2.17 Introduction to Simultaneous Equations: 1-hour Pack

Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Is x = 1, y = 1 a solution of both of these equations? Show your working.

x + 2y = 3

3x - y = 3

(2)

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2 Solve the simultaneous equations.

2x + 3y = 2

x + 3y = -5

(3)

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3 Solve the simultaneous equations.

2x + 3y = 24

4x - 3y = 30

(3)

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4 Is x = 6, y = 6 a solution of both of these equations? Show your working.

$x + 2y = 18$

$4x - y = 19$

(2)

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5 Solve the simultaneous equations.

$x + 2y = 20$

$4x + 2y = 44$

(3)

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6 Is x = 3, y = 1 a solution of both of these equations? Show your working.

$2x + y = 7$

$2x - y = 5$

(2)

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7 Solve the simultaneous equations.

$x + y = 8$

$4x - y = 32$

(3)

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8 Is x = 3, y = 7 a solution of both of these equations? Show your working.

$x + 4y = 31$

$4x - y = 5$

(2)

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9 Solve the simultaneous equations.

$x + 4y = -11$

$3x - 4y = 31$

(3)

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10 Solve the simultaneous equations.

$5x + 4y = -21$

$2x + y = -6$

(4)

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11 Solve this pair by substitution where one equation is rearranged first.

(a) Rearrange $3x - y = 7$ to express y in terms of x, substitute into $x + 2y = 4$ and solve. **(3)**

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12 Solve the simultaneous equations.

$3x + y = 10$

$2x + y = 7$

(3)

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13 Solve the simultaneous equations.

$4x + y = 3$

$3x + y = 3$

(3)

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14 Is $x = 5$, $y = 6$ a solution of both of these equations? Show your working.

$x + 3y = 23$

$2x - y = 5$

(2)

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15 2 adult tickets and 2 child tickets cost £22.

2 adult tickets and 1 child ticket cost £18.

Work out the cost of one adult ticket and the cost of one child ticket.

(4)

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16 Solve the pair of equations by substitution.
$y = x + 1$ and $x + y = 9$. Find x and y.

(2)

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17 Given $2x = 14$, work out x.

(1)

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18 The pair $x = 2$, $y = 6$ is claimed to satisfy $y = 3x$. State whether this claim is true.

(1)

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Mark scheme · 2.17 Introduction to Simultaneous Equations: 1-hour Pack

Question 1

substitutes both values into one equation	M1
No, with both equations checked	A1

Answer: **No**

Question 2

adds or subtracts the equations to eliminate one letter	M1
x = 7 (or y = -4) correct	A1
x = 7, y = -4 cao	A1

Answer: **x = 7, y = -4**

Question 3

adds or subtracts the equations to eliminate one letter	M1
x = 9 (or y = 2) correct	A1
x = 9, y = 2 cao	A1

Answer: **x = 9, y = 2**

Question 4

substitutes both values into one equation	M1
No, with both equations checked	A1

Answer: **No**

Question 5

adds or subtracts the equations to eliminate one letter	M1
x = 8 (or y = 6) correct	A1
x = 8, y = 6 cao	A1

Answer: **x = 8, y = 6**

Question 6

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

Answer: **Yes**

Question 7

adds or subtracts the equations to eliminate one letter	M1
x = 8 (or y = 0) correct	A1
x = 8, y = 0 cao	A1

Answer: **x = 8, y = 0**

Question 8

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

Answer: **Yes**

Question 9

adds or subtracts the equations to eliminate one letter	M1
x = 5 (or y = -4) correct	A1
x = 5, y = -4 cao	A1

Answer: **x = 5, y = -4**

Question 10

multiplies one or both equations so that one letter has matching coefficients	M1
eliminates a letter correctly	M1
one correct value	A1
x = -1, y = -4 cao	A1

Answer: **x = -1, y = -4**

Question 11

(a) rearrangement to get y = 3x - 7 and substitution into the second equation	M1
(a) correct algebra to a single equation in x, e.g. x + 2(3x - 7) = 4 giving 7x = 18	M1
(a) correct values x = 18/7 and y = 5/7 cao	A1

(a) Answer: **x = 18/7, y = 5/7**

Question 12

adds or subtracts the equations to eliminate one letter	M1
x = 3 (or y = 1) correct	A1
x = 3, y = 1 cao	A1

Answer: **x = 3, y = 1**

Question 13

adds or subtracts the equations to eliminate one letter	M1
x = 0 (or y = 3) correct	A1
x = 0, y = 3 cao	A1

Answer: **x = 0, y = 3**

Question 14

substitutes both values into one equation	M1
No, with both equations checked	A1

Answer: **No**

Question 15

forms one equation, eg 2x + 2y = 22	M1
forms the second equation and attempts to eliminate	M1
one correct cost	A1
adult ticket = £7, child ticket = £4 cao	A1

Answer: **adult ticket = £7, child ticket = £4**

Question 16

substitute y = x + 1 into x + y = 9 to get x + (x + 1) = 9	M1
x = 4, y = 5 cao	A1

Answer: **x = 4, y = 5**

Question 17

x = 7 cao	B1

Answer: **x = 7**

Question 18

True, because 3 x 2 = 6	B1

Answer: **True**

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