2.17 Introduction to Simultaneous Equations: 30-minute Pack

Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Solve the simultaneous equations.

$3x + 4y = 1$

$4x + 4y = 0$

(3)

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2 Solve the simultaneous equations.

$4x + 4y = 40$

$3x - 4y = 16$

(3)

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3 Is $x = 2$, $y = 5$ a solution of both of these equations? Show your working.

$2x + 3y = 19$

$x - y = -3$

(2)

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4 $2x + 3y = 13$ and $2x - y = 5$. Find x and y.

(a) Eliminate x by subtracting the second equation from the first and find y, then x. **(3)**

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5 Solve the simultaneous equations by substitution.

$y = x + 1$

$3x + y = -3$

(3)

6 1 notebook and 3 rulers cost £27.

1 notebook and 1 ruler cost £15.

Work out the cost of one notebook and the cost of one ruler.

(4)

7 State whether $x = 3$, $y = 4$ satisfies the equation $x + y = 7$.

(1)

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8 Two numbers, x and y, satisfy x + y = 20 and x - y = 4. Find x and y.

(3)

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9 Given y = 2x, work out y when x = 6.

(1)

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Mark scheme · 2.17 Introduction to Simultaneous Equations: 30-minute Pack

Question 1

adds or subtracts the equations to eliminate one letter	M1
x = -1 (or y = 1) correct	A1
x = -1, y = 1 cao	A1

Answer: **x = -1, y = 1**

Question 2

adds or subtracts the equations to eliminate one letter	M1
x = 8 (or y = 2) correct	A1
x = 8, y = 2 cao	A1

Answer: **x = 8, y = 2**

Question 3

substitutes both values into one equation	M1
Yes, with both equations checked	A1

Answer: **Yes**

Question 4

(a) correct elimination leading to 4y = 8 or equivalent	M1
(a) correct method to find y: y = 2	M1
(a) substitute to find x = 7/2 or 3.5 cao	A1

(a) Answer: **x = 7/2, y = 2**

Question 5

substitutes x + 1 for y in the second equation	M1
solves the resulting linear equation for x	M1
x = -1, y = 0 cao	A1

Answer: **x = -1, y = 0**

Question 6

forms one equation, eg x + 3y = 27	M1
forms the second equation and attempts to eliminate	M1
one correct cost	A1
notebook = £9, ruler = £6 cao	A1

Answer: **notebook = £9, ruler = £6**

Question 7

Yes, because 3 + 4 = 7	B1

Answer: **Yes**

Question 8

add the equations to eliminate y, e.g. 2x = 24	M1
correct value x = 12 found	M1
x = 12, y = 8 cao	A1

Answer: **x = 12, y = 8**

Question 9

y = 12 cao	B1

Answer: **y = 12**

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