

WA7MNALE1

Linear and non-linear equations and inequalities

Core + Challenge

Solving One-Step Equations

I can solve one-step linear equations using inverse operations and check my solution by substitution.

Name: _____ Date: _____ Score: _____ / 55

Key idea

An **equation** is balanced: whatever you do to one side, do to the other.

Undo with the inverse operation: $+\leftrightarrow-$, $\times\leftrightarrow\div$. $5m = 35 \rightarrow m = 35 \div 5 = 7$ $\frac{n}{3} = 6 \rightarrow n = 6 \times 3 = 18$

Check by substitution: $m = 7$: $5 \times 7 = 35 \checkmark$

Some equations are easiest by **inspection**: $6 - w = 5 \rightarrow w$ must be 1.

A Fluency *practise the skill*

/ 16 marks

Solve each equation.

1. $x + 7 = 15$ _____

9. $\frac{1}{4} + k = \frac{3}{8}$ _____

2. $y - 4 = 11$ _____

10. $6 - w = 5$ _____

3. $5m = 35$ _____

11. $45 = 9a$ _____

4. $\frac{n}{3} = 6$ _____

12. $e - 3 = -2$ _____

5. $12 = p + 5$ _____

13. $-3 + m = 11$ _____

6. $0.1v = 12$ _____

14. $\frac{x}{5} = 1.2$ _____

7. $w - 2.5 = 4$ _____

15. $3.5 + y = 10$ _____

8. $8k = 2$ _____

16. $7t = 0.84$ _____

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B**Core** *apply the skill to problems*

/ 21 marks

- 1 Ben had some stickers. He was given 15 more and now has 42. Write an equation and solve it. [2 marks]

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Answer: _____

- 2 Five identical notebooks cost \$17.50. Write an equation and find the cost of one notebook. [2 marks]

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Answer: _____

- 3 A number divided by 4 is 9.5. Write an equation and find the number. [2 marks]

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Answer: _____

- 4 The temperature rose by 8 °C to reach 5 °C. Write and solve an equation to find the starting temperature. [2 marks]

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Answer: _____

- 5 A rectangle has an area of 42 cm² and a length of 7 cm. Write and solve an equation for its width. [2 marks]

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Answer: _____

- 6 After spending \$23.60, Mia has \$16.40 left. How much did she start with? Write and solve an equation. [2 marks]

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Answer: _____

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- 7 One third of a class walk to school. 9 students walk. Write and solve an equation to find the class size. [2 marks]

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Answer: _____

- 8 An equilateral triangle has a perimeter of 22.5 cm. Write and solve an equation for its side length. [2 marks]

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Answer: _____

- 9 On a balance, 4 identical bags balance a 2 kg mass. Write and solve an equation for the mass of one bag. [2 marks]

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Answer: _____

- 10 Tom is 13. He is 4 years younger than his sister. [3 marks]
(a) Write an equation for his sister's age s .
(b) Solve it and check by substitution.

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Answer: _____

C Reasoning *explain, justify and check*

/ 9 marks

- 1 Explain how to use inverse operations to solve $5m = 35$. [2 marks]

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- 2 **(a)** Show that $x = 8$ is a solution of $x + 7 = 15$. **(b)** Is $n = 12$ a solution of $\frac{n}{3} = 6$? Explain. [2 marks]

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- 3 Kai solved $m - 9 = 20$ and got $m = 11$. Explain his mistake and correct it. [2 marks]

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- 4 Explain why $6 - w = 5$ can't be solved just by 'adding 6', and solve it another way. [3 marks]

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D Challenge *multi-step and problem-solving*

/ 9 marks

- 1 Solve $n + n + n = 4.8$ [2 marks]

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Answer: _____

- 2 A number multiplied by 0.25 gives 7. Write and solve an equation. [2 marks]

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Answer: _____

- 3 Write two **different** one-step equations whose solution is $x = 3.5$ (use different operations). [2 marks]

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Answer: _____

- 4 The mean of four test scores is 78. Three of the scores are 72, 85 and 80. Write and solve an equation to find the fourth score. [3 marks]

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Answer: _____

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How did I go?

Fluency ____ / 16 Core ____ / 21 Reasoning ____ / 9 Challenge ____ / 9 **Total ____ / 55**

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