2.13-2 Sequences and Patterns: Practice Set 2: Test Pack

GL ASSESSMENT GL · Calculators not allowed · about 15 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A sequence begins 5, 11, 17, 23, ...

(a) Write down the next two terms of the sequence. **(2)**

(b) Describe, in words, the rule for getting from one term to the next. **(1)**

2 Which number continues the sequence?

9, 18, 27, __, 45

- ☐ A) 34
- ☐ B) 35
- ☐ C) 36
- ☐ D) 37

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3 A multi-storey car park has 12 spaces on level 1. Each level above that has 7 more spaces than the level below it.

(a) Write down the number of spaces on level 2, level 3 and level 4. **(2)**

.....

(b) Find a formula for the number of spaces on level n. **(2)**

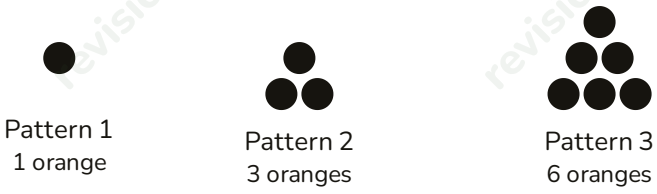
.....

(c) The car park has 15 levels. Find the number of spaces on level 15. **(2)**

.....

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4 Oranges are stacked in a triangular display. Pattern 1 has 1 orange, pattern 2 has 3 oranges and pattern 3 has 6 oranges, each new pattern adding one more row than the last.



Pattern 1
1 orange

Pattern 2
3 oranges

Pattern 3
6 oranges

(a) Write down the next two terms of the sequence. **(2)**

.....

(b) Explain how the pattern of differences between the terms helps you find the next term. **(1)**

.....

(c) Find the number of oranges in pattern 12 without listing every term. **(2)**

.....

5 A sequence begins 11, 15, 19, 23, ... Amina says the nth term of this sequence is 4n + 8. Explain why Amina's formula is incorrect, and write down the correct nth term for the sequence.

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(3)

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Mark scheme · 2.13-2 Sequences and Patterns: Practice Set 2: Test Pack

Question 1

(a) 29 oe **B1**

(a) 35 oe **B1**

(a) Answer: 29, 35

(b) add 6 to the previous term (oe) **B1**

(b) Answer: Add 6 to the previous term

Question 2

C) 36 **B1**

Answer: C) 36

Question 3

(a) two of the three values correct **B1**

(a) all three correct: 19, 26, 33 **B1**

(a) Answer: 19, 26, 33

(b) valid method using common difference 7 and level 1 value 12 **M1**

(b) 7n + 5 cao **A1**

(b) Answer: Number of spaces = 7n + 5

(c) their formula with n = 15 substituted (ft) **M1**

(c) 110 cao **A1**

(c) Answer: 110 spaces

Question 4

(a) 10 **B1**

(a) 15 **B1**

(a) Answer: 10, 15

(b) oe: the differences are consecutive whole numbers (2, 3, 4, 5, ...), each one more than the last, because each new row has one more orange than the row before it **B1**

(b) Answer: The differences are consecutive whole numbers (2, 3, 4, 5, ...), each one more than the last, because each new row has one more orange than the row before it

(c) valid method, e.g. pairing 1 + 2 + ... + 12 as (1 + 12) x 12 / 2, or using pattern n = n(n + 1) / 2 **M1**

(c) 78 cao **A1**

(c) Answer: 78

Question 5

tests Amina's formula, e.g. substitutes n = 1 into 4n + 8 to get 12, and compares with the actual first term 11, showing a mismatch **M1**

finds the correct constant using the common difference of 4 and first term 11 **M1**

correct formula 4n + 7 cao **A1**

Answer: Amina's formula is incorrect because 4(1) + 8 = 12, not 11; the correct nth term is 4n + 7

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