The following erratum was made on 26/Oct/2018

page 43 EXERCISE 2H Question 1 d, should read:

1 With the aid of Venn diagrams, explain why the following laws are valid:
   a the commutative laws \( A \cap B = B \cap A \) and \( A \cup B = B \cup A \)
   b the idempotent laws \( A \cap A = A \) and \( A \cup A = A \)
   c the associative laws \( A \cap (B \cap C) = (A \cap B) \cap C \) and \( A \cup (B \cup C) = (A \cup B) \cup C \)
   d the involution law \( (A')' = A \).
The following errata were made on 28/Jun/2016

page 590 ANSWERS EXERCISE 17E.1 5 b, should have decimal point in the correct place:

\[ \begin{align*}
5. \text{ The vector is } & (52.0, -30) \\
5. \text{ The vector is } & (-9.84, 11.3)
\end{align*} \]

page 15 ANSWERS EXERCISE 26E 8 and 10, should have correct equation:

\[ \begin{align*}
8. \quad & \frac{9}{4} \approx 0.286 \\
10. \quad & \left(\frac{5}{2}, \frac{5}{4}\right) \approx 0.392, \quad \left(\frac{5}{2}, \frac{5}{4}\right) \approx 0.392 \\
\therefore & \quad \text{both committee types are equally likely.}
\end{align*} \]

page 23 ANSWERS EXERCISE 29A 10 b and d, should include vertices at (0, 0):

\[ \begin{align*}
10. \quad & \text{Vertices are } (0, 0), (0, 8), (2, 4), \text{ and } (3, 0). \\
\text{d.} & \quad \text{Vertices are } (0, 0), (0, 9), (6, 6), (9, 4), \text{ and } (12, 0).
\end{align*} \]
The following erratum was made on 11/Mar/2016

page 594 ANSWERS EXERCISE 18C.2 d, should be an approximate answer:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>a</td>
<td>2.3 g</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>i \approx 1.02 g</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ii \approx 0.449 g</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>iii \approx 0.199 g</td>
<td></td>
</tr>
<tr>
<td></td>
<td>d</td>
<td>\approx 55.8% loss</td>
<td></td>
</tr>
</tbody>
</table>

The following erratum was made on 25/Aug/2015

page 574 ANSWERS REVIEW SET 9A 7 c, should be changed to match change in question (on page 204):

7 c The fastest 25\% of the boys swim as fast as or faster than 100\% of the girls.

The following errata were made on 11/Aug/2015

page 154 OPENING PROBLEM First line should read:

Consider the green triangle on the illustrated plane.

page 288 EXERCISE 13D 9 b ii, should read:

9 b A student is chosen at random.
Find the probability that the student:
   i plays football
   ii plays both sports

page 560 ANSWERS EXERCISE 3G 1 a and 3 a, should factorise like the procedure given:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>a</td>
<td>i (3x^2 + 7x + 2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ii (3x^2 + 7x + 2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>= (3x^2 + 6x + x + 2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>= (3x(x + 2) + 1(x + 2))</td>
</tr>
<tr>
<td></td>
<td></td>
<td>= ((x + 2)(3x + 1))</td>
</tr>
<tr>
<td>3</td>
<td>a</td>
<td>i ((2x + 3)(2x - 1))</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ii ((2x - 1)(2x + 3))</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>yes</td>
</tr>
</tbody>
</table>

page 562 ANSWERS EXERCISE 4E 7, should read:

\[ 6 + 2\sqrt{2} \quad 7 \sqrt{5} = \frac{\sqrt{2} - \sqrt{3}}{p} \quad (or \quad \sqrt{5} = \frac{12}{5 - 6p^2}) \]

page 568 ANSWERS EXERCISE 8A.1 5 a, should read:

5 a P\((-3, 1)\), Q\((-1, 1)\), R\((-1, -2)\), S\((-3, -2)\)

page 568 ANSWERS EXERCISE 8B 8 c, should have functions labelled with correct questions:

\[ y = 3^{-x} \quad (c) \]
\[ y = \frac{1}{3}3^{-x} + 1 \]
page 579 **ANSWERS EXERCISE 12H 2**, should be approximate values:

\[ \begin{align*}
2 & \quad a \quad \theta \approx 36.3^\circ \\
   & \quad b \quad \theta \approx 53.2^\circ \\
   & \quad c \quad \theta \approx 115.6^\circ 
\end{align*} \]

page 582 **ANSWERS EXERCISE 13G 5**, should read:

\[ \begin{align*}
4 & \quad P(Y) = 0.4 \\
5 & \quad P(C) + P(D) > 1 \\
6 & \quad a \ 0 \quad b \ 0.1 
\end{align*} \]

page 584 **ANSWERS EXERCISE 14D 10**, should have \( p \) instead of \( b \):

\[ \begin{align*}
10 & \quad b \quad p = \frac{3g}{y - 1} \\
   & \quad c \ 0g \ 0p, \ 2g \ 6p, \ 4g \ 4p 
\end{align*} \]

page 585 **ANSWERS EXERCISE 15C, 2 1** and 2, should read "and" instead of "or":

\[ \begin{align*}
1 & \quad a \ \{x \mid x \in \mathbb{R}\} \\
   & \quad b \ \{x \mid x \neq 0\} \\
   & \quad c \ \{x \mid x \neq 3\} \\
   & \quad d \ \{x \mid x \neq -2 \text{ and } x \neq 1\} \\
   & \quad e \ \{x \mid x \neq 3 \text{ and } x \neq -3\} \\
   & \quad f \ \{x \mid x \neq 1 \text{ and } x \neq 4\} \\
2 & \quad a \ \{x \mid x \geq 2\} \\
   & \quad b \ \{x \mid x < 3\} \\
   & \quad c \ \{x \mid 0 \leq x < 2\} \\
   & \quad d \ \{x \mid x > 0\} \\
   & \quad e \ \{x \mid x > 0\} \\
   & \quad f \ \{x \mid x < 4 \text{ and } x \neq 0\} 
\end{align*} \]

page 587 **ANSWERS REVIEW SET 15A 9 c**, should label axes intercepts:

\[ \begin{align*}
9 & \quad a \quad f^{-1}(x) = 7x - 2 \\
   & \quad b \quad y = f(x) \\
   & \quad c \quad y = x \\
   & \quad d \quad y = f^{-1}(x) 
\end{align*} \]

page 587 **ANSWERS REVIEW SET 15B 4 b**, should read "and" instead of "or":

\[ \begin{align*}
4 & \quad b \quad \text{Domain is } \{x \mid x \neq -5 \text{ and } x \neq 1\}. 
\end{align*} \]

page 589 **ANSWERS REVIEW SET 16B 10 c**, should read:

\[ \begin{align*}
10 & \quad c \quad \text{yes, using } u_n = 2n + 38 \text{ and } S_n = n^2 + 39n 
\end{align*} \]

page 591 **ANSWERS EXERCISE 17H 3 and 5**, should note where answers are approximate:

\[ \begin{align*}
3 & \quad a \ \{5 \mid y \neq 45^\circ\} \\
   & \quad b \ \{10 \mid 0^\circ\} \\
   & \quad c \ \{0 \mid 90^\circ\} \\
   & \quad d \ \{5 \mid 5 \approx 70.3^\circ\} \\
   & \quad e \ \{33 \mid 5 \approx 59.5^\circ\} \\
   & \quad f \ \{-11 \mid 2 \approx 138^\circ\} \\
5 & \quad a \ \approx 37.9^\circ \\
   & \quad b \ \approx 121^\circ \\
   & \quad c \ \approx 14.5^\circ \\
   & \quad d \ \approx 4.40^\circ 
\end{align*} \]

page 592 **ANSWERS REVIEW SET 17A 11**, should note where answer is approximate:

\[ \begin{align*}
10 & \quad a \ \ -1 \\
   & \quad b \ \ 97.1^\circ \\
   & \quad c \ \ 
\end{align*} \]

page 592 **ANSWERS REVIEW SET 17B 3 b, 10, and 12 c**, should note where answers are approximate to 3 sig. figs:

\[ \begin{align*}
3 & \quad a \ \text{He must fly in the direction } 11.3^\circ \text{ south of east.} \\
   & \quad b \ \approx 204 \text{ km} h^{-1} \\
8 & \quad a \ \left(\begin{array}{c}3 \\ -4 \end{array}\right) \\
   & \quad b \ \text{5 units} \\
   & \quad c \ \ 2 \\
10 & \quad a \ \approx 26.6^\circ \\
   & \quad b \ \left(\begin{array}{c}8 \\ -15 \end{array}\right) \\
   & \quad c \ \ 123^\circ 
\end{align*} \]

page 604 **ANSWERS EXERCISE 21E, 2 5 e**, should have correct function equation:

\[ y = \cos(x + \frac{\pi}{4}) \]
The following errata were made on or before 12/Jan/2015

pages 22, 23, and 553 EXERCISE 1C Questions 5 to 9, were re-ordered:

Questions 6 to 9 are all reduced in number by 1
Old question 5 becomes question 9

9 Answer the Opening Problem on page 14.

The following errata were made on or before 10/Dec/2014

page 29 SECTION 2A Explanation of the set of rational numbers, should read:

- \( \mathbb{Q} \) is the set of all rational numbers, or numbers which can be written in the form \( \frac{p}{q} \) where \( p \) and \( q \) are integers, \( q \neq 0 \).

For example: \( \frac{15}{4}, \ 10 \ (= \frac{10}{1}), \ 0.5 \ (= \frac{1}{2}), \ \text{and} \ -\frac{3}{8} \) are all rational numbers.

We cannot represent the rational numbers on a number line, because there are infinitely many of them, and in between them are irrational numbers which cannot be written in rational form.

For example:
- Radicals or surds such as \( \sqrt{2} \) and \( \sqrt{7} \) are irrational.
- \( \pi \approx 3.14159265 \) is an irrational number.
- Decimal numbers which neither terminate nor recur are irrational.

page 31 EXERCISE 2B Question 2, should have correct number of dots between 0 and 5:

2 Write using interval notation:

\[ (0, 5] \]
page 137 EXERCISE 7B Question 9, should try to show that WXYZ is a rhombus:

9 ABCD is a rectangle. Equilateral triangles are drawn from each side of the rectangle, with apexes W, X, Y, and Z. Show that WXYZ is a rhombus.

page 204 REVIEW SET 9A Question 7 c, should not be a strict inequality:

7 c The fastest 25% of the boys swim as fast as or faster than ......% of the girls.

page 385 REVIEW SET 17A Question 1 a, should read:

1 Using a scale of 1 cm represents 10 units, sketch a vector to represent:

a an aeroplane taking off at an angle of 8° to the runway with a speed of 60 m s⁻¹

page 554 ANSWERS EXERCISE 2B 3 d, should have correct number of dots between 0 and -5:

page 556 ANSWERS EXERCISE 2F 2 b i, should read:

2 b i \(n(A) + n(B) - n(A \cap B) = a + b + c - b\)
\[= a + b + c\]
\[= n(A \cup B)\]

page 557 ANSWERS EXERCISE 2H 1 d should have \(A\) unshaded and 2 f should reference the correct laws:

1 d

\[\text{represents } A\]

\[\text{represents } A'\]

\(A'\) is the region outside \(A\) and is shaded.

\((A')'\) is the region not in \(A'\) and is unshaded.

\[\therefore (A')' = A\]

page 558 ANSWERS REVIEW SET 2A 14, should read:

13 a 11 b 14 c 21 d 2 e 14 200 families

page 565 ANSWERS EXERCISE 6E.2 8 b, should read:

8 a i \(x - 7y = -12\) ii \(x + y = 8\)

\[\left(\frac{3}{4}\right) - \left(\frac{9}{2}\right) = -\frac{24}{7} = -12\] \(\checkmark\)

\[\left(\frac{1}{4}\right) + \left(\frac{2}{3}\right) = 8\] \(\checkmark\)

page 583 ANSWERS EXERCISE 14B 4 b, should be an approximate answer:

4 a \(\approx 4260 \text{ cm}^3\) b \(\approx 1.06 \text{ cm}\) c \(\approx 4.99 \text{ mm}\)

page 584 ANSWERS EXERCISE 14E 6 b, should read:

6 b \(S_{100} = \frac{100 \times 101 \times 201}{6} = 338350\)

page 588 ANSWERS EXERCISE 16A 6 a, should read:

6 a \(u_8 = 14\) b 136 c \(u_8 = -14\)
page 588 ANSWERS EXERCISE 16B 3, should read:

3  a  \( u_1 = 41, \; d = 1 \)  
   b  \( u_1 = 1, \; d = 11 \)  
   c  \( u_1 = 98, \; d = -10 \)  
   d  \( u_1 = 91, \; d = -9 \)

page 588 ANSWERS EXERCISE 16C 9, should include both answers:

9  c  \( u_n = 2 \times 5^{n-1} \) or \( u_n = (-2) \times ( -5)^{n-1} \)

page 588 ANSWERS EXERCISE 16F.1 2, should be positive:

2  e  \(-1364 \)  
   f  \( \frac{1600}{27} \)  
   g  \( \approx 52.2 \)  
   h  \( \approx 12.8 \)

page 590 ANSWERS EXERCISE 17D 5, should read:

5  d  Ian should face \( \approx 41.8^\circ \) left of where he is aiming.

page 592 ANSWERS EXERCISE 18B.1 1 a, should have \( y \) intercept of 1:

![Graph of f(x) = 3x]

page 592 ANSWERS EXERCISE 18B.1 1 c i, should have \( y \) intercept of \(-2\):

![Graph of y = \( \frac{1}{2} \)x]

page 609 ANSWERS EXERCISE 23D.1 3, should have the Prime Minister's approval rating on the \( x \) axis:

![Graph with Prime Minister's approval rating on x axis]

page 610 ANSWERS EXERCISE 23D.2 1 b i and 4 a, should have better placed data points:

![Graph with data points]

![Graph with Frosty mornings data points]
page 611 ANSWERS REVIEW SET 23B 5a and 6a, should have better placed data points:

\[ f(x) = x - 3x^2 - 24x + 5 \]

page 613 ANSWERS EXERCISE 25E 1d iv, should have correct function equation:

\[ f(x) = x^3 - 3x^2 - 24x + 5 \]

page 613 ANSWERS EXERCISE 25E 5d, should read:

\[ a = 18a - 2a^3 \]

page 614 ANSWERS EXERCISE 25G.1 2d, should state the area:

\[ \lim_{n \to \infty} S = \frac{a^4}{4} \]

So, the area is \( \frac{a^4}{4} \) units\(^2\).

page 614 ANSWERS REVIEW SET 25B 7d, should have correct function equation:

\[ f(x) = 2x + \frac{2}{x} \]

page 22 ANSWERS EXERCISE 29A.1 1e and f, should have correct equation:

\[ x + 2y = 10 \]

page 25 ANSWERS REVIEW SET A 6, should read:

6 gas meters, 3 water meters