6.2 Pre-Algebra and Sequences: 1-hour Pack

National Curriculum (2014) Mathematics - KS2 Algebra (missing numbers, formulae, sequences) · Calculators not allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Here is a sequence: 1, 9, 17, 25, 33, ...

The nth term is of the form 8n + b. Find the nth term.

Answer: ___

(2)

---

2 Here is a sequence: 17, 20, 23, 26, 29, ...

The nth term is of the form 3n + b. Find the nth term.

Answer: ___

(2)

---

3 Lily has 16 more marbles than Tom. Together they have 96 marbles.

How many marbles does Tom have?

Answer: ___

(2)

© Revision Library | revisionlibrary.co.uk

4 The rule for a sequence is: start at 18 and add 4 each time. The 1st term is 18.

What is the 11th term?

Answer: ___

(2)

---

5 ___ - 9 = 12

Answer: ___

(1)

---

6 The sum of 4 consecutive even numbers is 244.

What is the smallest of the 4 numbers?

Answer: ___

(2)

---

7 The rule for a sequence is: start at 6 and add 3 each time. The 1st term is 6.

What is the 19th term?

Answer: ___

(2)

© Revision Library | revisionlibrary.co.uk

8 Solve 9x - 15 = 93.

Answer: x = ___

(2)

---

9 A number a is found using a = 3n - 7.

Work out a when n = 5.

Answer: ___

(2)

---

10 Look at this sequence: 2, 6, 18, 54, ___

(a) Find the next term. **(1)**

(b) Describe the term-to-term rule for the sequence. **(1)**

---

11 At a school fair, raffle tickets cost £5 each. The total cost, C (in pounds), for n tickets is given by the formula C = 5 x n.

(a) Find C when n = 7. **(1)**

(b) Amara paid £45 for raffle tickets. Find n, the number of tickets she bought. **(2)**

© Revision Library | revisionlibrary.co.uk

12 For a rectangular vegetable patch with length l metres and width w metres, the perimeter P (in metres) is given by the formula P = 2 x (l + w).

(a) A patch has l = 9 m and w = 6 m. Find P. **(1)**

(b) Another patch has perimeter P = 42 m and length l = 13 m. Find w. **(2)**

13 Two whole numbers have a sum of 23 and a product of 132.

What are the two numbers? Write the smaller one first.

Answer: ___ and ___

(2)

14 Solve 6x - 23 = 67.

Answer: x = ___

(2)

15 Here is a sequence: 12, 21, 30, 39, 48, ...

The nth term is of the form 9n + b. Find the nth term.

Answer: ___

(2)

© Revision Library | revisionlibrary.co.uk

16 A number a is found using a = 3n - 8.

Work out a when n = 3.

Answer: ___

(2)

---

17 Simplify 3n + 3n.

Answer: ___

(1)

---

18 Solve 7x - 9 = 12.

Answer: x = ___

(2)

---

19 ___ divided by 7 = 24

Answer: ___

(1)

© Revision Library | revisionlibrary.co.uk

20 The sum of 4 consecutive even numbers is 92.

What is the smallest of the 4 numbers?

Answer: ___

(2)

---

21 Willow has 21 more marbles than Femi. Together they have 97 marbles.

How many marbles does Femi have?

Answer: ___

(2)

---

22 Here is a sequence: 20, 29, 38, 47, 56, ...

The nth term is of the form 9n + b. Find the nth term.

Answer: ___

(2)

---

23 Here is a sequence: 8, 11, 14, 17, 20, ...

The nth term is of the form 3n + b. Find the nth term.

Answer: ___

(2)

© Revision Library | revisionlibrary.co.uk

24 A pen costs 5p. Mia buys x pens.

Write an expression for the total cost in pence.

Answer: ___

(1)

25 Simplify 9x + 1 + x + 2.

Answer: ___

(2)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 6.2 Pre-Algebra and Sequences: 1-hour Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

finds the common difference — M1
8n - 7 cao — A1
Answer: **8n - 7**

Question 2

finds the common difference — M1
3n + 14 cao — A1
Answer: **3n + 14**

Question 3

96 - 16 = 80 seen — M1
40 cao — A1
Answer: **40**

Question 4

10 steps of 4 seen — M1
58 cao — A1
Answer: **58**

Question 5

21 cao — B1
Answer: **21**

Question 6

uses the mean or tests numbers — M1
58 cao — A1
Answer: **58**

Question 7

18 steps of 3 seen — M1
60 cao — A1
Answer: **60**

Question 8

adds or divides first — M1
x = 12 cao — A1
Answer: **x = 12**

Question 9

3 x 5 = 15 seen — M1
8 cao — A1
Answer: **8**

Question 10

(a) 162 cao — B1
(a) Answer: **162**
(b) 'multiply the previous term by 3' oe — B1
(b) Answer: **Multiply the previous term by 3.**

Question 11

(a) 35 (pounds) cao — B1
(a) Answer: **£35**
(b) 45 / 5 seen or implied — M1
(b) 9 cao — A1
(b) Answer: **9**

Question 12

(a) 30 (m) cao — B1
(a) Answer: **30 m**
(b) 42 / 2 (= 21) seen, or an equivalent correct method — M1
(b) 8 (m) cao — A1
(b) Answer: **8 m**

Question 13

tests pairs that add to the sum — M1
11 and 12 cao — A1
Answer: **11 and 12**

Question 14

adds or divides first — M1
x = 15 cao — A1
Answer: **x = 15**

Question 15

finds the common difference — M1
9n + 3 cao — A1
Answer: **9n + 3**

Question 16

3 x 3 = 9 seen — M1
1 cao — A1
Answer: **1**

Question 17

6n cao — B1
Answer: **6n**

Question 18

adds or divides first — M1
x = 3 cao — A1
Answer: **x = 3**

Question 19

168 cao — B1
Answer: **168**

Question 20

uses the mean or tests numbers — M1
20 cao — A1
Answer: **20**

Question 21

97 - 21 = 76 seen — M1
38 cao — A1
Answer: **38**

© Revision Library | revisionlibrary.co.uk

Question 22

finds the common difference	**M1**
9n + 11 cao	**A1**

Answer: **9n + 11**

Question 23

finds the common difference	**M1**
3n + 5 cao	**A1**

Answer: **3n + 5**

Question 24

5x cao	**B1**

Answer: **5x**

Question 25

collects the v terms or the numbers	**M1**
10x + 3 cao	**A1**

Answer: **10x + 3**

© Revision Library | revisionlibrary.co.uk