2.6 Substitution into Expressions and Formulae: 1-hour Pack

Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Work out the value of 2x - 4y when x = -2 and y = 2.

(2)

2 Work out the value of 10 - 9a when a = 7.

(2)

3 The cost, C pounds, of hiring a ladder for h days is given by C = 49 + 5h.
The total cost is £104. Work out the number of days.

(3)

4 Work out the value of 13 - 8n when n = 1.

(2)

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5 Work out the value of $(b + 11)^2 - 4$ when $b = 6$.

(3)

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6 The cost, C pounds, of hiring a ladder for h days is given by $C = 17 + 4h$.
The total cost is £69. Work out the number of days.

(3)

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7 The cost, C pounds, of hiring a ladder for h days is given by $C = 42 + 9h$.
Work out the cost of hiring the ladder for 15 days.

(2)

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8 Work out the value of $xy + 3x$ when $x = 2$ and $y = 3$.

(2)

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9 The cost, C pounds, of hiring a ladder for h days is given by $C = 16 + 3h$.
Work out the cost of hiring the ladder for 4 days.

(2)

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10 Work out the value of $xy + 6x$ when $x = -4$ and $y = -2$.

(2)

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11 Use the formula $T = 3n^2 - 5$
to work out the value of T when $n = 3$.

(3)

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12 Work out the value of $5b - 9$ when $b = 3$.

(2)

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13 Use the formula $P = 2(l + w)$
to work out the value of P when $l = 8$, $w = 3$.

(2)

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14 The cost, C pounds, of hiring a ladder for h days is given by $C = 42 + 7h$.
The total cost is £126. Work out the number of days.

(3)

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15 Use the formula $s = ut + 1/2\ at^2$
to work out the value of s when u = 4, t = 3, a = 6.

(3)

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16 Evaluate 4b - 3 when b = 2.

(1)

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17 Substitute t = 1/2 into 6t and give the answer as a fraction.

(1)

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18 The formula for the area of a rectangle is A = l w. Find A when l = 7 and w = 3.

(2)

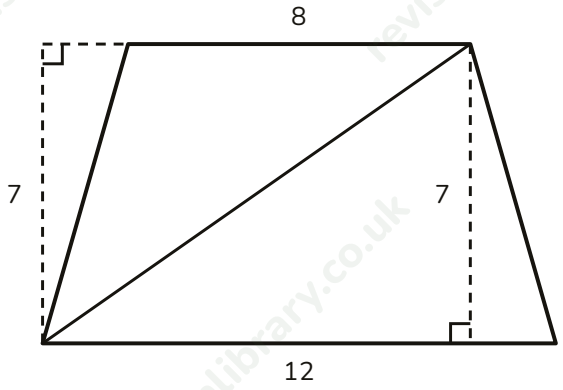
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19 Evaluate 4(x + 2) when x = 3.

(2)

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20 A trapezium is split into two triangles. Triangle 1 has base 12 and height 7. Triangle 2 has base 8 and height 7. Using the formula A = 1/2 b h for each triangle, find the total area of the trapezium.



(3)

21 Find the value of q + 8 when q = 6.

(1)

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Mark scheme · 2.6 Substitution into Expressions and Formulae: 1-hour Pack

Question 1

substitutes x = (-2) and y = 2 correctly	M1
-12 cao	A1

Answer: **-12**

Question 2

substitutes a = 7 correctly (brackets round negative numbers)	M1
-53 cao	A1

Answer: **-53**

Question 3

49 + 5h = 104	M1
5h = 55 or equivalent	M1
11 (days) cao	A1

Answer: **11 days**

Question 4

substitutes n = 1 correctly (brackets round negative numbers)	M1
5 cao	A1

Answer: **5**

Question 5

substitutes b = 6: (6 + 11)	M1
evaluates the bracket or square correctly	M1
285 cao	A1

Answer: **285**

Question 6

17 + 4h = 69	M1
4h = 52 or equivalent	M1
13 (days) cao	A1

Answer: **13 days**

Question 7

substitutes h = 15: 42 + 9 x 15	M1
£177 cao	A1

Answer: **£177**

Question 8

substitutes x = 2 and y = 3 correctly	M1
12 cao	A1

Answer: **12**

Question 9

substitutes h = 4: 16 + 3 x 4	M1
£28 cao	A1

Answer: **£28**

Question 10

substitutes x = (-4) and y = (-2) correctly	M1
-16 cao	A1

Answer: **-16**

Question 11

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

Answer: **22**

Question 12

substitutes b = 3 correctly (brackets round negative numbers)	M1
6 cao	A1

Answer: **6**

Question 13

correct substitution into the formula	M1
22 cao	A1

Answer: **22**

Question 14

42 + 7h = 126	M1
7h = 84 or equivalent	M1
12 (days) cao	A1

Answer: **12 days**

Question 15

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

Answer: **39**

Question 16

5 cao	B1

Answer: **5**

Question 17

3/1 or 3 cao (3) as fraction 3/1 acceptable	B1

Answer: **3**

Question 18

substitutes 7 and 3 into A = l w or shows multiplication 7 x 3	M1
21 (square units) cao	A1

Answer: **21**

Question 19

substitutes x = 3 into the bracket correctly, e.g. 4(5)	M1
20 cao	A1

Answer: **20**

Question 20

correct area for triangle 1, e.g. 1/2 x 12 x 7 = 42	M1
correct area for triangle 2, e.g. 1/2 x 8 x 7 = 28	M1
70 cao	A1

Answer: **70**

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Question 21

14 cao **B1**

Answer: **14**

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