Year 2 maths: Growing patterns (Hard)

Maths · Patterns and algebra
Level: Hard

Student: _____ Date: _____

Instructions
- There are 10 questions. Read each one carefully.
- Write your answers on this paper. Use the space under a question to work it out.
- A grown-up can read a question aloud — that's fine.
- The answers are at the end. Check them together when you have finished.

Questions

1. What number comes next? 39, 37, 35, 33, ___ Answer: ☐

39 , **37** , **35** , **33** , ☐

Working:

2. How many shells will Step 6 have? Answer: ☐ shells



Step 1 **Step 2** **Step 3**

Working:

3. One number in this pattern is wrong. Which one? 90, 80, 75, 60, 50

Circle one answer.

90 , **80** , **75** , **60** , **50**

○ **A** 80 ○ **B** 75 ○ **C** 60 ○ **D** 50

4. What number is missing at the start? ___, 17, 20, 23

Answer: ☐



Working:

5. Start at 3 and add 4 each time. Which numbers will be in the pattern? Tick every one.

Tick every answer that fits.

☐ **A** 15 ☐ **B** 18 ☐ **C** 19 ☐ **D** 22

6. In a growing pattern, Step 2 has 7 stars and Step 3 has 10 stars. Each step adds the same number. How many stars does Step 1 have?

Answer: ☐ stars

Working:

7. What number is missing at the start? ___, 44, 41, 38

Answer: ☐



Working:

8. Liam says the rule for 81, 78, 75, 72 is 'add 3'. Is he right?

Circle one answer.



○ **A** No. The numbers get smaller, so the rule is take away 3.

○ **B** No. The rule is take away 81.

○ **C** Yes. Every jump is 3.

9. Start at 100 and count back by 10s. Which numbers will you say? Tick every one.

Tick every answer that fits.

☐ **A** 80 ☐ **B** 75 ☐ **C** 40 ☐ **D** 110

10. What is the rule? 1, 3, 7, 15

Circle one answer.



- ○ **A** Double
- ○ **B** Double, then add 1
- ○ **C** Add 2

Answer key

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1. 31
The pattern takes away 2 each time. 33 − 2 = 31.

2. 19 shells
Each step adds 3: 4, 7, 10, then Step 4 is 13, Step 5 is 16 and Step 6 is 19.

3. B — 75
The rule is take away 10: 90, 80, 70, 60, 50. 75 should be 70.

4. 14
The pattern adds 3 each time. To go back, take 3 away: 17 − 3 = 14.

5. A — 15; C — 19
The pattern is 3, 7, 11, 15, 19, 23. 15 and 19 are in it. 18 and 22 are not.

6. 4 stars
Each step adds 3 (7 to 10). Going back, take 3 away: 7 − 3 = 4.

7. 47
The pattern takes away 3 each time. To go back to the start, go the other way: 44 + 3 = 47. Check: 47 − 3 = 44.

8. A — No. The numbers get smaller, so the rule is take away 3.
The numbers get smaller, so the rule must take away. 81 − 3 = 78, so the rule is take away 3. Liam found the right jump but the wrong direction.

9. A — 80; C — 40
Counting back by 10s from 100: 90, 80, 70, 60, 50, 40… 80 and 40 are in the pattern. 75 isn't (it has 5 ones) and 110 is counting up, not back.

10. B — Double, then add 1
Double 1 is 2, add 1 is 3. Double 3 is 6, add 1 is 7. Double 7, add 1 is 15.