2.10 Solving One and Two Step Equations: 2-hour Pack

Calculators not allowed · about 120 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A rectangle has length (x + 7) cm and width 4 cm. Its area is 44 cm². Form an equation and find x.

Diagram NOT accurately drawn



(3)

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2 Solve t/9 - 2 = 1

(2)

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3 Solve b/3 = 9

(1)

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4 The cost, C pounds, of hiring a ladder for h days is given by C = 23 + 6h.
The total cost is £65. Work out the number of days.

(3)

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5 I think of a number, multiply it by 2 and add 3. The answer is 19. Form an equation and solve it to find my number.

(3)

---

6 Solve 7t - 12 = 37

(2)

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7 A rectangle has length (x + 1) cm and width 3 cm. Its area is 33 cm². Form an equation and find x.

Diagram NOT accurately drawn



33 cm²

(3)

---

8 Solve the equation 5k + 9 = -1. Show each step.

(3)

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9 The cost, C pounds, of hiring a ladder for h days is given by C = 30 + 5h.
The total cost is £75. Work out the number of days.

(3)

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10 Solve t/3 - 4 = -9

(2)

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11 Solve 5a + 14 = -16

(2)

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12 Solve t + 13 = 17

(1)

---

13 I think of a number, multiply it by 3 and add 5. The answer is 14. Form an equation and solve it to find my number.

(3)

---

14 Solve t/2 + 13 = 27

(2)

---

15 The cost, C pounds, of hiring a ladder for h days is given by C = 35 + 9h.
The total cost is £98. Work out the number of days.

(3)

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16 Solve each equation. Show each step.

(a) 4p - 6 = 10 **(2)**

(b) 7 = 2m + 1 **(2)**

17 I think of a number, multiply it by 4 and add 8. The answer is 28. Form an equation and solve it to find my number.

(3)

18 Solve 3x + 12 = 51

(2)

19 Solve 9 - 4a = -15

(2)

20 I think of a number, multiply it by 4 and add 4. The answer is 52. Form an equation and solve it to find my number.

(3)

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21 The cost, C pounds, of hiring a ladder for h days is given by C = 36 + 7h.
Work out the cost of hiring the ladder for 10 days.

(2)

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22 The cost, C pounds, of hiring a ladder for h days is given by C = 29 + 5h.
The total cost is £69. Work out the number of days.

(3)

---

23 Solve p + 18 = 9

(1)

---

24 Solve a - 2 = 9

(1)

---

25 Solve the equation -2x - 8 = -14. Show your working.

(3)

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26 Solve n/8 - 4 = -11

(2)

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27 Solve b - 14 = -8

(1)

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28 A rectangle has length (x + 5) cm and width 3 cm. Its area is 24 cm². Form an equation and find x.

Diagram NOT accurately drawn



24 cm²

(3)

---

29 Solve 7b + 3 = 3

(2)

---

30 Solve the equation (1/3) x = 3. Give your answer as an integer.

(2)

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31 Solve x + 9 = 14.

(1)

---

32 Solve the equation -3x - 5 = 10. Show your working.

(2)

---

33 Solve the equation -4t - 7 = 5. Show the steps and give your answer as an integer.

(2)

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34 Solve (1/2)x = 6. Give your answer as an integer.

(1)

---

35 Solve (1/5)k = 4. Give your answer as an integer.

(1)

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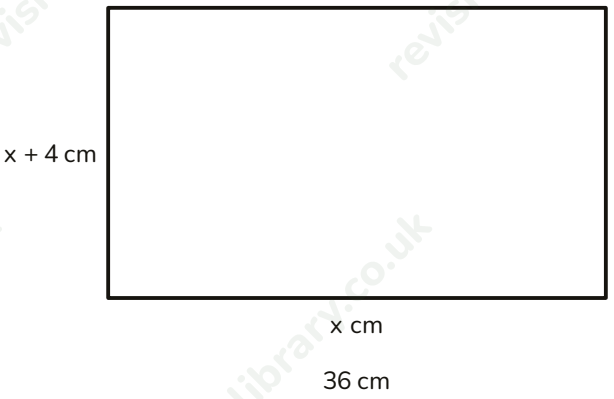
36 Solve the equation (3/5)b + 1 = 7. Give your answer as an integer.

(2)

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37 A rectangle has width x cm. Its length is 4 cm more than its width. The perimeter of the rectangle is 36 cm. Form an equation in x and solve it to find the width.

Diagram NOT accurately drawn



(3)

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38 Solve y - 6 = 2.

(1)

---

39 Solve the equation 2(x - 3) = 8, giving your answer as an integer. Then check your solution by substitution.

(3)

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40 Solve 3a = 21.

(1)

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41 Solve the equation 6 + x = 13 and check your answer by substitution.

(2)

---

42 Solve the equation 4x + 5 = 25. Show the steps.

(2)

---

43 Solve the two-step equation. Show your working.

2x + 9 = 17

(2)

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Mark scheme · 2.10 Solving One and Two Step Equations: 2-hour Pack

Question 1

4(x + 7) = 44	M1
correct method to solve	M1
x = 4 cao	A1

Answer: **x = 4**

Question 2

correct first step (undoing the + or - or reordering)	M1
t = 27 cao	A1

Answer: **t = 27**

Question 3

b = 27 cao	B1

Answer: **b = 27**

Question 4

23 + 6h = 65	M1
6h = 42 or equivalent	M1
7 (days) cao	A1

Answer: **7 days**

Question 5

2n + 3 = 19 (or equivalent equation)	M1
correct method to solve	M1
8 cao	A1

Answer: **8**

Question 6

correct first step (undoing the + or - or reordering)	M1
t = 7 cao	A1

Answer: **t = 7**

Question 7

3(x + 1) = 33	M1
correct method to solve	M1
x = 10 cao	A1

Answer: **x = 10**

Question 8

subtract 9 from both sides or show 5k = -10	M1
divide both sides by 5 to give k = -2	M1
k = -2 cao	A1

Answer: **-2**

Question 9

30 + 5h = 75	M1
5h = 45 or equivalent	M1
9 (days) cao	A1

Answer: **9 days**

Question 10

correct first step (undoing the + or - or reordering)	M1
t = -15 cao	A1

Answer: **t = -15**

Question 11

correct first step (undoing the + or - or reordering)	M1
a = -6 cao	A1

Answer: **a = -6**

Question 12

t = 4 cao	B1

Answer: **t = 4**

Question 13

3n + 5 = 14 (or equivalent equation)	M1
correct method to solve	M1
3 cao	A1

Answer: **3**

Question 14

correct first step (undoing the + or - or reordering)	M1
t = 28 cao	A1

Answer: **t = 28**

Question 15

35 + 9h = 98	M1
9h = 63 or equivalent	M1
7 (days) cao	A1

Answer: **7 days**

Question 16

(a) add 6 to both sides to get 4p = 16	M1
(a) p = 4 cao	A1

(a) Answer: **4**

(b) subtract 1 to give 2m = 6	M1
(b) m = 3 cao	A1

(b) Answer: **3**

Question 17

4n + 8 = 28 (or equivalent equation)	M1
correct method to solve	M1
5 cao	A1

Answer: **5**

Question 18

correct first step (undoing the + or - or reordering)	M1
x = 13 cao	A1

Answer: **x = 13**

Question 19

correct first step (undoing the + or - or reordering)	M1
a = 6 cao	A1

Answer: **a = 6**

Question 20

4n + 4 = 52 (or equivalent equation)	M1
correct method to solve	M1
12 cao	A1

Answer: **12**

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Question 21

substitutes h = 10: 36 + 7 x 10 **M1**

£106 cao **A1**

Answer: **£106**

Question 22

29 + 5h = 69 **M1**

5h = 40 or equivalent **M1**

8 (days) cao **A1**

Answer: **8 days**

Question 23

p = -9 cao **B1**

Answer: **p = -9**

Question 24

a = 11 cao **B1**

Answer: **a = 11**

Question 25

add 8 to both sides giving -2x = -6 **M1**

divide both sides by -2 to give x = 3 **M1**

x = 3 cao **A1**

Answer: **3**

Question 26

correct first step (undoing the + or - or reordering) **M1**

n = -56 cao **A1**

Answer: **n = -56**

Question 27

b = 6 cao **B1**

Answer: **b = 6**

Question 28

3(x + 5) = 24 **M1**

correct method to solve **M1**

x = 3 cao **A1**

Answer: **x = 3**

Question 29

correct first step (undoing the + or - or reordering) **M1**

b = 0 cao **A1**

Answer: **b = 0**

Question 30

multiply both sides by 3 to give x = 9 **M1**

x = 9 cao **A1**

Answer: **9**

Question 31

x = 5 cao **B1**

Answer: **x = 5**

Question 32

correct first step, e.g. -3x = 15 **M1**

x = -5 cao **A1**

Answer: **x = -5**

Question 33

correct first step, e.g. -4t = 12 **M1**

t = -3 cao **A1**

Answer: **t = -3**

Question 34

x = 12 cao **B1**

Answer: **x = 12**

Question 35

k = 20 cao **B1**

Answer: **k = 20**

Question 36

correct first step, e.g. (3/5)b = 6 **M1**

b = 10 cao **A1**

Answer: **b = 10**

Question 37

forms 4x + 8 = 36 or equivalent from 2(x + x + 4) **M1**

correct rearrangement, e.g. 4x = 28 **M1**

x = 7 cao **A1**

Answer: **x = 7**

Question 38

y = 8 cao **B1**

Answer: **y = 8**

Question 39

expands the bracket, 2x - 6 = 8 **M1**

correct rearrangement, e.g. 2x = 14 **M1**

x = 7 cao, with check shown **A1**

Answer: **x = 7**

Question 40

a = 7 cao **B1**

Answer: **a = 7**

Question 41

correct rearrangement, x = 13 - 6 **M1**

x = 7 cao **A1**

Answer: **x = 7**

Question 42

correct first step, e.g. 4x = 20 **M1**

x = 5 cao **A1**

Answer: **x = 5**

Question 43

correct first step, e.g. 2x = 8 **M1**

x = 4 cao **A1**

Answer: **x = 4**

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