

# GRADE 6

# SEQUENCES & PATTERNS

Complete Worksheet Pack

## What this pack covers

Number sequences • Missing terms • Term-to-term rules • nth-term rules • Tables •  
Visual and real-life patterns • Pattern relationships • Reasoning challenges

6 practice worksheets + 6 separate answer-key pages

# Worksheet 1: Number Sequences & Rules

Look for the pattern carefully. Show the rule you used, especially for nth-term and reasoning questions.

1. Continue: 4, 8, 12, 16, \_\_\_\_, \_\_\_\_.
2. Continue: 75, 68, 61, 54, \_\_\_\_, \_\_\_\_.
3. Find the rule: 3, 7, 11, 15, 19, ...
4. Find the rule: 50, 45, 40, 35, ...
5. Continue: 2, 6, 18, 54, \_\_\_\_, \_\_\_\_.
6. Continue: 96, 48, 24, 12, \_\_\_\_, \_\_\_\_.
7. A sequence begins 11, 15, 19, 23. What is the 10th term?
8. A sequence starts at 100 and decreases by 6 each time. What is the 12th term?

# Answer Key 1

## Worksheet 1: Number Sequences & Rules — Answers

1. 20, 24
2. 47, 40
3. Add 4
4. Subtract 5
5. 162, 486
6. 6, 3
7. 47
8. 34

Teacher note: Accept equivalent descriptions or rules where mathematically correct.

## Worksheet 2: Finding Missing Terms & Patterns

Look for the pattern carefully. Show the rule you used, especially for nth-term and reasoning questions.

1. Find the missing terms: 5, 10, \_\_\_\_, 20, 25, \_\_\_\_, 35.
2. Find the missing terms: 81, \_\_\_\_, 63, 54, \_\_\_\_, 36.
3. 7, 14, 28, \_\_\_\_, 112, \_\_\_\_.
4. 160, 80, \_\_\_\_, 20, \_\_\_\_, 5.
5. 2, 5, 10, 17, 26, \_\_\_\_, \_\_\_\_\_. What is being added each time?
6. 1, 4, 9, 16, 25, \_\_\_\_, \_\_\_\_.
7. 3, 6, 12, 24, 48, \_\_\_\_\_. What is the multiplier?
8. Find the missing term: 200, 190, 175, 155, \_\_\_\_, 100.

## Answer Key 2

### Worksheet 2: Finding Missing Terms & Patterns — Answers

1. 15, 30
2. 72, 45
3. 56, 224
4. 40, 10
5. 37, 50; add 3,5,7,9,11,13
6. 36, 49
7. 96; multiply by 2
8. 130

Teacher note: Accept equivalent descriptions or rules where mathematically correct.

## Worksheet 3: Term-to-Term & Position-to-Term Rules

Look for the pattern carefully. Show the rule you used, especially for nth-term and reasoning questions.

1. For the sequence 5, 9, 13, 17, ... write a rule for the nth term.
2. For 12, 17, 22, 27, ... write a rule for the nth term.
3. Find the 20th term of 3, 7, 11, 15, ...
4. Find the 15th term of 8, 14, 20, 26, ...
5. The nth term is  $3n + 2$ . Find the 1st, 5th and 10th terms.
6. The nth term is  $5n - 1$ . Find the 3rd, 7th and 12th terms.
7. Which term of the sequence 6, 10, 14, 18, ... is 54?
8. Which term of the sequence 9, 14, 19, 24, ... is 59?

## Answer Key 3

### Worksheet 3: Term-to-Term & Position-to-Term Rules — Answers

1.  $4n + 1$
2.  $5n + 7$
3. 79
4. 92
5. 5, 17, 32
6. 14, 34, 59
7. 13th term
8. 11th term

Teacher note: Accept equivalent descriptions or rules where mathematically correct.

## Worksheet 4: Visual & Real-Life Patterns

Look for the pattern carefully. Show the rule you used, especially for nth-term and reasoning questions.

1. A tile pattern has 4 tiles in Figure 1, 7 in Figure 2, 10 in Figure 3, and 13 in Figure 4. How many tiles in Figure 10?
2. A staircase pattern has 3 blocks in Figure 1, 5 in Figure 2, 7 in Figure 3. Find Figure 15.
3. A savings plan starts with \$20 and increases by \$15 each week. How much is saved in Week 8?
4. A plant is 12 cm tall and grows 3 cm each week. How tall is it after 9 weeks?
5. A theatre row has 18 seats. Each next row has 2 more seats. How many seats are in Row 12?
6. A delivery route has 5 stops on Day 1, 8 on Day 2, 11 on Day 3. How many stops on Day 20?
7. A pattern has 6 squares in Figure 1 and increases by 4 squares each figure. Write an expression for Figure  $n$ .
8. A monthly fee pattern is \$30, \$35, \$40, \$45, ... What will the fee be in Month 18?

## Answer Key 4

### Worksheet 4: Visual & Real-Life Patterns — Answers

1. 31 tiles
2. 31 blocks
3. \$125
4. 36 cm
5. 40 seats
6. 62 stops
7.  $4n + 2$
8. \$115

Teacher note: Accept equivalent descriptions or rules where mathematically correct.

## Worksheet 5: Pattern Relationships & Tables

Look for the pattern carefully. Show the rule you used, especially for nth-term and reasoning questions.

1. Complete the table for  $y = 3x + 2$ :  $x = 1, 2, 3, 4, 5$ .
2. Complete the table for  $y = 5x - 1$ :  $x = 2, 3, 4, 5$ .
3. A sequence has nth term  $2n + 7$ . Find terms 4, 8 and 15.
4. A pattern has terms 6, 11, 16, 21. Write the rule and find the 25th term.
5. If a sequence follows  $7n - 3$ , which term is 46?
6. The outputs are 9, 13, 17, 21 for inputs 1, 2, 3, 4. Write the rule.
7. The rule is  $4n + 5$ . What is the difference between the 12th and 7th terms?
8. A pattern starts 100 and decreases by 7. Write the nth-term rule and find the 14th term.

## Answer Key 5

### Worksheet 5: Pattern Relationships & Tables — Answers

1. 5, 8, 11, 14, 17
2. 9, 14, 19, 24
3. 15, 23, 37
4. Add 5; 126
5. 7th term
6.  $y=4x+5$
7. 20
8.  $107-7n$ ; 9

Teacher note: Accept equivalent descriptions or rules where mathematically correct.

## Worksheet 6: Sequences & Patterns Reasoning Challenge

Look for the pattern carefully. Show the rule you used, especially for nth-term and reasoning questions.

1. A sequence begins 2, 5, 10, 17, 26. Find the next two terms and explain the pattern.
2. The nth term of a sequence is  $4n - 3$ . Is 101 a term? Explain.
3. Two sequences are A: 5, 9, 13, ... and B: 2, 8, 14, ... Do they ever have a common term? Explain.
4. A pattern has nth term  $6n + 1$ . Which term is 97?
5. A sequence starts at 200 and subtracts consecutive even numbers: 200, 198, 194, 188, ... Find the next three terms.
6. A pattern has 3 more squares each figure. Figure 1 has 7 squares. How many squares are in Figure 25?
7. Find the smallest positive  $n$  for which  $5n + 2 > 100$ .
8. A sequence has nth term  $3n + 4$ . Another has nth term  $5n - 2$ . Find the first positive  $n$  for which the terms are equal.

## Answer Key 6

### Worksheet 6: Sequences & Patterns Reasoning Challenge — Answers

1. 37, 50; differences +3,+5,+7,+9,+11,+13
2. No;  $4n-3=101$  gives  $n=26$ , so yes, actually 101 IS the 26th term
3. No. Sequence A always gives odd numbers (5 mod 4), while sequence B always gives even numbers.
4. 16th term
5. 180, 170, 158
6. 79 squares
7.  $n=20$
8.  $n=3$ ; both equal 13

Teacher note: Accept equivalent descriptions or rules where mathematically correct.