



# ACHIEVE ACADEMY

## GCSE Maths — Higher Tier

Solving Linear Equations · Practice Booklet

NAME: \_\_\_\_\_

CLASS: \_\_\_\_\_

DATE: \_\_\_\_\_

☐ Developing

☒ Secure

☐ Greater Depth

Answer every question in the working space provided. Method marks are available for correct working even if the final answer is wrong. Check the time allowed with your tutor before you start.

### Solving Linear Equations

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Total marks available: 112

## ● Solving Linear Equations

$$\checkmark a = 7$$

Q1 · ● Developing · 4 marks

METHOD

$$5a + 35 = 7a + 21$$

$$-2a = 21 - 35$$

$$a = (-14) \div (-2) = 7$$

$$\checkmark a = -6$$

Q2 · ● Developing · 4 marks

METHOD

$$-3a + 12 = 30$$

$$-3a = 30 - 12$$

$$a = 18 \div (-3) = -6$$

$$\checkmark x = 6$$

Q3 · ● Developing · 4 marks

METHOD

$$2x - 4 = 4x - 16$$

$$-2x = -16 + 4$$

$$x = (-12) \div (-2) = 6$$

$$\checkmark a = 1$$

Q4 · ● Developing · 4 marks

METHOD

$$7a - 35 = 4a - 32$$

$$3a = -32 + 35$$

$$a = 3 \div 3 = 1$$

$$\checkmark n = 8$$

Q5 · ● Developing · 4 marks

METHOD

$$16n - 12 = 116$$

$$16n = 116 + 12$$

$$n = 128 \div 16 = 8$$

$$\checkmark a = 8$$

Q6 · ● Developing · 4 marks

METHOD

$$7a = 56$$

$$a = 56 \div 7 = 8$$

$$\checkmark a = 2$$

Q7 · ● Developing · 4 marks

METHOD

$$3a - 18 = 6a - 24$$

$$-3a = -24 + 18$$

$$a = (-6) \div (-3) = 2$$

$$\checkmark y = -5$$

Q8 · ● Developing · 4 marks

METHOD

$$-10y - 8 = 42$$

$$-10y = 42 + 8$$

$$y = 50 \div (-10) = -5$$

$$\checkmark b = 6$$

Q9 · ● Developing · 4 marks

METHOD

$$3b + 7 = 25$$

$$3b = 25 - 7$$

$$b = 18 \div 3 = 6$$

$$\checkmark n = -3$$

Q10 · ● Developing · 4 marks

METHOD

$$2n + 12 = 6n + 24$$

$$-4n = 24 - 12$$

$$n = 12 \div (-4) = -3$$

$$\checkmark y = 15$$

Q11 · ● Secure · 4 marks

METHOD

$$y(5 + 3) / 15 = 8$$

$$y \times 8 = 8 \times 15 = 120$$

$$y = 120 \div 8 = 15$$

$$\checkmark a = 1$$

Q12 · ● Secure · 3 marks

METHOD

$$a - 1 = 0 \times 4 = 0$$

$$a = 0 + 1 = 1$$

$$\checkmark a = 39$$

Q13 · ● Secure · 3 marks

METHOD

$$a - 4 = 5 \times 7 = 35$$

$$a = 35 + 4 = 39$$

$$\checkmark y = 120$$

Q14 · ● Secure · 4 marks

METHOD

$$y(5 + 6) / 30 = 44$$

$$y \times 11 = 44 \times 30 = 1320$$

$$y = 1320 \div 11 = 120$$

$$\checkmark y = 8$$

Q15 · ● Secure · 3 marks

METHOD

$$y - 4 = 2 \times 2 = 4$$

$$y = 4 + 4 = 8$$

$$\checkmark a = -16$$

Q16 · ● Secure · 3 marks

METHOD

$$a + 8 = -1 \times 8 = -8$$

$$a = -8 - 8 = -16$$

$$\checkmark x = -13$$

Q17 · ● Secure · 3 marks

METHOD

$$x - 3 = -2 \times 8 = -16$$

$$x = -16 + 3 = -13$$

$$\checkmark y = -48$$

Q18 · ● Secure · 3 marks

METHOD

$$y + 6 = -7 \times 6 = -42$$

$$y = -42 - 6 = -48$$

$$\checkmark n = 32$$

Q19 · ● Secure · 3 marks

METHOD

$$n - 2 = 6 \times 5 = 30$$

$$n = 30 + 2 = 32$$

$$\checkmark a = 0$$

Q20 · ● Secure · 3 marks

METHOD

$$a + 7 = 1 \times 7 = 7$$

$$a = 7 - 7 = 0$$

$$\checkmark y = -2 \text{ or } y = 1$$

Q21 · ● Greater Depth · 4 marks

METHOD

Find two numbers that multiply to  $-2$  and add to  $1$ :  $2$  and  $-1$

$$(y + 2)(y - 1) = 0$$

$$y = -2 \text{ or } y = 1$$

$$\checkmark a = -4 \text{ or } a = 7$$

Q22 · ● Greater Depth · 4 marks

METHOD

Find two numbers that multiply to  $-28$  and add to  $-3$ :  $-7$  and  $4$

$$(a - 7)(a + 4) = 0$$

$$a = 7 \text{ or } a = -4$$

$$\checkmark a = -9 \text{ or } a = -6$$

Q23 · ● Greater Depth · 4 marks

METHOD

Find two numbers that multiply to  $54$  and add to  $15$ :  $6$  and  $9$

$$(a + 6)(a + 9) = 0$$

$$a = -6 \text{ or } a = -9$$

$$\checkmark b = -9 \text{ or } b = -8$$

Q24 · ● Greater Depth · 4 marks

METHOD

Find two numbers that multiply to  $72$  and add to  $17$ :  $8$  and  $9$

$$(b + 8)(b + 9) = 0$$

$$b = -8 \text{ or } b = -9$$

$$\checkmark n = -4 \text{ or } n = 1$$

Q25 · ● Greater Depth · 4 marks

METHOD

Find two numbers that multiply to  $-4$  and add to  $3$ :  $4$  and  $-1$

$$(n + 4)(n - 1) = 0$$

$$n = -4 \text{ or } n = 1$$

$$\checkmark b = -2$$

Q26 · ● Greater Depth · 4 marks

METHOD

$$b + 6 = -4(b + 1)$$

$$b + 6 = -4b - 4$$

$$5b = -4 - 6$$

$$b = (-10) \div 5 = -2$$

$$\checkmark a = -5 \text{ or } a = 4$$

Q27 · ● Greater Depth · 4 marks

METHOD

Find two numbers that multiply to  $-20$  and add to  $1$ :  $-4$  and  $5$

$$(a - 4)(a + 5) = 0$$

$$a = 4 \text{ or } a = -5$$

$$\checkmark x = 6$$

Q28 · ● Greater Depth · 4 marks

METHOD

$$x - 32 = -2(x + 7)$$

$$x - 32 = -2x - 14$$

$$3x = -14 + 32$$

$$x = 18 \div 3 = 6$$

$$\checkmark x = -5 \text{ or } x = -2$$

Q29 · ● Greater Depth · 4 marks

METHOD

Find two numbers that multiply to 10 and add to 7: 2 and 5

$$(x + 2)(x + 5) = 0$$

$$x = -2 \text{ or } x = -5$$

$$\checkmark a = -3 \text{ or } a = 7$$

Q30 · ● Greater Depth · 4 marks

METHOD

Find two numbers that multiply to -21 and add to -4: -7 and 3

$$(a - 7)(a + 3) = 0$$

$$a = 7 \text{ or } a = -3$$