2.11 Equations with Brackets and Unknowns on Both Sides: 30-minute Pack

Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Solve 2(x + 3) = 3(x - 1) + 1

(3)

2 Solve 2(x + 4) - 3 = x + 9

(3)

3 Solve 3(x - 2) = 9

(2)

4 Solve 4(p + 3) = 5(p + 5) - 13

(4)

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5 Solve $5(p + 4) + 1 = 26$

(3)

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6 I think of a number, multiply it by 2 and add 1. The answer is 7. Form an equation and solve it to find my number.

(3)

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7 Priya has x boxes of postcards. Each box contains 4 postcards and she also has 5 loose postcards. Altogether she has 29 postcards. Form an equation and solve it for x.

(3)

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8 Aisha is 4 years older than twice Ben's age. Their ages add to 34. Write an equation using b for Ben's age and find both of their ages.

(3)

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Mark scheme · 2.11 Equations with Brackets and Unknowns on Both Sides: 30-minute Pack

Question 1

expand both brackets and simplify: $2x + 6 = 3x - 3 + 1$	M1
collect like terms: $2x + 6 = 3x - 2$ so $x = 8$	M1
$x = 8$ cao	A1

Answer: **8**

Question 2

expand and simplify left side: $2x + 8 - 3 = x + 9$ giving $2x + 5 = x + 9$	M1
collect x terms then subtract: $x = 4$	M1
$x = 4$ cao	A1

Answer: **4**

Question 3

divide both sides by 3 or expand then divide: $x - 2 = 3$ or $3x - 6 = 9$	M1
$x = 5$ cao	A1

Answer: **5**

Question 4

expands one bracket correctly	M1
expands both brackets correctly	M1
collects letter terms and number terms on separate sides	M1
$p = 0$ cao	A1

Answer: **p = 0**

Question 5

expands the bracket: $5p + 20$	M1
collects number terms and isolates the term in the letter	M1
$p = 1$ cao	A1

Answer: **p = 1**

Question 6

$2n + 1 = 7$ (or equivalent equation)	M1
correct method to solve	M1
3 cao	A1

Answer: **3**

Question 7

correct formation: $4x + 5 = 29$ or equivalent equation	M1
subtract 5 then divide by 4 to find x	M1
$x = 6$ cao	A1

Answer: **6**

Question 8

forms $b + (2b + 4) = 34$	M1
correct rearrangement, e.g. $3b = 30$	M1
Ben = 10, Aisha = 24	A1

Answer: **Ben = 10, Aisha = 24**

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