2.6 Substitution into Expressions and Formulae: 30-minute Pack

Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Evaluate 3y - 2(x + 1) when x = 2 and y = 5. Show the steps.

(3)

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2 The formula for the area of a triangle is A = 1/2 b h. Find A when b = 8 and h = 5.

(2)

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3 Stretch question. The cooling formula for a cup of tea is T = 80 - 2n, where T is temperature in degrees Celsius after n minutes. A class drinks tea in pairs. Calculate the total temperature sum for 3 pairs if they drink after 5, 7 and 9 minutes. Show all substitution and addition steps.

(6)

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4 Work out the value of $x^2 + y^2$ when x = -5 and y = -2.

(2)

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5 Find the value of p + 5 when p = 7.

(1)

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6 The cost, C pounds, of hiring a ladder for h days is given by C = 38 + 9h.
Work out the cost of hiring the ladder for 7 days.

(2)

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7 Use the formula F = 9C/5 + 32
to work out the value of F when C = 40.

(3)

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8 Work out the value of $(x + 14)^2 - 8$ when x = 2.

(3)

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9 Evaluate 2a + 1 when a = 0.

(1)

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Mark scheme · 2.6 Substitution into Expressions and Formulae: 30-minute Pack

Question 1

substitutes x = 2 and y = 5 into expression and shows 3(5) - 2(2 + 1) or equivalent	M1
evaluates brackets and multiplication correctly, e.g. 15 - 2 x 3	M1
9 cao	A1

Answer: **9**

Question 2

substitutes b = 8 and h = 5 into A = 1/2 b h or shows 1/2 x 8 x 5	M1
20 (square units) cao	A1

Answer: **20**

Question 3

substitutes n = 5 correctly to get T = 80 - 2 x 5 = 70 for first pair	M1
substitutes n = 7 correctly to get T = 80 - 2 x 7 = 66 for second pair	M1
substitutes n = 9 correctly to get T = 80 - 2 x 9 = 62 for third pair	M1
adds the three temperatures to get 70 + 66 + 62	M1
evaluates the sum correctly to 198 or shows intermediate addition	M1
198 degrees Celsius cao	A1

Answer: **198**

Question 4

substitutes x = (-5) and y = (-2) correctly	M1
29 cao	A1

Answer: **29**

Question 5

12 cao	B1

Answer: **12**

Question 6

substitutes h = 7: 38 + 9 x 7	M1
£101 cao	A1

Answer: **£101**

Question 7

correct substitution into the formula	M1
correct order of operations when evaluating	M1
104 cao	A1

Answer: **104**

Question 8

substitutes x = 2: (2 + 14)	M1
evaluates the bracket or square correctly	M1
248 cao	A1

Answer: **248**

Question 9

1 cao	B1

Answer: **1**

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