6.1 Introduction to Algebra: 1-hour Pack

Total Marks

NCETM National Curriculum (2014) Mathematics - KS2 Algebra · Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Olu has p marbles. Zak has 3 fewer marbles than Olu.

Write an expression for the number of marbles Zak has.

Answer: ___

(1)

2 T = 4x + 4y.

Work out T when x = 4 and y = 2.

Answer: ___

(2)

3 Here is a sequence: 15, 20, 25, 30, 35, ...

Write the next two terms.

Answer: ___, ___

(2)

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4 The cost, C pounds, of hiring a bike for n hours is C = 6n + 9.

Work out C when n = 2.

Answer: £___

(2)

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5 The nth term of a sequence is 5n + 8.

What is the 21st term?

Answer: ___

(2)

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6 Solve 4x + 18 = 38.

Answer: x = ___

(2)

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7 Solve the equation to find the value of n. Show your working. $3n + 4 = 19$

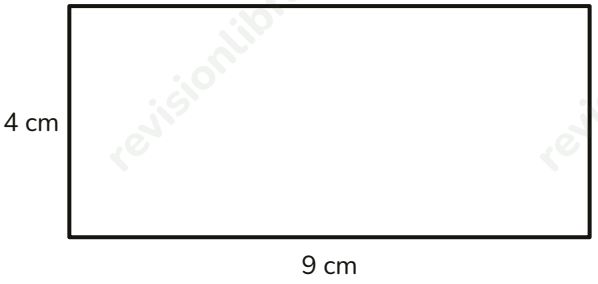
(2)

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8 The area of a rectangle can be found using the formula A = l x w, where l is the length and w is the width.

(a) A rectangle has length 9 cm and width 4 cm. Work out its area. **(1)**

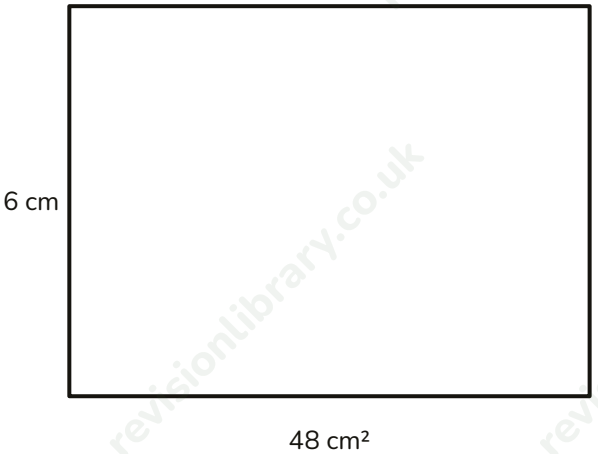
Diagram NOT accurately drawn



.....

(b) A different rectangle has an area of 48 cm^2 and a width of 6 cm. Work out its length. **(2)**

Diagram NOT accurately drawn



.....

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9 a and b are two whole numbers. a + b = 20 and a is 6 more than b. Find the value of a and the value of b. Show your working.

(3)

---

10 Here is a sequence: 4, 10, 16, 22, 28, ...

Write the next two terms.

Answer: ___, ___

(2)

---

11 Ravi has 23 more marbles than Sofia. Together they have 97 marbles.

How many marbles does Sofia have?

Answer: ___

(2)

---

12 Priya has 9 more marbles than Kofi. Together they have 73 marbles.

How many marbles does Kofi have?

Answer: ___

(2)

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13 Solve 5x + 6 = 91.

Answer: x = ___

(2)

---

14 a and b are positive whole numbers. a + b = 16 and a x b is less than 112.

How many pairs (a, b) with a smaller than b satisfy both conditions?

Answer: ___

(3)

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15 Simplify 9a + 2a.

Answer: ___

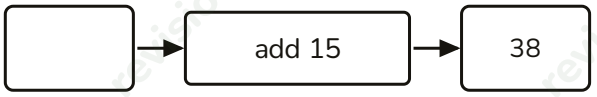
(1)

---

16 A function machine adds 15.

The output is 38. What was the input?

Answer: ___



(1)

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

Write the next two terms.

Answer: ___, ___

(2)

---

18 A regular shape has perimeter P = 3s, where s is the side length.

Work out P when s = 19.

Answer: ___

(1)

---

19 Dev has 13 more marbles than Femi. Together they have 37 marbles.

How many marbles does Femi have?

Answer: ___

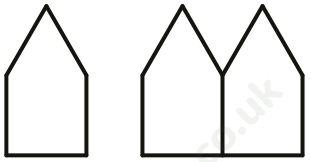
(2)

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20 Matchsticks are used to make a row of pentagons joined side by side. One pentagon uses 5 sticks and each extra pentagon added needs 4 more sticks.

How many sticks are needed for 7 pentagons?

Answer: ___



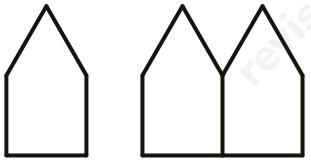
(2)

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21 Matchsticks are used to make a row of pentagons joined side by side. One pentagon uses 5 sticks and each extra pentagon added needs 4 more sticks.

How many sticks are needed for 5 pentagons?

Answer: ___

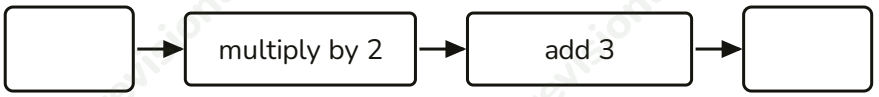


(2)

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22 A function machine multiplies the input by 2, then adds 3.

Diagram NOT accurately drawn



(a) Find the output when the input is 6. **(1)**

.....

(b) Find the output when the input is 10. **(1)**

.....

(c) The output is 25. Find the input. **(2)**

.....

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23 A taxi charges £4 to start and £4 for each mile. A journey is t miles long.

Write an expression for the total cost in pounds.

Answer: ___

.....

.....

(2)

---

24 ___ divided by 9 = 30

Answer: ___

(1)

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Mark scheme · 6.1 Introduction to Algebra: 1-hour Pack

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

Question 1

p - 3 cao — **B1**

Answer: **p - 3**

Question 2

4 x 4 or 4 x 2 seen — **M1**

24 cao — **A1**

Answer: **24**

Question 3

identifies the rule — **M1**

40, 45 cao — **A1**

Answer: **40, 45**

Question 4

6 x 2 seen — **M1**

£21 cao — **A1**

Answer: **£21**

Question 5

5 x 21 seen — **M1**

113 cao — **A1**

Answer: **113**

Question 6

subtracts or divides first — **M1**

x = 5 cao — **A1**

Answer: **x = 5**

Question 7

subtracts 4 from both sides to get 3n = 15 oe — **M1**

n = 5 cao — **A1**

Answer: **n = 5**

Question 8

(a) 36 (cm^2) cao — **B1**

(a) Answer: **36 cm^2**

(b) 48 / 6 seen or implied — **M1**

(b) 8 (cm) cao — **A1**

(b) Answer: **8 cm**

Question 9

forms b + (b + 6) = 20 oe, or an equivalent correct method (e.g. bar model or systematic trial and improvement with checking) — **M1**

2b + 6 = 20 leading to 2b = 14, dependent on the previous method mark — **dM1**

a = 13 and b = 7 both correct cao — **A1**

Answer: **a = 13, b = 7**

Question 10

identifies the rule — **M1**

34, 40 cao — **A1**

Answer: **34, 40**

Question 11

97 - 23 = 74 seen — **M1**

37 cao — **A1**

Answer: **37**

Question 12

73 - 9 = 64 seen — **M1**

32 cao — **A1**

Answer: **32**

Question 13

subtracts or divides first — **M1**

x = 17 cao — **A1**

Answer: **x = 17**

Question 14

lists the pairs — **M1**

tests the product — **M1**

7 cao — **A1**

Answer: **7**

Question 15

11a cao — **B1**

Answer: **11a**

Question 16

23 cao — **B1**

Answer: **23**

Question 17

identifies the rule — **M1**

26, 29 cao — **A1**

Answer: **26, 29**

Question 18

57 cao — **B1**

Answer: **57**

Question 19

37 - 13 = 24 seen — **M1**

12 cao — **A1**

Answer: **12**

Question 20

6 extra shapes seen — **M1**

29 cao — **A1**

Answer: **29**

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Question 21

4 extra shapes seen	**M1**
21 cao	**A1**

Answer: **21**

Question 22

(a) 15 cao	**B1**

(a) Answer: **15**

(b) 23 cao	**B1**

(b) Answer: **23**

(c) 25 - 3 (= 22) seen, using the inverse operations in reverse order	**M1**
(c) 11 cao	**A1**

(c) Answer: **11**

Question 23

one correct term	**M1**
4t + 4 cao	**A1**

Answer: **4t + 4**

Question 24

270 cao	**B1**

Answer: **270**

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