# 2.2 Algebra: Equations: Test Pack

Calculator allowed · about 70 minutes

Name: _____ Date: ____ / ____ / _____

**Answer ALL questions. Show all your working.**

**1** Solve each equation.

**(a)** x + 7 = 15 **(1)**

**(b)** x - 4 = 9 **(1)**

**(c)** 5x = 35 **(1)**

**(d)** x/4 = 6 **(1)**

**2** Solve the equation 3x = 21.

**(1)**

**3** Solve the equation 4x + 5 = 21.

**(2)**


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**4** Tickets for a school concert cost L pounds each. Ffion buys 4 tickets and pays a booking fee of £3. The total she pays is £47.

**(a)** Write an equation in L for the total cost. **(1)**

**(b)** Solve your equation to find L. **(2)**

**5** Solve the equation 6 - 2x = -4.

**(2)**

**6** Solve the equation 4x + 5 = 21.

**(2)**

**7** Show that x = 7 is the solution of the equation 4(x - 2) = 2x + 6.

**(2)**

**8** Three consecutive integers have a sum of 84. Let the smallest integer be n. Form an equation and solve it to find the three integers.

**(3)**


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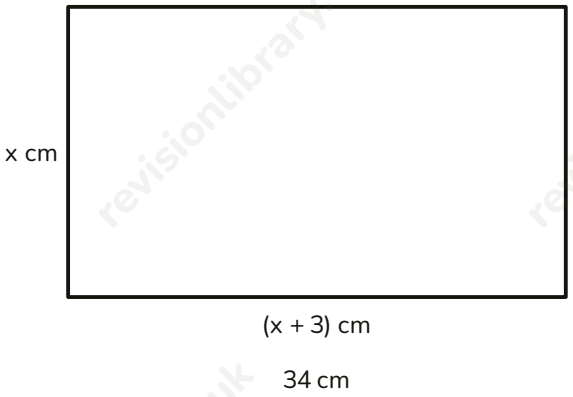
**9** Solve the equation $2(x + 3) = 16$.

**(2)**

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**10** A rectangle has length $(x + 3)$ cm and width $x$ cm. The perimeter of the rectangle is 34 cm. Form an equation and solve it to find x.

Diagram NOT accurately drawn




**(3)**


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**11** Priya is x years old. Her brother Kofi is 3 years older than Priya. In 5 years' time, the sum of their ages will be 41.

**(a)** Write an expression, in terms of x, for Kofi's age now. **(1)**

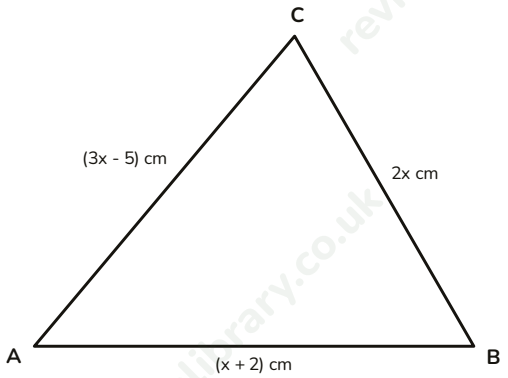
**(b)** Form an equation in x using the information about the sum of their ages in 5 years' time. **(1)**

**(c)** Solve your equation to find x. **(2)**

**(d)** Find Kofi's current age. **(1)**

**12** The sides of a triangle, in centimetres, are (x + 2), 2x and (3x - 5). The perimeter is 51 cm.
(a) Form and simplify an equation in x.
(b) Solve it to find x.

Diagram NOT accurately drawn




**(4)**


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**13** Solve $7(t + 6) + 9 = 121$

**(3)**

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**14** Solve $9m = 36$

**(1)**

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**15** Solve $(2a - 7)/3 = 7$

**(3)**

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**16** Solve $9n + 8 = 107$

**(2)**

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**17** I think of a number, multiply it by 4 and add 4. The answer is 40. Form an equation and solve it to find my number.

**(3)**


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**18** Solve 8b + 3 = b - 32

**(3)**

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**19** Solve the equation (2x - 1) / 3 = (x + 4) / 2.

**(4)**


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# Mark scheme · 2.2 Algebra: Equations: Test Pack

## Question 1

(a) x = 8 (cao) **B1**

(a) Answer: **x = 8**

(b) x = 13 (cao) **B1**

(b) Answer: **x = 13**

(c) x = 7 (cao) **B1**

(c) Answer: **x = 7**

(d) x = 24 (cao) **B1**

(d) Answer: **x = 24**

## Question 2

x = 7 (cao) **B1**

Answer: **x = 7**

## Question 3

4x = 16 oe **M1**

x = 4 (cao) **A1**

Answer: **x = 4**

## Question 4

(a) 4L + 3 = 47 oe **B1**

(a) Answer: **4L + 3 = 47**

(b) 4L = 44 oe **M1**

(b) L = 11 (cao) **A1**

(b) Answer: **L = 11**

## Question 5

-2x = -10 oe **M1**

x = 5 (cao) **A1**

Answer: **x = 5**

## Question 6

correct rearrangement, e.g. 4x = 16 **M1**

x = 4 cao **A1**

Answer: **x = 4**

## Question 7

substitutes x = 7 correctly into both sides, LHS = 4(5) = 20, RHS = 2(7) + 6 = 20 **M1**

states LHS = RHS = 20, so x = 7 is confirmed as the solution (cso) **A1**

Answer: **LHS = RHS = 20, so x = 7 is the solution (shown)**

## Question 8

n + (n + 1) + (n + 2) = 84 oe **M1**

3n + 3 = 84 => n = 27 oe **M1**

27, 28, 29 (cao) **A1**

Answer: **27, 28, 29**

## Question 9

expands the bracket correctly, e.g. 2x + 6 = 16 **M1**

x = 5 cao **A1**

Answer: **x = 5**

## Question 10

correct equation formed, e.g. 2((x + 3) + x) = 34 **M1**

correctly simplified, e.g. 4x + 6 = 34 **M1**

x = 7 cao **A1**

Answer: **x = 7**

## Question 11

(a) x + 3 **B1**

(a) Answer: **x + 3**

(b) (x + 5) + (x + 3 + 5) = 41 oe, e.g. (x+5)+(x+8)=41 **B1**

(b) Answer: **(x + 5) + (x + 8) = 41**

(c) 2x + 13 = 41 => 2x = 28 oe **M1**

(c) x = 14 (cao) **A1**

(c) Answer: **x = 14**

(d) 17 (ft their x + 3) **B1**

(d) Answer: **17 years old**

## Question 12

adds the three sides **M1**

6x - 3 = 51 **A1**

correct method to solve **M1**

x = 9 cao **A1**

Answer: **(a) 6x - 3 = 51, (b) x = 9**

## Question 13

expands the bracket: 7t + 42 **M1**

collects number terms and isolates the term in the letter **M1**

t = 10 cao **A1**

Answer: **t = 10**

## Question 14

m = 4 cao **B1**

Answer: **m = 4**

## Question 15

multiplies both sides by the denominator **M1**

correct second step **M1**

a = 14 cao **A1**

Answer: **a = 14**

## Question 16

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

n = 11 cao **A1**

Answer: **n = 11**

## Question 17

4n + 4 = 40 (or equivalent equation) **M1**

correct method to solve **M1**

9 cao **A1**

Answer: **9**


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## Question 18

| | |
|---|---|
| collects the letter terms on one side: 7b | **M1** |
| collects number terms on the other side | **M1** |
| b = -5 cao | **A1** |

Answer: **b = -5**

## Question 19

| | |
|---|---|
| 2(2x - 1) = 3(x + 4) oe | **M1** |
| 4x - 2 = 3x + 12 oe | **M1** |
| x = 14 from collecting terms oe | **M1** |
| x = 14 (cao) | **A1** |

Answer: **x = 14**


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