2.11 Equations with Brackets and Unknowns on Both Sides: 1-hour Pack

Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Solve 5(x + 7) = 2(x + 3) + 59

(4)

2 Solve 2(t - 2) + 3 = 19

(3)

3 Solve (m + 9)/5 = -3

(3)

4 Solve 3(n - 4) + 9 = 21

(3)

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5 The sides of a triangle, in centimetres, are (x + 5), 5x and (6x - 3). The perimeter is 62 cm.
(a) Form and simplify an equation in x.
(b) Solve it to find x.

(4)

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6 Solve 3(a - 4) - 4 = 8

(3)

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7 Solve 4(t - 3) - 1 = -25

(3)

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8 Solve 4x + 5 = 21

(2)

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9 Solve (x + 4)/5 = 0

(3)

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10 Solve $(n + 9)/6 = 5$

(3)

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11 Solve $8a + 6 = 7a + 12$

(3)

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12 The sides of a triangle, in centimetres, are $(x + 9)$, $3x$ and $(4x - 5)$. The perimeter is 92 cm.
(a) Form and simplify an equation in x.
(b) Solve it to find x.

(4)

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13 Solve $9b - 5 = 6b - 17$

(3)

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14 The sides of a triangle, in centimetres, are (x + 3), 5x and (6x - 1). The perimeter is 50 cm.
(a) Form and simplify an equation in x.
(b) Solve it to find x.

(4)

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15 I think of a number, multiply it by 4 and add 7. The answer is 15. Form an equation and solve it to find my number.

(3)

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Mark scheme · 2.11 Equations with Brackets and Unknowns on Both Sides: 1-hour Pack

Question 1

expands one bracket correctly	M1
expands both brackets correctly	M1
collects letter terms and number terms on separate sides	M1
x = 10 cao	A1

Answer: **x = 10**

Question 2

expands the bracket: 2t - 4	M1
collects number terms and isolates the term in the letter	M1
t = 10 cao	A1

Answer: **t = 10**

Question 3

multiplies both sides by the denominator	M1
correct second step	M1
m = -24 cao	A1

Answer: **m = -24**

Question 4

expands the bracket: 3n - 12	M1
collects number terms and isolates the term in the letter	M1
n = 8 cao	A1

Answer: **n = 8**

Question 5

adds the three sides	M1
12x + 2 = 62	A1
correct method to solve	M1
x = 5 cao	A1

Answer: **(a) 12x + 2 = 62, (b) x = 5**

Question 6

expands the bracket: 3a - 12	M1
collects number terms and isolates the term in the letter	M1
a = 8 cao	A1

Answer: **a = 8**

Question 7

expands the bracket: 4t - 12	M1
collects number terms and isolates the term in the letter	M1
t = -3 cao	A1

Answer: **t = -3**

Question 8

subtract 5 then divide by 4: 4x = 16	M1
x = 4 cao	A1

Answer: **4**

Question 9

multiplies both sides by the denominator	M1
correct second step	M1
x = -4 cao	A1

Answer: **x = -4**

Question 10

multiplies both sides by the denominator	M1
correct second step	M1
n = 21 cao	A1

Answer: **n = 21**

Question 11

collects the letter terms on one side: 1a	M1
collects number terms on the other side	M1
a = 6 cao	A1

Answer: **a = 6**

Question 12

adds the three sides	M1
8x + 4 = 92	A1
correct method to solve	M1
x = 11 cao	A1

Answer: **(a) 8x + 4 = 92, (b) x = 11**

Question 13

collects the letter terms on one side: 3b	M1
collects number terms on the other side	M1
b = -4 cao	A1

Answer: **b = -4**

Question 14

adds the three sides	M1
12x + 2 = 50	A1
correct method to solve	M1
x = 4 cao	A1

Answer: **(a) 12x + 2 = 50, (b) x = 4**

Question 15

4n + 7 = 15 (or equivalent equation)	M1
correct method to solve	M1
2 cao	A1

Answer: **2**

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