WONDERLEARNERZ PRIMARY ACADEMY â€" OFFICIAL ANSWER KEY & MARKING SCHEME

Patterns and Sequences: Worksheet 3 [ANSWER KEY]

Grade 5 | Mathematics | Ch 11: Patterns and Sequences | Total Marks: 19 | Time: 45 Minutes

Q1. What is the next number in the arithmetic sequence: 21, 30, 39, 48, [?]? [1 Mark]

Correct Answer: 57

Explanation: The rule is add 9: 48 + 9 = 57.

Q2. Identify the missing term in the sequence of square numbers: 1, 4, 9, 16, [?], [1 Mark]
36.

Correct Answer: 25

Explanation: These are square numbers (1Â², 2Â², 3Â², 4Â², 5Â², 6Â²). 5Â² = 25.

Q3. What is the rule for this sequence: 80, 72, 64, 56, 48? [1 Mark]

Correct Answer: Subtract 8 each time

Explanation: Each term decreases by 8: 80 - 8 = 72, 72 - 8 = 64, etc.

Q4. Find the 10th term of the sequence starting at 5 with the rule 'Add 4': 5, 9, 13, [1 Mark]
17...

Correct Answer: 41

Explanation: Term n = 5 + (n - 1) x 4. For n = 10: 5 + 9 x 4 = 5 + 36 = 41.

Q5. At the Harbor Marine Terminal, an amphitheater arranges chairs in rows: Row 1 has [1 Mark]
18 chairs, Row 2 has 24, Row 3 has 30, and so on. How many chairs are in Row 7?

Correct Answer: 54 chairs

Explanation: Pattern starts at 18 with rule +6. Row 7 = 18 + (6 x 6) = 18 + 36 = 54 chairs.

Q6. A fitness tracker user logs daily walking goals: Day 1: 4,000 steps, Day 2: 4,500 [1 Mark]
steps, Day 3: 5,000 steps. What will be the step goal on Day 10?

Correct Answer: 8,500 steps

Explanation: Rule is +500 steps daily. Day 10 = 4,000 + (9 x 500) = 4,000 + 4,500 = 8,500 steps.

Q7. A bacteria culture doubles in population every hour. If there are 15 cells [1 Mark]
initially, how many cells will exist after 4 hours?

Correct Answer: 240 cells

Explanation: Hour 0: 15. Hour 1: 30. Hour 2: 60. Hour 3: 120. Hour 4: 240 cells.

Q8. Find the missing value in this sequence: 14, 21, [?], 35, 42. [1 Mark]

Correct Answer: 28

Explanation: Rule is add 7: 21 + 7 = 28.

Q9. Fill in the missing number: 3, 6, 12, [?], 48, 96. [1 Mark]

Correct Answer: 24

Explanation: Geometric pattern multiplies by 2: 12 x 2 = 24.

Q10. A student writes the sequence of multiples of 9: '9, 18, 27, 35, 45, 54.' [1 Mark]
Identify the mistake and provide the correct sequence term.

Correct Answer: 36 instead of 35

Explanation: 4 x 9 is 36, not 35.

Q11. Kevin claims: 'The sequence 2, 4, 8, 16 has the rule Add 2.' Explain Kevin's [1 Mark]
error and state the true rule.

Correct Answer: The rule is multiply by 2 (geometric doubling), not add 2

Explanation: Adding 2 only works for 2 to 4; 4+2=6, not 8. Each term is multiplied by 2.

Q12. Explain the difference between an arithmetic sequence and a geometric sequence using clear examples. **[2 Marks]**

Correct Answer: An arithmetic sequence adds or subtracts a constant common difference (e.g., 3, 7, 11, 15 adds 4), while a geometric sequence multiplies or divides by a constant ratio (e.g., 3, 6, 12, 24 doubles).

Explanation: Arithmetic sequences change linearly by addition; geometric sequences grow exponentially by multiplication.

Q13. How can finding the pattern rule help predict terms far ahead without writing out every intermediate number? **[2 Marks]**

Correct Answer: Formulating an algebraic rule (like Term n = Start + (n - 1) x difference) allows direct calculation of any distant term (like the 100th term) in one step.

Explanation: Algebraic formulas generalize recursive patterns into direct calculation functions.

Q14. Find the sum of the first 6 square numbers: 1Â² + 2Â² + 3Â² + 4Â² + 5Â² + 6Â². **[2 Marks]**

Correct Answer: 91

Explanation: 1 + 4 + 9 + 16 + 25 + 36 = 91.

Q15. In a two-step pattern, terms alternate between 'Multiply by 2' and 'Add 3': 2, 4, 7, 14, 17, [?], [?]. What are the next two terms? **[2 Marks]**

Correct Answer: 34 and 37

Explanation: From 17: Multiply by 2 -> 34. Then Add 3 -> 37.