

Mathematics
STANDARD 4
NUMBER: NUMBER
PATTERNS

TEACHING POINTS

Number Patterns

- Repeating, increasing and decreasing patterns
- Pattern Rule
- Missing elements
- Extending a pattern

EXERCISE 1

State whether the following number patterns are repeating, increasing or decreasing.

	NUMBER PATTERN	INCREASING, DECREASING OR REPEATING
1.	2, 4, 6, 2, 4, 6, 2, 4, 6, 2....	_____
2.	3, 6, 9, 12, 15, 18,.....	_____
3.	1,0, 1,0,1, 0,1, 0,1,	_____
4.	100, 95, 90, 85, 80,	_____
5.	1, 4, 9, 16, 25, 36,.....	_____
6.	256,128, 64, 32, 16,	_____
7.	5, 10, 15, 20, 5, 10, 15, 20, 5, 10, 15, 20,.....	_____
8.	1, 2, 4, 7, 11, 16, 22,....	_____
9.	125, 123, 121, 119, 117,	_____
10	3, 6, 12, 24, 48,	_____

EXERCISE 2

Write the pattern rule for each of the following patterns.

2, 4, 6, 8, 10, 12, _____

80, 76, 72, 68, 64, 60, _____

1, 2, 1, 2, 1, 2, 1, 2, _____

1, 4, 9, 16, 25, 36, _____

5, 10, 15, 20, 25, 30, _____

1, 2, 4, 7, 11, 16, 22, _____

960, 480, 240, 120, 60, _____

4, 8, 16, 32, 64, 128, _____

EXERCISE 3

Write in the missing elements in the patterns below.

1. 12, 17, 22, _____, 32, 37,...
2. 800, 400, 200, _____, 50, 25,...
3. 75, 70, _____, _____, 55, 50,...
4. 5, 6, 7, 5, 6, 7, 5, 6, 7, 5 _____, _____, 5, 6,...
5. 144, 121, _____, 81, _____, 49, 36,.....
6. 24, 25, 27, 30, _____, 39, _____, 52, 60,....
7. 90, 81, 72, _____, 54, _____, 36, 27,.....
8. 40, 51, 62, _____, 84, _____, 106, 117,.....

EXERCISE 4

Write the 6th and 7th elements in each of the following number patterns.

1. 42, 44, 46, 48,.....

2. 96, 88, 80, 72,.....

3. 4 800, 2 400, 1 200, 600,.....

4. 5, 6, 8, 11,.....

5. 1. 4. 9. 16,.....





6. 80, 79, 77, 74,.....

7. 48, 57, 66, 75,.....

8. 2, 6, 18, 54,.....

EXERCISE 5 SEA QUESTIONS

No.	Year	Question														
1.	2019	<p>A farmer sold avocados over a period of 6 days. The number of avocados sold each day follows a pattern as shown in the table below. The number of avocados sold on Day 5 and Day 6 is not shown.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Day</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> </tr> </thead> <tbody> <tr> <td>Number of Avocados Sold</td> <td>60</td> <td>66</td> <td>73</td> <td>81</td> <td></td> <td></td> </tr> </tbody> </table> <p>How many avocados were sold altogether for the 6 days?</p> <p>3 marks</p>	Day	1	2	3	4	5	6	Number of Avocados Sold	60	66	73	81		
Day	1	2	3	4	5	6										
Number of Avocados Sold	60	66	73	81												
2.	2018	<p>A pattern is formed using triangles as shown below.</p> <div style="text-align: center;"> </div> <p>How many triangles will form the 7th pattern?</p> <p>Answer _____ triangles</p> <p>2 marks</p>														
3.		<p>A group of students uses sticks to create craft items. The number of sticks form a pattern as shown below.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Item Number</th> <th>Number of Sticks Used</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>16</td> </tr> <tr> <td>2</td> <td>25</td> </tr> <tr> <td>3</td> <td>36</td> </tr> <tr> <td>4</td> <td>49</td> </tr> <tr> <td>5</td> <td>64</td> </tr> </tbody> </table> <p>(a) What is the pattern rule for the number of sticks used?</p> <p>(b) Using the same rule, how many sticks will be used to make Item number 7?</p> <p>(c) For which item number will 121 sticks be used?</p> <p>3 marks</p>	Item Number	Number of Sticks Used	1	16	2	25	3	36	4	49	5	64		
Item Number	Number of Sticks Used															
1	16															
2	25															
3	36															
4	49															
5	64															

4.	2017	<p>Write the next term in the sequence below.</p> <p>32, 16, 8, _____</p> <p>1 mark</p>
5.		<p>A pattern is formed using dots as shown below.</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>Figure 1</p> </div> <div style="text-align: center;">  <p>Figure 2</p> </div> <div style="text-align: center;">  <p>Figure 3</p> </div> <div style="text-align: center;">  <p>Figure 4</p> </div> </div> <p>How many dots will form Figure 6?</p> <p>Answer _____ dots (2 marks)</p>
6.	2016	<p>Write the next term in the following sequence.</p> <p>27, 36, 45, 54, _____</p> <p>1 mark</p>
7.	2015	<p>Complete the following number sequence.</p> <p>4, 9, 15, 22, 30, 39, _____</p>

ANSWERS

EXERCISE 1 ANSWERS

	NUMBER PATTERN	INCREASING, DECREASING OR REPEATING
1.	2, 4, 6, 2, 4, 6, 2, 4, 6, 2....	<u>Repeating</u>
2.	3, 6, 9, 12, 15, 18,.....	<u>Increasing</u>
3.	1,0, 1,0,1, 0,1, 0,1,	<u>Repeating</u>
4.	100, 95, 90, 85, 80,	<u>Decreasing</u>
5.	1, 4, 9, 16, 25, 36,.....	<u>Increasing</u>
6.	256,128, 64, 32, 16,	<u>Decreasing</u>
7.	5, 10, 15, 20, 5, 10, 15, 20, 5, 10, 15, 20,.....	<u>Repeating</u>
8.	1, 2, 4, 7, 11, 16, 22,....	<u>Increasing</u>
9.	125, 123, 121, 119, 117,	<u>Decreasing</u>
10	3, 6, 12, 24, 48,	<u>Increasing</u>

EXERCISE 2 ANSWERS

2, 4, 6, 8, 10, 12,

Add 2

80, 76, 72, 68, 64, 60,

Subtract 4

1, 2, 1, 2, 1, 2, 1, 2,

Digits 1 and 2 repeat OR

digits repeat after every 2 elements

1, 4, 9, 16, 25, 36,

Square numbers

5, 10, 15, 20, 25, 30,

Add 5 OR Multiples of 5

1, 2, 4, 7, 11, 16, 22,

Numbers added increase by 1

960, 480, 240, 120, 60,

Divide by 2

4, 8, 16, 32, 64, 128,

Multiply by 2

EXERCISE 3 ANSWERS

1. 12, 17, 22, 27, 32, 37,...
2. 800, 400, 200, 100, 50, 25,...
3. 75, 70, 65, 60, 55, 50,...
4. 5, 6, 7, 5, 6, 7, 5, 6, 7, 5, 6, 7, 5, 6,...
5. 144, 121, 100, 81, 64, 49, 36,.....
6. 24, 25, 27, 30, 34, 39, 45, 52,60,.....
7. 90, 81, 72, 63, 54, 45, 36, 27,.....
8. 40, 51, 62, 73, 84, 95, 106,117,.....

EXERCISE 4 ANSWERS

1. 42, 44, 46, 48,..... **52 and 54**

2. 96, 88, 80, 72,..... **56 and 48**

3. 4 800, 2 400, 1 200, 600,.....**150 and 75**

4. 5, 6, 8, 11,..... **20 and 26**

5. 1. 4. 9. 16,..... **36 and 49**

6. 80, 79, 77, 74,..... **65 and 59**

7. 48, 57, 66, 75,..... **93 and 102**

8. 2, 6, 18, 54,..... **468 and 1458**

EXERCISE 5 ANSWERS

1. 470
2. 28
3. (a) Square numbers (b) 100 (c) 8th
4. 4
5. 28
6. 63
7. 49