The following errata were made on 13/May/2020

page 375 ANSWERS EXERCISE 4E Question 3 f, should read as originally printed:

3 f \approx 105.3 \text{ cents per litre}

The following erratum was made on 28/Apr/2020

page 373 ANSWERS EXERCISE 4B Question 4 c, should read as originally printed:

4 c There is a strong, negative, non-linear correlation between number of workers and time.

The following errata were made on 19/Sep/2019

page 390 ANSWERS EXERCISE 7F Question 5 a, should read:

5 a 25 years 5 months b $3693.84 per month

page 390 ANSWERS REVIEW SET 7A Question 15 a, should read:

15 a 8 years 8 months b $2996.23

page 391 ANSWERS EXERCISE 8C.2 Question 2 b, should read:

2 a $2001.09 b 24 years 8 fortights

page 392 ANSWERS REVIEW SET 8A Question 2 b, should read:

6 a \approx 6.55\% \text{ p.a.} b $213938.75 c 21 years 5 months

page 399 ANSWERS REVIEW SET 9A Question 2, should have no edge connecting A and E:

\begin{center}
\begin{tikzpicture}
\node (A) at (0,0) {A};
\node (B) at (-1,1) {B};
\node (C) at (1,1) {C};
\node (D) at (-1,-1) {D};
\node (E) at (1,-1) {E};
\draw (A) -- (B);
\draw (A) -- (C);
\draw (A) -- (D);
\draw (A) -- (E);
\end{tikzpicture}
\end{center}

The following errata were made on 11/Sep/2019

page 66 EXERCISE 3D.1 Question 4, should read:

4 For the sequence $t_1 = 3$, $t_{n+1} = 2t_n + 2$, $n \geq 1$, find the first term which is greater than 100.
The population of bacteria after any given hour is \(2\) times that of the previous hour. So \(r = 2\).

The population after 1 hour is \(2 \times 5000 = 10000\).

So \(f_1 = 10000\).

\[ t_n = 10000 \times 2^{n-1} = 5000 \times 2^n \]

The following errata were made on 02/Sep/2019

**ANSWERS EXERCISE 4D** Question 1, should read:

\[
\begin{array}{c|c|c|c|c|c|c|c}
\text{Time (days)} & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\
\hline
\text{Number of customers} & 12 & 15 & 11 & 19 & 15 & 12 & 15 \\
\text{3-point moving average} & 12.7 & 15 & 15 & 15.3 & 14 & 14.3 & \\
\end{array}
\]

**ANSWERS EXERCISE 4G** Questions 5 a and e, should be given to 3 significant figures:

5 a \( V \approx 8040 \times (0.748)^t \) 
5 b \( \approx 1880 \) 
5 c \( \approx 25.2\% \) 
5 d \( \approx 7.18\text{ years} \)

**ANSWERS EXERCISE 6D** Question 4 b, should read:

4 a \( E \approx 0.0734t + 16.4 \) 
4 b \( \approx 18.6\text{ tonnes per capita} \)

**ANSWERS EXERCISE 6D** Question 5 e ii, should read:

5 d \( S \approx 1.77t + 124 \) 
5 e i \( \approx 135000 \) 
5 e ii \( \approx 125000 \)

**ANSWERS EXERCISE 6D** Question 6 f ii, should read:

6 e \( S \approx 0.0376t + 43.9 \) 
6 f i \( \approx 43900 \) 
6 f ii \( \approx 41900 \)

**ANSWERS REVIEW SET 6A** Question 2, should read:

\[
\begin{array}{c|c|c|c|c|c|c|c}
\text{Time (days)} & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\
\hline
\text{Number of customers} & 12 & 15 & 11 & 19 & 15 & 12 & 15 \\
\text{3-point moving average} & 12.7 & 15 & 15 & 15.3 & 14 & 14.3 & \\
\end{array}
\]

The following errata were made on 02/Sep/2019

**ANSWERS REVIEW SET 3B** Question 7 a, should read:

7 a The population of bacteria after any given hour is 2 times that of the previous hour. So \( r = 2\).

The population after 1 hour is \(2 \times 5000 = 10000\).

So \( f_1 = 10000\).

\[ t_n = 10000 \times 2^{n-1} = 5000 \times 2^n \]

**ANSWERS EXERCISE 4E** Question 6 f ii, should read:

6 f i 9 hours per week 
6 f ii \( \approx 7.19\text{ hours per week} \)

This particular child spent more time watching television than predicted.

**ANSWERS EXERCISE 6B** Question 6 b, should have correct x-axis label:

\[
\begin{array}{c|c|c|c|c|c|c|c}
\text{Time (days)} & 0 & 2 & 4 & 6 & 8 & 10 & 12 \\
\hline
\text{Maximum temperature (°C)} & 16 & 20 & 24 & 28 & \\
\end{array}
\]
The value in the connectivity matrix $C^4$ (30) includes routes which revisit cities, such as Am $\rightarrow$ Be $\rightarrow$ Pr $\rightarrow$ Be $\rightarrow$ Am, and includes distinct routes which visit the same combinations of cities, such as Am $\rightarrow$ Pa $\rightarrow$ Br $\rightarrow$ Co $\rightarrow$ Am and Am $\rightarrow$ Co $\rightarrow$ Br $\rightarrow$ Pa $\rightarrow$ Am.
Example 8

Gavin has taken out a loan for $300,000 at 4.9% p.a. interest compounded monthly for 20 years. His monthly repayments are set at $1963.34. He has an average of $10,000 in his offset account for the term of the loan.

Estimate the amount of interest Gavin will save by having the offset account.

Having $10,000 in an offset account for the term of a $300,000 loan is equivalent to borrowing $290,000.

We first find the time Gavin would take to repay the loan.

\[ I\% = 4.9, \quad PV = 290,000, \quad PMT = -1963.34, \quad FV = 0, \quad P/Y = 12, \quad C/Y = 12 \]

\[ N \approx 226.8 \]

It will take 227 months, or 18 years 11 months to repay the loan.

We now find the future value of the loan after 227 months:

\[ N = 227 \]
\[ I = 4.9 \]
\[ PV = 290,000 \]
\[ PMT = -1963.34 \]
\[ FV = 16,918,598 \]
\[ P/Y = 12 \]
\[ C/Y = 12 \]

\[ \therefore \text{interest saved} \approx 471,201.60 - 455,264.26 \]
\[ \approx 15,937 \]
The following erratum was made on 22/Mar/2018

page 373 ANSWERS EXERCISE 4B Question 4 e, should read:

4 e There is a strong, negative, \textit{linear} correlation between number of workers and time.

This erratum was made in error, please disregard it.

page 390 ANSWERS EXERCISE 7E.2 Questions 6 c and 7 c, should read:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>a</td>
<td>$66.354.49</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>$56.020.65</td>
</tr>
<tr>
<td></td>
<td>c</td>
<td>$3.40%$ p.a.</td>
</tr>
<tr>
<td>7</td>
<td>a</td>
<td>$22.444.54</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>$22.110.15</td>
</tr>
<tr>
<td></td>
<td>c</td>
<td>$0.500%$ p.a.</td>
</tr>
</tbody>
</table>

page 391 ANSWERS EXERCISE 8C.6 Questions 1 and 2 b, should read:

<p>| | | |</p>
<table>
<thead>
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<tbody>
<tr>
<td>1</td>
<td>a</td>
<td>$26.500</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>$2101.07</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>b</td>
</tr>
</tbody>
</table>

page 392 ANSWERS REVIEW SET 8B Question 7, should read:

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>7</td>
<td>$23.300</td>
</tr>
</tbody>
</table>

The following erratum was made on 22/Mar/2018

page 391 ANSWERS EXERCISE 8C.6 Questions 1 and 2 b, should read:

<p>| | | |</p>
<table>
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<tbody>
<tr>
<td>1</td>
<td>a</td>
<td>$26.500</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>$2101.07</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>b</td>
</tr>
</tbody>
</table>

page 392 ANSWERS REVIEW SET 8B Question 7, should read:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>$23.300</td>
</tr>
</tbody>
</table>
The following erratum was made on 18/Sep/2017

page 383 ANSWERS EXERCISE 5C Question 7, should read:

7  $\approx 59.6$ minutes  8  $\approx 24.7$ cm  9  $\approx 75.2$ mm

The following erratum was made on 27/Feb/2017

page 375 ANSWERS EXERCISE 4E Question 3 d, should read:

3  a  $r \approx -0.924$
   b  There is a strong, negative, linear correlation between the petrol price and the number of customers.
   c  $y \approx -4.27x + 489$
   d  $\approx -4.27$; this indicates that for every cent per litre the petrol price increases by, the number of customers will decrease by approximately 4.27.