6.1 Introduction to Algebra: 30-minute Pack

Total Marks

NCETM National Curriculum (2014) Mathematics - KS2 Algebra · Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A matchstick pattern is made so that position n uses 3n + 1 matchsticks.

(a) How many matchsticks are used in position 5? **(1)**

(b) A pattern in this sequence uses 40 matchsticks. Which position is it? **(2)**

2 Priya has p pounds. Tom has £3 more than Priya.

(a) Write an expression for the amount of money Tom has, in terms of p. **(1)**

(b) Priya has £12. Work out how much money Tom has. **(1)**

(c) The total amount of money they have together can be written as 2p + 3. Work out the value of 2p + 3 when p = 12, and use it to check your answer to part (b). **(2)**

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3 Solve 5x + 14 = 114.

Answer: x = ___

(2)

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4 Simplify 6n + 5n.

Answer: ___

(1)

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5 4 x ___ - 18 = 38

Answer: ___

(2)

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6 a and b are positive whole numbers. a + b = 26 and a x b is less than 156.

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

Answer: ___

(3)

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7 Write an expression for each of the following. Use the letter given.

(a) A number, n, add 6 **(1)**

(b) 5 less than a number, y **(1)**

(c) Double a number, m, then add 3 **(1)**

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8 a = 4. Work out the value of each expression.

(a) a + 9 **(1)**

(b) 3a **(1)**

(c) 2a - 5 **(2)**

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9 ___ divided by 9 = 4

Answer: ___

(1)

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10 A taxi charges £5 to start and £4 for each mile. A journey is x miles long.

Write an expression for the total cost in pounds.

Answer: ___

(2)

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Mark scheme · 6.1 Introduction to Algebra: 30-minute Pack

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

Question 1

(a) 16 cao — **B1**

(a) Answer: **16**

(b) 3n = 39 oe (subtracts 1, then sets up the equation) — **M1**

(b) position 13 (n = 13) cao — **A1**

(b) Answer: **position 13**

Question 2

(a) p + 3 oe — **B1**

(a) Answer: **p + 3**

(b) 15 (pounds) cao, ft their expression from part (a) — **B1**

(b) Answer: **£15**

(c) 2 x 12 + 3 (= 27) seen or implied — **M1**

(c) 27 (pounds) stated, with a correct check that 12 + 15 = 27 — **A1**

(c) Answer: **£27**

Question 3

subtracts or divides first — **M1**

x = 20 cao — **A1**

Answer: **x = 20**

Question 4

11n cao — **B1**

Answer: **11n**

Question 5

38 + 18 = 56 seen — **M1**

14 cao — **A1**

Answer: **14**

Question 6

lists the pairs — **M1**

tests the product — **M1**

9 cao — **A1**

Answer: **9**

Question 7

(a) n + 6 oe — **B1**

(a) Answer: **n + 6**

(b) y - 5 oe (not 5 - y) — **B1**

(b) Answer: **y - 5**

(c) 2m + 3 oe — **B1**

(c) Answer: **2m + 3**

Question 8

(a) 13 cao — **B1**

(a) Answer: **13**

(b) 12 cao — **B1**

(b) Answer: **12**

(c) 2 x 4 (= 8) seen or implied — **M1**

(c) 3 cao — **A1**

(c) Answer: **3**

Question 9

36 cao — **B1**

Answer: **36**

Question 10

one correct term — **M1**

4x + 5 cao — **A1**

Answer: **4x + 5**

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