The sequence for the pattern of balls can be specified:

- **using words**  
  “The set of all odd numbers starting with 1.”

- **using an explicit formula**  
  \[ u_n = 2n - 1 \]  
  generates all terms.

\( u_n \) is called the \textit{n}th term or the \textit{general term}.

---

**ZERO VECTOR**

The zero vector is  \( \mathbf{0} = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \).

For any vector \( \mathbf{a} \):

- \( \mathbf{a} + \mathbf{0} = \mathbf{0} + \mathbf{a} = \mathbf{a} \).
- \( \mathbf{a} + (-\mathbf{a}) = (-\mathbf{a}) + \mathbf{a} = \mathbf{0} \).
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MATHEMATICS FOR THE INTERNATIONAL STUDENT
MYP 5 Plus (second edition)

Second edition - 2010 reprint

---

page 14  TEXT  paragraph under **SCIENTIFIC NOTATION** heading should read:

If a number is too large or too small to be displayed neatly on the screen, it will be expressed in scientific notation, that is, in the form \( a \times 10^n \) where \( 1 \leq a < 10 \) and \( n \) is an integer.

---

page 61  REVIEW SET 2A

1  e  \(-(x - 2)^2\)

---

page 77  EXERCISE 3E

5  Find \( \sqrt{11 - 6\sqrt{2}} \).  (Reminder: \( \sqrt{2} \) is never negative.)

---

page 80  OPENING PROBLEM  change question numbering

a  From where he stands on the fairway, how far is the caddy from the tee?
b  If he knows the hole is 430 m long, how far is the caddy from the 150 m marker?
c  How far does Karrie need to hit her ball with her second shot to reach the hole?

---

page 102  REVIEW SET 4B  change diagram

---

page 100  REVIEW SET 4A  change diagram

---

page 121  EXERCISE 5E.1  

6  b  Show that \([AQ]\) has equation \( cx -(b - 2a)y = 2ac. \)

---

page 156  TEXT  (bullet points in the middle of page, change first sub-point)

> with centre the origin

---

page 181  EXERCISE 8C  add legend to stem-and-leaf plot in question 3

1 | 8  represents 18

---

page 196  EXERCISE 8G  add legend to stem-and-leaf plot in question 3

5 | 1  represents 51
2  b Why do your answers in a not add up to 1?

page 305 EXAMPLE 13 solutions to part a, change second line to:

\[
= \frac{2}{x} \left( \frac{x + 2}{x + 2} \right) + \left( \frac{1}{x + 2} \right) \frac{x}{x}
\]

page 343 EXAMPLE 10 solutions to part a, change two last lines to:

\[
\therefore 2x = -4 \text{ or } -6
\]

\[
\therefore x = -2 \text{ or } -3
\]

page 345 TEXT The explicit formula for the number of balls should be:

The sequence for the pattern of balls can be specified:

- using words “The set of all odd numbers starting with 1.”
- using an explicit formula \( u_n = 2n - 1 \) generates all terms.
  
  \( u_n \) is called the \textbf{r}\textit{t}\textbf{h} \textit{t}erm or the \textbf{g}\textit{e}\textit{n}eral \textit{t}erm.

page 370 TEXT The rules for the zero vector should be:

\[
\textbf{ZERO VECTOR}
\]

The zero vector is \( 0 = \left( \begin{array}{c} 0 \\ 0 \end{array} \right) \).

For any vector \( \mathbf{a} \): \( \mathbf{a} + \mathbf{0} = \mathbf{0} + \mathbf{a} = \mathbf{a} \).

\( \mathbf{a} + (-\mathbf{a}) = (-\mathbf{a}) + \mathbf{a} = \mathbf{0} \).

page 401 EXAMPLE 15 second line of solution for part a, should be:

\[
= (2^x)^2 + 5(2^x) + 3(2^x) + 15 \quad \{\text{using FOIL}\}
\]

page 460 EXERCISE 18H

6 In the given figure, find in terms of \( m \):

page 486 EXERCISE 20C

9 b If \( \mathbf{A} = \left( \begin{array}{cc} a & b \\ c & a \end{array} \right) \) where \( a, b \) and \( c \) are integers, and \( \mathbf{A}^2 = 4\mathbf{A} \), find the possible values of \( a, b \) and \( c \).

page 487 EXERCISE 20C

9 c Hence, write down all \( 2 \times 2 \) matrices of the form \( \left( \begin{array}{cc} a & b \\ c & a \end{array} \right) \) which satisfy the matrix equation \( \mathbf{A}^2 - 4\mathbf{A} = \mathbf{0} \), where the elements of \( \mathbf{A} \) are integers.

page 503 EXERCISE 20H

4 We showed earlier that if \( \mathbf{AX} = \mathbf{B} \) then \( \mathbf{X} = \mathbf{A}^{-1}\mathbf{B} \).

Prove that if \( \mathbf{XA} = \mathbf{B} \) then \( \mathbf{X} = \mathbf{BA}^{-1} \).

page 520 EXERCISE 21C change diagram in question 10
5 Susanne wishes to purchase 10 breeding female labradors from another breeder in the next county. The other breeder has 30 bitches for sale and knows that 4 of them have a problem with hip dysplasia but is not prepared to disclose this information. Before the purchase takes place, Susanne decides to randomly sample three of the dogs and have them X-rayed to determine if they have the dysplasia problem. If none of the three has the problem she will buy them, together with 7 others selected at random. What is the chance that Susanne purchases the dogs and at least one of them has the hip problem?

CHAPTER 24 (CD only) page 13 EXERCISE 24C

![Diagram of a point P(x, y) on an ellipse with foci A(-h, 0) and B(h, 0), and a normal line through P perpendicular to the x-axis]

3

12 at least 24 places

6 \( \sqrt{\pi} = \frac{12}{5 - 6p^2} \) or \( \sqrt{\pi} = \frac{\sqrt{2} - \sqrt{3}}{p} \)

6 \( x = -2, \ y = 1 \) or \( x = -\frac{4}{3}, \ y = \frac{10}{3} \)

4 \( b \ x = \sqrt{\pi} \)

8 42.2 km

16 a 240 m  b 40 m  c 202 m

3 4.21 cm  8 71 m

1 i

page 563 ANSWERS EXERCISE 5G

1 a \( R_{90} \): (-3, -2), \( R_{-90} \): (3, 2), \( R_{180} \): (2, -3)

b \( R_{90} \): (1, 4), \( R_{-90} \): (-1, -4), \( R_{180} \): (-4, 1)

page 567 ANSWERS EXERCISE 8D

1 b (Change graph title to “Weights of a volleyball squad”)

3 d

<table>
<thead>
<tr>
<th>Height of netball players (cm)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>139.5</td>
<td>10</td>
</tr>
<tr>
<td>149.5</td>
<td>8</td>
</tr>
<tr>
<td>159.5</td>
<td>6</td>
</tr>
<tr>
<td>169.5</td>
<td>4</td>
</tr>
<tr>
<td>179.5</td>
<td>2</td>
</tr>
<tr>
<td>189.5</td>
<td>0</td>
</tr>
</tbody>
</table>
1. \( s \) takes all values into account, whereas the range and IQR each use only 2 values.

2. \( \text{mean length} = 38.3 \text{ cm}, \quad \text{SD} = 2.66 \text{ cm} \)

3. \( b \)

4. The 3 triangles do not exist.

5. \( \tan(180^\circ - \theta) = -\tan \theta \)

6. \( \tan(180^\circ - \theta) = -\tan \theta \)

7. \( \tan(180^\circ - \theta) = -\tan \theta \)

8. \( \tan(180^\circ - \theta) = -\tan \theta \)

9. \( \tan(180^\circ - \theta) = -\tan \theta \)

10. \( \tan(180^\circ - \theta) = -\tan \theta \)

11. \( \tan(180^\circ - \theta) = -\tan \theta \)

12. \( \tan(180^\circ - \theta) = -\tan \theta \)

13. \( \tan(180^\circ - \theta) = -\tan \theta \)

14. \( \tan(180^\circ - \theta) = -\tan \theta \)

15. \( \tan(180^\circ - \theta) = -\tan \theta \)

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22. \( \tan(180^\circ - \theta) = -\tan \theta \)

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28. \( \tan(180^\circ - \theta) = -\tan \theta \)

29. \( \tan(180^\circ - \theta) = -\tan \theta \)

30. \( \tan(180^\circ - \theta) = -\tan \theta \)

31. \( \tan(180^\circ - \theta) = -\tan \theta \)

32. \( \tan(180^\circ - \theta) = -\tan \theta \)

33. \( \tan(180^\circ - \theta) = -\tan \theta \)

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36. \( \tan(180^\circ - \theta) = -\tan \theta \)

37. \( \tan(180^\circ - \theta) = -\tan \theta \)

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60. \( \tan(180^\circ - \theta) = -\tan \theta \)

61. \( \tan(180^\circ - \theta) = -\tan \theta \)

62. \( \tan(180^\circ - \theta) = -\tan \theta \)

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64. \( \tan(180^\circ - \theta) = -\tan \theta \)

65. \( \tan(180^\circ - \theta) = -\tan \theta \)

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76. \( \tan(180^\circ - \theta) = -\tan \theta \)

77. \( \tan(180^\circ - \theta) = -\tan \theta \)

78. \( \tan(180^\circ - \theta) = -\tan \theta \)

79. \( \tan(180^\circ - \theta) = -\tan \theta \)

80. \( \tan(180^\circ - \theta) = -\tan \theta \)

81. \( \tan(180^\circ - \theta) = -\tan \theta \)

82. \( \tan(180^\circ - \theta) = -\tan \theta \)

83. \( \tan(180^\circ - \theta) = -\tan \theta \)

84. \( \tan(180^\circ - \theta) = -\tan \theta \)

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86. \( \tan(180^\circ - \theta) = -\tan \theta \)

87. \( \tan(180^\circ - \theta) = -\tan \theta \)

88. \( \tan(180^\circ - \theta) = -\tan \theta \)

89. \( \tan(180^\circ - \theta) = -\tan \theta \)

90. \( \tan(180^\circ - \theta) = -\tan \theta \)

91. \( \tan(180^\circ - \theta) = -\tan \theta \)

92. \( \tan(180^\circ - \theta) = -\tan \theta \)

93. \( \tan(180^\circ - \theta) = -\tan \theta \)

94. \( \tan(180^\circ - \theta) = -\tan \theta \)

95. \( \tan(180^\circ - \theta) = -\tan \theta \)

96. \( \tan(180^\circ - \theta) = -\tan \theta \)

97. \( \tan(180^\circ - \theta) = -\tan \theta \)

98. \( \tan(180^\circ - \theta) = -\tan \theta \)

99. \( \tan(180^\circ - \theta) = -\tan \theta \)

100. \( \tan(180^\circ - \theta) = -\tan \theta \)
Paolo is 25 km from his starting point at a bearing of 347°.
Gina is 6.76 km from her starting point at a bearing of 006.60°.

a The boat must head 25.5° west of north.

\[
\cos \left( \frac{7\pi}{2} \right) = 0, \quad \sin \left( \frac{7\pi}{2} \right) = -1
\]

\[ x = 10 \quad c \quad 200 \text{ m}^2 \]

\( \approx 56.5\% \) (add)

\[
\begin{align*}
3c &= \frac{4}{5} \\
4f &= -\sqrt{\frac{15}{4}} \\
5g &= \sqrt{\frac{7}{4}} \\
6h &= -\frac{12}{13}
\end{align*}
\]

\( \frac{4}{5} \)

\[ x \in [3, 8] \]

\[ H \approx 4 \sin 0.507(t - 9.3) + 6 \text{ metres} \]

Safe for about 65% to 66% of the time.

\[ a \quad 1 + \sqrt{3} \quad c \quad \frac{\sqrt{2} + \sqrt{6}}{4} \quad ii \quad 2 + \sqrt{3} \]

\[ x > -\frac{5}{2} \quad j \quad x \leq -3 \quad \text{or} \quad x > 1 \]

\[ b \quad + \quad + \quad 0 \quad 2 \quad x \quad c \quad -0 \quad + \quad -\frac{1}{2} \quad + \quad x \]

\[ a \quad b \quad \text{circle} \quad x^2 + y^2 = a^2 \]

\[ a \quad (-2\sqrt{2}, -2\sqrt{2}) \]

\[ 1 \text{ cm} \quad 10 \quad 40 \text{ cm} \]

\[ \alpha \quad a \quad \text{circles on the same arc} \]

\[ a \quad 60 \quad b \quad 180 \quad c \quad 25 \quad d \quad 30 \quad d \quad 55 \]
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page 14 TEXT paragraph under SCIENTIFIC NOTATION heading should read:

If a number is too large or too small to be displayed neatly on the screen, it will be expressed in scientific notation, that is, in the form $a \times 10^n$ where $1 \leq a < 10$ and $n$ is an integer.

page 61 REVIEW SET 2A

1 e $-(x - 2)^2$

page 77 EXERCISE 3E

5 Find $\sqrt{11} - 6\sqrt{2}$. (Reminder: $\sqrt{2}$ is never negative.)

page 80 OPENING PROBLEM change question numbering

a From where he stands on the fairway, how far is the caddy from the tee?
b If he knows the hole is 430 m long, how far is the caddy from the 150 m marker?
c How far does Karrie need to hit her ball with her second shot to reach the hole?

page 100 REVIEW SET 4A change diagram

10 b

page 102 REVIEW SET 4B change diagram

Shift \{gradient formula\} one line up

page 121 EXERCISE 5E.1

6 b Show that $[AQ]$ has equation $cx - (b - 2a)y = 2ac$.

page 156 TEXT (bullet points in the middle of page, change first sub-point)

\begin{itemize}
  \item with centre the origin
\end{itemize}

page 181 EXERCISE 8C add legend to stem-and-leaf plot in question 3

1 | 8 represents 18

page 196 EXERCISE 8G add legend to stem-and-leaf plot in question 3

5 | 1 represents 51
2. **b** Why do your answers in **a** not add up to 1?

\[
\frac{2}{x} \left( \frac{x + 2}{x + 2} \right) + \left( \frac{1}{x + 2} \right) \frac{x}{x} = 2x = -4 \quad \text{or} \quad -6
\]
\[
\therefore \quad x = -2 \quad \text{or} \quad -3
\]

### EXERCISE 10E.2

**b** Why do your answers in **a** not add up to 1?

\[
\frac{2}{x} \left( \frac{x + 2}{x + 2} \right) + \left( \frac{1}{x + 2} \right) \frac{x}{x} = 2x = -4 \quad \text{or} \quad -6
\]
\[
\therefore \quad x = -2 \quad \text{or} \quad -3
\]

### EXAMPLE 10

**b** Why do your answers in **a** not add up to 1?

\[
\frac{2}{x} \left( \frac{x + 2}{x + 2} \right) + \left( \frac{1}{x + 2} \right) \frac{x}{x} = 2x = -4 \quad \text{or} \quad -6
\]
\[
\therefore \quad x = -2 \quad \text{or} \quad -3
\]

### SAMPLE TEXT

**2** Why do your answers in **a** not add up to 1?

\[
\frac{2}{x} \left( \frac{x + 2}{x + 2} \right) + \left( \frac{1}{x + 2} \right) \frac{x}{x} = 2x = -4 \quad \text{or} \quad -6
\]
\[
\therefore \quad x = -2 \quad \text{or} \quad -3
\]

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\]
\[
\therefore \quad x = -2 \quad \text{or} \quad -3
\]

**EXAMPLE 10** solutions to part **a**, change second last lines to:

- using words
- using an explicit formula
  \[ u_n = 2n - 1 \]

\( u_n \) is called the **n**th term or the **general term**.

** Exercise 11E.2 **

**b** Why do your answers in **a** not add up to 1?

\[
\frac{2}{x} \left( \frac{x + 2}{x + 2} \right) + \left( \frac{1}{x + 2} \right) \frac{x}{x} = 2x = -4 \quad \text{or} \quad -6
\]
\[
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\]

**EXAMPLE 13** solutions to part **a**, change second line to:

- using words
- using an explicit formula
  \[ u_n = 2n - 1 \]

\( u_n \) is called the **n**th term or the **general term**.

**Exercise 18H**

**b** Why do your answers in **a** not add up to 1?

\[
\frac{2}{x} \left( \frac{x + 2}{x + 2} \right) + \left( \frac{1}{x + 2} \right) \frac{x}{x} = 2x = -4 \quad \text{or} \quad -6
\]
\[
\therefore \quad x = -2 \quad \text{or} \quad -3
\]

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**Exercise 18H**

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**Exercise 18H**

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\[
\frac{2}{x} \left( \frac{x + 2}{x + 2} \right) + \left( \frac{1}{x + 2} \right) \frac{x}{x} = 2x = -4 \quad \text{or} \quad -6
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**Exercise 18H**

**b** Why do your answers in **a** not add up to 1?

\[
\frac{2}{x} \left( \frac{x + 2}{x + 2} \right) + \left( \frac{1}{x + 2} \right) \frac{x}{x} = 2x = -4 \quad \text{or} \quad -6
\]
\[
\therefore \quad x = -2 \quad \text{or} \quad -3
\]
Susanne wishes to purchase 10 breeding female labradors from another breeder in the next county. The other breeder has 30 bitches for sale and knows that 4 of them have a problem with hip dysplasia but is not prepared to disclose this information. Before the purchase takes place, Susanne decides to randomly sample three of the dogs and have them X-rayed to determine if they have the dysplasia problem. If none of the three has the problem she will buy them, together with 7 others selected at random. What is the chance that Susanne purchases the dogs and at least one of them has the hip problem?
page 565 ANSWERS EXERCISE 7C

1 a $R_{90} = (-3, -2), \ R_{-90} = (3, 2), \ R_{180} = (2, -3)$
   b $R_{90} = (1, 4), \ R_{-90} = (-1, -4), \ R_{180} = (-4, 1)$

page 567 ANSWERS EXERCISE 8D

1 b $x = -1 \pm \sqrt{3}$, no real solutions exist

3 d Height of netball players

page 567 ANSWERS EXERCISE 8E.1

5 d increase mean to 40.75

page 568 ANSWERS EXERCISE 8F

5 b 77 runners

page 569 ANSWERS EXERCISE 8J.1

1 e $s$ takes all values into account, whereas the range and IQR each use only 2 values.

page 569 ANSWERS EXERCISE 8J.2

3 mean length = 38.3 cm, SD = 2.66 cm

page 569 ANSWERS EXERCISE 8K

2 b i 286

page 571 ANSWERS EXERCISE 9C (change question numbering)

4 b

page 571 ANSWERS EXERCISE 9D

7 10 m

page 571 ANSWERS EXERCISE 9E.2

1 b $x = -1 \pm \sqrt{3}$, no real solutions exist

1 c $x = \frac{1 \pm \sqrt{-7}}{4}$, no real solutions exist

page 572 ANSWERS REVIEW SET 9B

7 c $x = \frac{-5 \pm \sqrt{85}}{6}$

9 a $x = \frac{29 + \sqrt{865}}{6}$

10 $\frac{2}{3} + \sqrt{3}$ and $\frac{2}{3} + \sqrt{3}$ (delete “or ......”)

page 572 ANSWERS EXERCISE 10A.2 (change question number)

4 The 3 triangles do not exist.

page 573 ANSWERS EXERCISE 10B.1

2 32.9°

page 573 ANSWERS EXERCISE 10D

10 $\tan(180^\circ - \theta) = -\tan \theta$

page 573 ANSWERS EXERCISE 10F

1 a $x \approx 11.1$

2 a $a \approx 28.4$ cm

3 a $\theta \approx 31.4^\circ$

4 a $\hat{A} \approx 49.1^\circ$
\[
\begin{align*}
&3 \quad \theta = 36^\circ, \ x \approx 12.4, \ y \approx 21.0 \\
&2 \quad a \ x \approx 38.7^\circ \quad b \ x \approx 37.1^\circ \\
&3 \quad x \approx 25.7, \ \alpha \approx 36.4^\circ, \ \theta \approx 53.6^\circ \\
&10 \quad x \approx 2.83 \text{ or } 15.56
\end{align*}
\]

\[
\begin{align*}
&2 \quad b \ 113 \text{ m}
\end{align*}
\]

\[
\begin{align*}
&1 \quad g \ x = \frac{1}{3} \text{ or } 1
\end{align*}
\]

\[
\begin{align*}
&2 \quad d \ \text{no} \quad e \ \text{no, as } n \text{ would be } < 0
\end{align*}
\]

\[
\begin{align*}
&7 \quad c \ u_n = 3 \times (\pm \sqrt{2})^{n-1} \quad d \ u_n = 6 \times (\pm \sqrt{2})^{n-1} \\
&9 \quad c \ 118 \text{.98}
\end{align*}
\]

\[
\begin{align*}
&3 \quad d \ \text{Scale: } 1 \text{ cm } \equiv 30 \text{ km h}^{-1}
\end{align*}
\]

\[
\begin{align*}
&4 \quad \text{Paolo is 25 km from his starting point at a bearing of } 347^\circ. \\
&5 \quad \text{Gina is 6.76 km from her starting point at a bearing of } 006.60^\circ.
\end{align*}
\]

\[
\begin{align*}
&4 \quad a \ \text{The boat must head } 25.5^\circ \text{ west of north.}
\end{align*}
\]

\[
\begin{align*}
&1 \quad b \ 160 \\
&4 \quad d \ \approx 56.5\% \quad \text{(add)}
\end{align*}
\]

\[
\begin{align*}
&6 \quad b \ x = 10 \quad c \ 200 \text{ m}^2 \quad \text{(change question numbering)}
\end{align*}
\]

\[
\begin{align*}
&3 \quad f \ \cos\left(\frac{7\pi}{2}\right) = 0, \ \sin\left(\frac{7\pi}{2}\right) = -1
\end{align*}
\]

\[
\begin{align*}
&598 \quad \text{ANSWERS EXERCISE 18E} \quad \text{(change question numbering)}
\end{align*}
\]

\[
\begin{align*}
&4 \quad H \approx 4 \sin 0.507(t - 9.3) + 6 \text{ metres} \\
&5 \quad \text{Safe for about } 65\% \text{ to } 66\% \text{ of the time.}
\end{align*}
\]

\[
\begin{align*}
&14 \quad a \ 1 + \sqrt{3} \quad c \ 1 + \frac{\sqrt{2} + \sqrt{6}}{4} \quad i \ 2 + \sqrt{3}
\end{align*}
\]
page 601 ANSWERS EXERCISE 19B

4a $x \in [3, 8]$ 
4b $x > -\frac{5}{3}$ 
4c $x \leq -3$ or $x > 1$

page 601 ANSWERS REVIEW SET 19B

1b $0 < x < 2$ 
1c $0 > x > 2$ 

page 603 ANSWERS REVIEW SET 20A (change question numbering)

8c 7 units$^2$

page 603 ANSWERS REVIEW SET 20B

9a $(-2\sqrt{3}, -2\sqrt{3})$

page 604 ANSWERS EXERCISE 21A (change question numbering)

9 $1$ cm 
10 $40$ cm

page 604 ANSWERS EXERCISE 21C

5b iii $\alpha^\circ$ {angles on the same arc}

page 16 ANSWERS CHAPTER 23 EXERCISE 23B (CD only)

3a 60 
12a 180 b 25 c 30 d 55