6.3 Algebra: Formulae, Sequences and Equations: 30-minute Pack

Calculators not allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 The cost, C pounds, of hiring a bike for n hours is C = 2n + 5.

Work out C when n = 6.

Answer: £___

(2)

2 Simplify 4a + 8 + 6a + 9.

Answer: ___

(2)

3 Simplify n + n.

Answer: ___

(1)

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4 The rule for a sequence is: start at 10 and add 5 each time. The 1st term is 10.

What is the 28th term?

Answer: ___

(2)

---

5 Zara has n stamps. Zak has 6 times as many stamps as Zara.

Write an expression for the number of stamps Zak has.

Answer: ___

(1)

---

6 a and b are whole numbers. a + b = 40 and a is 10 more than b.

Find a and b.

Answer: a = ___, b = ___

(2)

---

7 A taxi charges £6 to start and £4 for each mile. A journey is p miles long.

Write an expression for the total cost in pounds.

Answer: ___

(2)

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8 Fill in the missing number: n + 7 = 19. Find n.

(1)

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9 Solve 8x + 19 = 139.

Answer: x = ___

(2)

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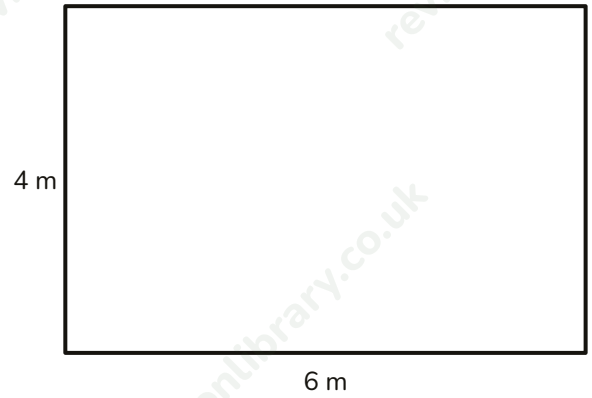
10 Find the nth term for the sequence 2, 5, 8, 11, ... Then find the 20th term.

(2)

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11 Frank uses the formula A = l + w to find the area of a rectangle with length 6 m and width 4 m. Is Frank correct? Explain your answer.

Diagram NOT accurately drawn



(2)

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12 Solve the equation n/4 + 3 = 10. Find n.

(2)

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13 The rule for a sequence is "start at 4, then add 5 each time". Write the first five terms of this sequence.

(2)

---

14 Complete the function machine. Input -> multiply by 3 -> add 4 -> output.
What is the output when the input is 5?

(2)

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Mark scheme · 6.3 Algebra: Formulae, Sequences and Equations: 30-minute Pack

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

Question 1

2 x 6 seen	M1
£17 cao	A1

Answer: **£17**

Question 2

collects the v terms or the numbers	M1
10a + 17 cao	A1

Answer: **10a + 17**

Question 3

2n cao	B1

Answer: **2n**

Question 4

27 steps of 5 seen	M1
145 cao	A1

Answer: **145**

Question 5

6n cao	B1

Answer: **6n**

Question 6

forms or tests an equation	M1
a = 25, b = 15 cao	A1

Answer: **a = 25, b = 15**

Question 7

one correct term	M1
4p + 6 cao	A1

Answer: **4p + 6**

Question 8

n = 12 cao	B1

Answer: **12**

Question 9

subtracts or divides first	M1
x = 15 cao	A1

Answer: **x = 15**

Question 10

nth term identified as 3n - 1 or equivalent	M1
20th term = 3 x 20 - 1 = 59 cao	A1

Answer: **nth term = 3n - 1; 20th term = 59**

Question 11

states formula is incorrect and gives correct formula A = l x w or equivalent	M1
brief explanation e.g. A = 6 x 4 = 24 m² and not l + w cao	A1

Answer: **No. Area = l x w, so A = 6 x 4 = 24 m²; using l + w is incorrect.**

Question 12

shows n/4 = 7 or equivalent	M1
n = 28 cao	A1

Answer: **28**

Question 13

first three terms correct oe	B1
all five terms correct cao	B1

Answer: **4, 9, 14, 19, 24**

Question 14

correct method shown 5 x 3 = 15 and 15 + 4 = 19	M1
19 cao	A1

Answer: **19**

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