

Grade 4 - Number and Shape Patterns - Test Answer Key

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Use this answer key and scoring guide to grade the number patterns test. Each solution shows the terms and the reasoning, and the scoring notes explain partial credit out of 20 points.

Grade 4 · Common Core State Standards: **4.OA.C.5**

Question 1 - Add 7 pattern [2 pts]

8, 15, 22, 29, 36, 43.

8, 15, 22, 29, 36, 43

Scoring: 2 points for all six terms; 1 point if one term is wrong or one is missing.

Question 2 - Doubling pattern [2 pts]

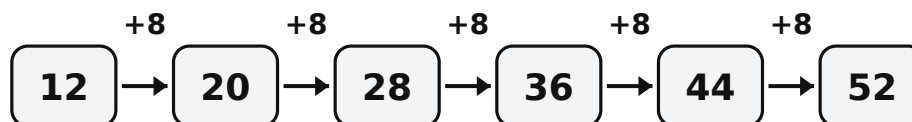
$3 \times 2 = 6$, $6 \times 2 = 12$, $12 \times 2 = 24$, $24 \times 2 = 48$.

3, 6, 12, 24, 48

Scoring: 2 points for all five terms; 1 point if the first three terms are correct.

Question 3 - Missing terms [2 pts]

Each term is 8 more than the one before. $36 + 8 = 44$, $44 + 8 = 52$.



Completed pattern.

Add 8; 44 and 52

Scoring: 1 point for the rule; 1 point for both missing numbers.

Question 4 - Input-output table [2 pts]

$10-4=6$, $12-4=8$, $15-4=11$, $18-4=14$, $20-4=16$.

Rule: subtract 4

Input	10	12	15	18	20
Output	6	8	11	14	16

Completed table.

6, 8, 11, 14, 16

Scoring: 2 points for five correct outputs; 1 point for three or four correct.

Question 5 - Find the table rule [2 pts]

$3 \times 4 = 12$, $5 \times 4 = 20$, $7 \times 4 = 28$, $9 \times 4 = 36$. The rule is multiply by 4.

$11 \times 4 = 44$.

Multiply by 4; output 44

Scoring: 1 point for the rule; 1 point for 44.

Question 6 - Toothpick squares [3 pts]

(a) 4, 7, 10: add 3 each time, starting at 4.

(b) 13, 16, 19. Six squares need 19 toothpicks.

(c) The terms are 4, 7, 10, 13, 16, 19, 22, 25. Yes, 8 squares use 25 toothpicks.



4 squares: 13



5 squares: 16



6 squares: 19

Squares 4, 5 and 6.

(a) start at 4, add 3 (b) 19 (c) yes, 8 squares

Scoring: 1 point for each part.

Question 7 - Odd or even feature [2 pts]

5, 9, 13, 17, 21, 25.

Every term is odd, because adding an even number to an odd number always gives an odd number.

5, 9, 13, 17, 21, 25; all odd

Scoring: 1 point for the six terms; 1 point for a correct feature.

Question 8 - Flower garden rows [3 pts]

(a) 3, 7, 11, 15, 19.

(b) Continue: 23, 27, 31. Row 8 has 31 flowers.

(c) Every row has an odd number of flowers (3 is odd and 4 is even). 50 is even, so no row has 50.

(a) 3, 7, 11, 15, 19 (b) 31 (c) no, all rows are odd

Scoring: 1 point for each part.

Question 9 - Diego's claim [2 pts]

2, 5, 8, 11, 14, 17.

The terms alternate even, odd, even, odd. Adding 3 (an odd number) changes odd and even each time.

Diego is not correct.

Scoring: 1 point for the six terms; 1 point for a correct conclusion with a reason.

Total

20 points