtuse, 146° **4.** P = 18 yds, A = 15 yd^2 **5. a)** 10 yds **b)** 9” **6. a)** C = 43.96”,

A = 153.86 in^2 **b)** C = 21.98 yds, A = 38.47 yd^2 **c)** C = 39.56', A = 123.63 ft^2 **d)** C = 320.28cm, A = 8167.14 cm^2

Performance Task – Chapter 6

1. R1 = AD, R2 = AB, R3 = AC

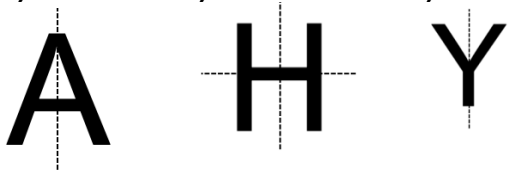
2. a) Isosceles **b)** Isosceles

3. a) 50° **b)** 80° **4.** 55°

CHAPTER 7

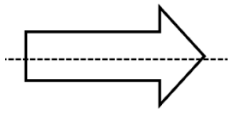
Exercises 7.1

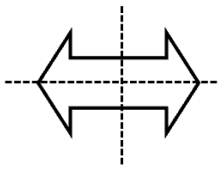
1. a) **b)** **c)**



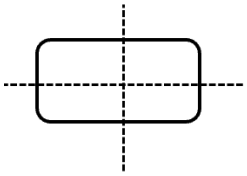
d) No lines of symmetry

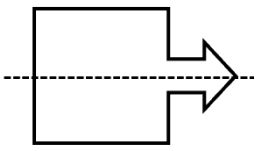
2. a) **b)**





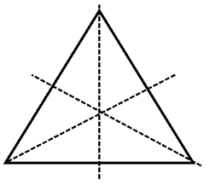
c) **d)**

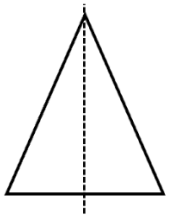




3. The figures have no lines of symmetry.

4. a) **b)**





c) No lines of symmetry.

Exercises 7.2

1. Yes, they are. **2. a)** Yes **b)** Answers will vary. **3.** The pairs in parts B and C are similar. **4. a)** n = 28.8 **b)** n = 4.6

Exercises 7.3

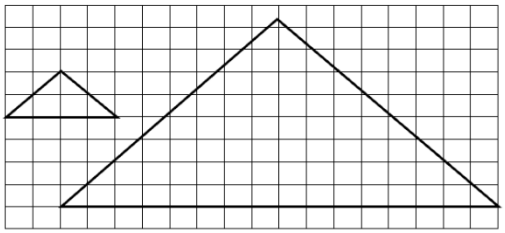
1.

Original Length	(E) or (R)	Scale Factor	New Length
5 ft	E	3:1 or $\frac{3}{1}$	15 ft
10 ft	E	2:1 or $\frac{2}{1}$	20 ft
10 inches	R	1:2 or $\frac{1}{2}$	5 in
20 miles	R	3:4 or $\frac{3}{4}$	15 m
20 yards	E	4:1 or $\frac{4}{1}$	80 yd
7.5 feet	E	3:2 or $\frac{3}{2}$	11.25 ft

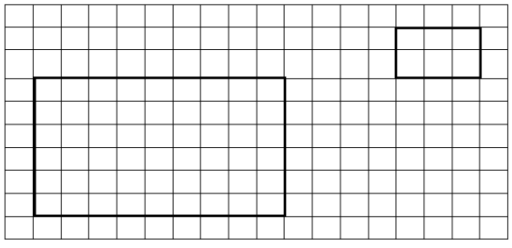
2.

Original Length	(E) or (R)	Scale Factor	New Length
2 ft	E	$\frac{4}{1}$	*8 ft*
15 ft	R	$\frac{1}{3}$	5 ft
6 inches	R	$\frac{1}{3}$	2 in
4 miles	R	$\frac{1}{2}$	2 m
15 yards	E	$\frac{3}{2}$	22.5 yd
7.5 feet	E	$\frac{4}{1}$	30 ft
9 inches	R	$\frac{2}{3}$	6 in

3. a)



b)



4. a) 1:15 **b)** 1:36 **c)** 5:108 **d)** 1:528,000

5.

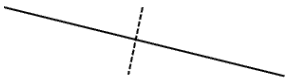
Scale Factor	Length on Scale Drawing	Actual Length
1:5	8”	40”
1:70	6”	35 ft
1:700	7”	408.3 ft
8:1	4”	0.5”

6. 6 meters

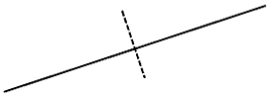
Exercises 7.4

1. a)

b)

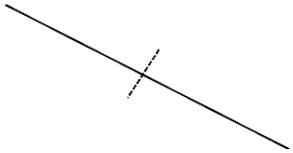


c)



d)

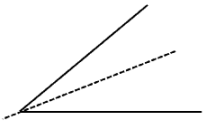
e)



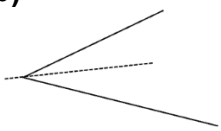
f)

2. a) Answers will vary. **b)** A perpendicular bisector is a line that bisects a line into two equal parts, making them symmetrical**.**
c) Answers will vary.

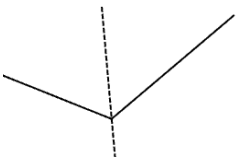
3. a)



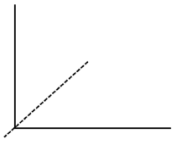
b)



c)

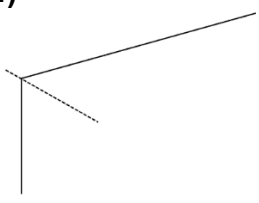


d)

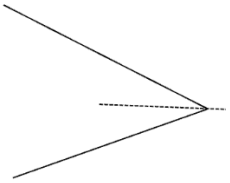


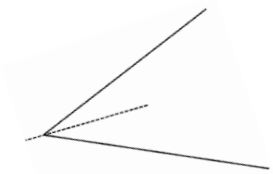
e)

f)



4. a)





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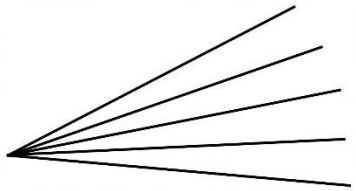
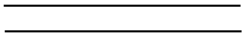
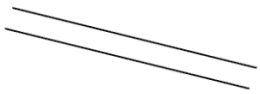


c) All of the resulting angles are equal. It takes 4 smaller angles to add up to the original angle.

5. a)



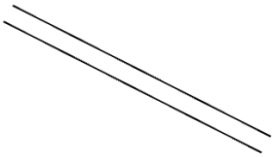
b)



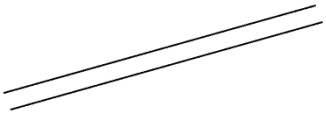
c)

d)

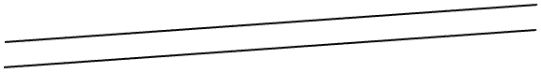
e)



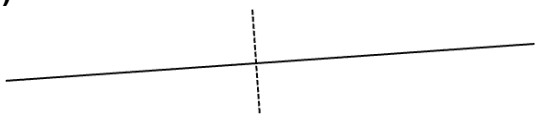
f)



6. a)



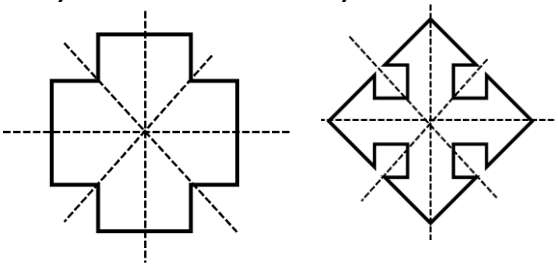
b)



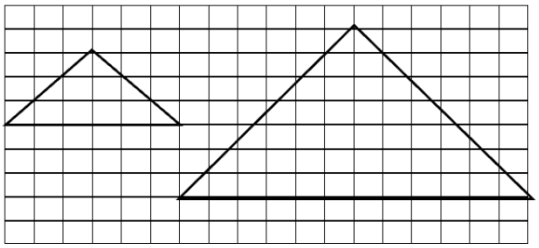
c) 4 90^{o} angles are at the point of intersection.

Self-Assessment – Chapter 7

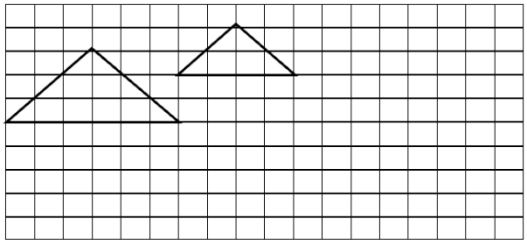
1. a) **b)**



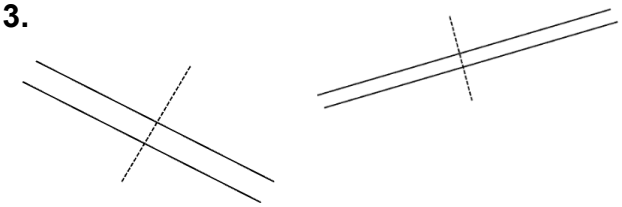
2. a)



b)



3.



c) Answers will vary.

4.

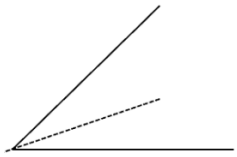
Original Length	(E) or (R)	Scale Factor	New Length
4 ft	E	$\frac{2}{1}$	*8 ft*
15 ft	R	$\frac{1}{2}$	7.5 ft
6 inches	R	$\frac{2}{3}$	4 in
4 miles	E	$\frac{3}{2}$	6 m
15 yards	E	$\frac{3}{2}$	22.5 yd
4.5 feet	E	$\frac{3}{1}$	13.5 ft
9 inches	R	$\frac{2}{9}$	2 in

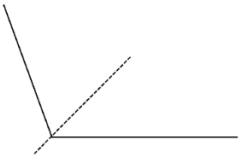
5.

Scale Factor	Length on Scale Drawing	Actual Length
1:5	12”	60”
1:7	9”	63”
1:50	7”	350”
8:1	9”	1.125”
5:2	3.5”	8.75”
1:4	6”	24”

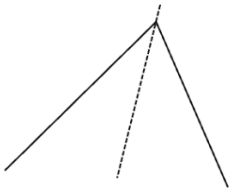
6. a) 1:7 **b)** 1:60 **c)** 5:120 **d)** 1:26400

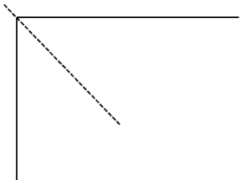
7. a) **b)**



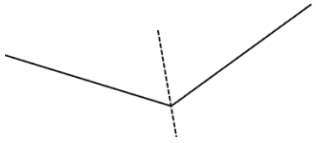


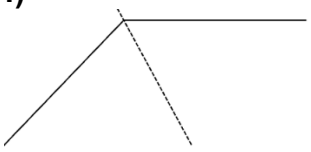
c) **d)**





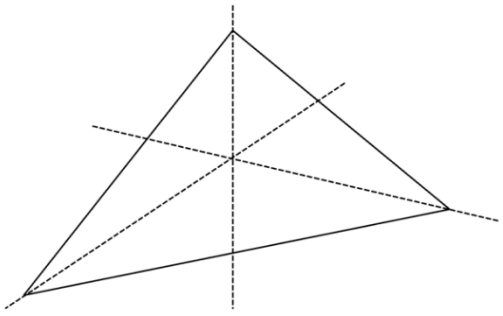
e) **f)**





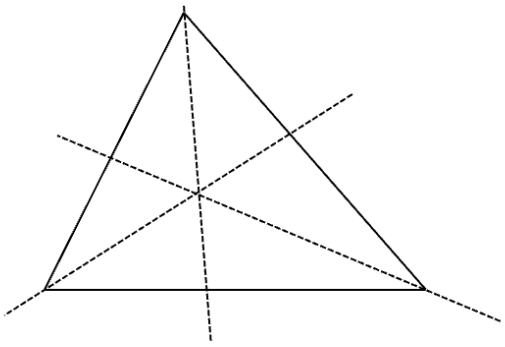
Performance Task – Chapter 7

1.



c) They intersect in the center of the triangle.

2.

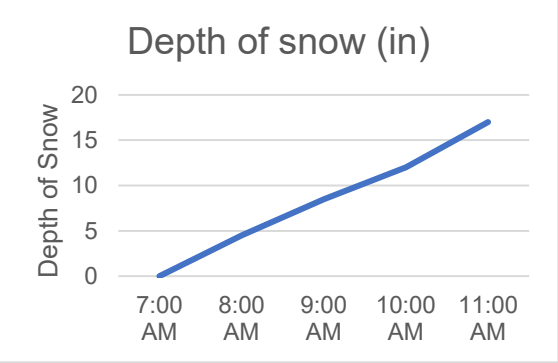


c) They intersect in the center of the triangle.
3. Answers will vary.

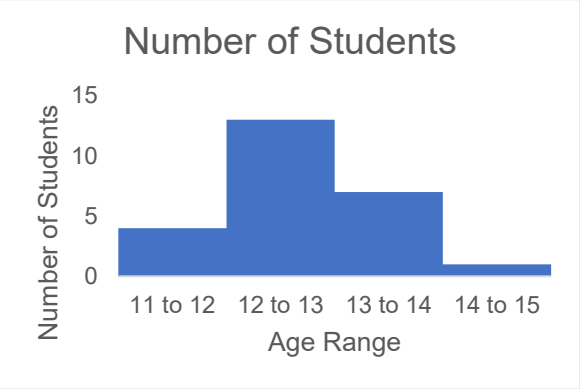
CHAPTER 8

Exercises 8.1

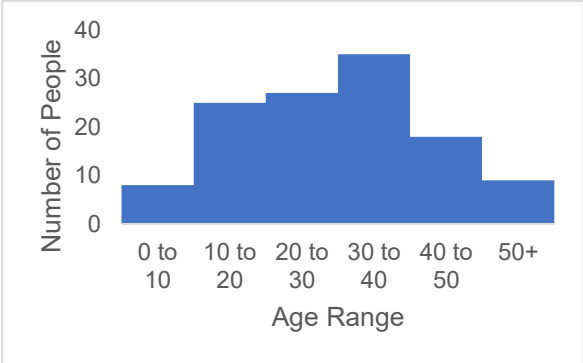
1. Answers will vary.
2. a) Shows change over time.
b)



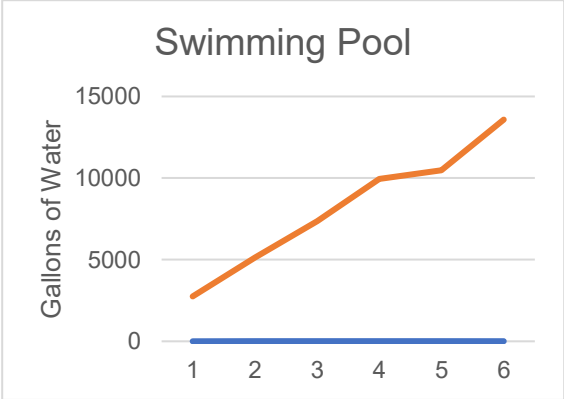
3. a) It shows a range of data points.
b)



4. a)



In a histogram, the data is displayed in ranges.
b)



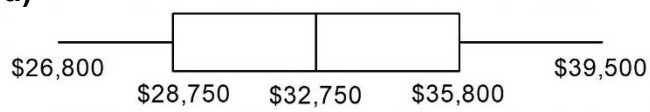
In a line graph, the data shows change over time.

Exercises 8.2

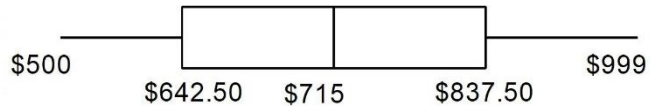
1. a) 43 **b)** 43 **c)** 32 **2. a)** $16.97 **b)** $16.67 **c)** $15.68 **3.** Either mean or median. **4. a)** $103.97 **b)** $17.22 **c)** $15.68 **d)** Answers will vary. **e)** Answers will vary. **5.** Mean 1.31m Median 1.43m Mode 1.5m
6. Answers will vary. **7.** Answers will vary. **8.** It could be considered an outlier.

Exercises 8.3

1. a) 87 **b)** No **c)** 55 **2. a)** $32,750 **b)** $28,750 **c)** $35,800
d)



3.



Exercises 8.4

1. a) 27 **b)** 21.5 **c)** 5.25 **2. a)** 2, 98. They are far away from the rest of the data. **b)** 96 **c)** 6 **3. a)** 1, 70 **b)** 69 **c)** 12 **4. a)** None **b)** 0.47 **c)** 0.25 m **5.** Range = $2650; Interquartile range = $245

Self-Assessment – Chapter 8

1. a)

Before	After
Mean: 53	**Mean:** 25.17
Median: 26	**Median:** 24.5
Mode: 22	**Mode:** 22

b)

Before	After
Mean: 1.03	**Mean:** 1.24
Median: 1.15	**Median:** 1.2
Mode: 1.5	**Mode:** 1.5

2. a) 2 is the outlier, and would have considerable effect. **b)** 2 and 43 are the outliers, and would have considerable effect. **3. a)** 31 **b)** 96 **c)** 60-79 **d)** 65 **e)** 25 **f)** Answers may vary.

Performance Task – Chapter 8

1. Mean = $33,841.67 Median = $28,550 Mode = No mode **2.** 132,000 **3.** 15,200 **4.** Either mean or median

CHAPTER 9

Exercises 9.1

1. a) 50% **b)** 0% **c)** 50% **d)** 100% **e)** 50% **2. a)** $\frac{23}{40}$ **b)** $\frac{17}{40}$ **c)** It adds up to the number of tosses. **3. a)** 75 **b)** $\frac{25}{75}$ or $\frac{1}{3}$ **4. a)** $\frac{1}{6}$ **b)** 100 **c)** $P1 = \frac{3}{25}, P2 = \frac{17}{100}, P3 = \frac{1}{5}, P4 = \frac{9}{50}, P5 = \frac{21}{100}, P6 = \frac{3}{25}$ **d)** They would come closer to the theoretical probability.

Exercises 9.2

1. a) $\frac{1}{4}$ **b)** $\frac{1}{13}$ **c)** $\frac{3}{13}$ **d)** $\frac{40}{52}$ **e)** $\frac{52}{52}$ or 1 **f)** $\frac{0}{52}$ or 0 **2. a)** $\frac{3}{16}$ **b)** $\frac{3}{8}$ **c)** $\frac{7}{16}$ **d)** $\frac{0}{16}$ or 0 **3. a)** 1 & 2 **b)** $\frac{1}{3}$ **4. a)** 2, 3, 4, 5 **b)** $\frac{2}{3}$ **5.** $\frac{1}{1000}$ **6. a)** $\frac{23}{100}$ **b)** $\frac{13}{50}$ **c)** $\frac{27}{100}$ **d)** $\frac{6}{25}$ **7. a)** $\frac{1}{4}$ **b)** $\frac{1}{4}$ **c)** $\frac{1}{4}$ **d)** $\frac{1}{4}$ **8.** Theoretical probability and real-world experiments often lead to different outcomes.

Exercises 9.3

1. a)

Coin 1	Coin 2
Heads	Heads
Heads	Tails
Tails	Heads
Tails	Tails

b) $\frac{1}{4}$ **2. a)** $\frac{1}{2}$ **b)** $\frac{1}{2}$ **c)** $\frac{1}{4}$ **d)** They are the same.

3. a)

Coin 1	Coin 2	Coin 3
Heads	Heads	Tails
Heads	Tails	Tails
Heads	Tails	Heads
Tails	Heads	Tails
Tails	Tails	Tails
Tails	Tails	Heads
Heads	Heads	Heads
Tails	Heads	Heads

b) $\frac{1}{8}$ **c)** $\frac{1}{2}$ **d)** $\frac{1}{8}$ The probability is the same as in part b0. Each toss is independent, so the probability of all events happening equals the product of individual probabilities. **4. a)** $\frac{1}{26}$ **b)** $\frac{3}{169}$ **c)** $\frac{1}{4}$ **d)** $\frac{5}{48}$ **e)** $\frac{1}{78}$ **f)** $\frac{1}{169}$

Exercises 9.4

1. a) $\frac{13}{40}$ **b)** $\frac{3}{10}$ **c)** $\frac{3}{8}$ **d)** $\frac{7}{10}$ **e)** $\frac{27}{40}$ **f)** $\frac{5}{8}$ **g)** $\frac{40}{40}$ or 1 **2. a)** $\frac{2}{13}$ **b)** $\frac{4}{13}$ **c)** $\frac{2}{13}$ **d)** $\frac{1}{2}$ **e)** $\frac{4}{13}$ **f)** $\frac{52}{52}$ or 1 **g)** $\frac{52}{52}$ or 1 **3. a)** $\frac{1}{3}$ **b)** $\frac{2}{3}$ **c)** $\frac{2}{3}$ **d)** $\frac{2}{3}$ **4.** Answers will vary. **5. a)** $\frac{1}{2}$ **b)** $\frac{1}{2}$ **c)** $\frac{1}{6}$

Self-Assessment – Chapter 9

1. a) 50% **b)** 100% **c)** 0% **2. a)** $\frac{1}{2}$ **b)** $\frac{1}{10}$ **c)** $\frac{1}{20}$ **d)** $\frac{29}{100}$ **3. a)** $\frac{3}{20}$ **b)** $\frac{1}{3}$ **c)** $\frac{2}{13}$ **d)** $\frac{2}{13}$ **4. a)** $\frac{1}{52}$ **b)** $\frac{3}{169}$ **c)** $\frac{1}{4}$

Performance Task – Chapter 9

1. 1 winning ticket **2.** 5 tickets. **3.** $\frac{1}{10,000}$ **4.** Remaining tickets are also $\frac{1}{10,000}$ **5.** $\frac{5}{10,000}$ **6.** Answers will vary.

CHAPTER 10

Exercises 10.1

1. a) variable **b)** fixed **c)** variable **d)** fixed **2. a)** fixed = bus fee, variable = milage **b)** fixed = cost of movie, variable = drinks **c)** fixed = vet charge, variable = medication **3. a)** fixed **b)** variable **c)** fixed

Exercises 10.2

1. Answers will vary. **2. a)** $58.50, yes. **b)** Yes **c)** Yes **3.** Yes, Kwame will have $83 after two months, which is enough. **4.** Answers will vary.

Exercises 10.3

1.

Date	Trans-action	Pay-ment	Deposit	Total
July 1	Rent	$725		$120
July 14	Salary		$956	$1,076
July 18	Bill	$175		$901
July 21	Food Bank	$50		$851
July 23	Groceries	$238		$613
July 25	Bus Pass	$175		$438
July 28	Salary		$956	$1,394

2.

Date	Trans-action	Pay-ment	Deposit	Total
Dec. 4			$225	$270
Dec. 8	Pay		$45	$315
Dec. 10	Food	$124		$191
Dec. 12	Salary		$842	$1,033
Dec. 15	Rent	$735		$298
Dec. 18	Pay		$45	$343
Dec. 20	Gifts	$185		$158
Dec 28.	Salary		$842	$1,000
Dec. 27	Donation	$200		$800
Dec. 30	Dinner/ Movie	$125		$675

3. a) She needed enough money to cover the donation. **b)** Yes, she had $298, so she had enough to buy the presents at $185. **4.** No, Naomi will not have enough.

Exercises 10.4

1. a) $560 **b)** $60 **2. a)** $1,135 **b)** $135 **3. a)** $2,002.50 **b)** $202.50 **4. a)** $2,603.23 **b)** $103.13 **5. a)** $1,773.97 **b)** $23.97 **6.** Answers may vary. **7.** Both options cost the same. **8. a)** $1,180 **b)** $1,150 **c)** Option B is more economical. Mark might consider the length of repayment, monthly payment amount, cash flow, and ability to pay early.

Exercises 10.5

1. $83 **2.** The account will have approximately $475.25. **3.** The account will have approximately $1,505.63. **4.** Bank A

Exercises 10.6

1. a) $2,030.50 **b)** $1,954.25 **c)** $76.25 **2. a)** $1,495 **b)** $1,469 **3. a)** Yes **b)** Answers may vary. **4.** The savings will decrease by $11. **5. a)** $2,165.40 **b)** $2,014 **c)** Expenses increased by $9.

6. a) $1,830 **b)** Answers may vary. Variable expenses should be decreased to make sure income covers all costs.

Self-Assessment – Chapter 10

1. a) Bank B **b)** Bank A **c)** $1,962.50
2. a) $2,395 **b)** Yes **c)** New plates
d) About 4 months **3.** Savings will increase by $149. **4.** Total after one year = $1,050.94

Performance Task – Chapter 10

1.

Date	Trans-action	Pay-ment	Deposit	Total
Dec. 10	Salary		$947	$1,082
Dec. 10	Food	$214		$868
Dec. 15	Rent	$925		-$57
Dec. 17	Dinner	$125		-$182
Dec. 18	Dep.		$190	$8
Dec. 20	Give	$200		-$192
Dec. 21	Gifts	$275		-$467
Dec. 24	Salary		$947	$480

a) Yes, between December 15 and 24
b) Answers will vary.