

WA7MNALE1

Linear and non-linear equations and inequalities

Core + Challenge

Solving One-Step Equations — Marking Key

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

For tutors and parents. Award method marks for correct working even if the final answer is wrong.

Marks summary

Section A Fluency: 16 Section B Core: 21 Section C Reasoning: 9 Section D Challenge: 9 **Total: 55**

Fluency: 1 mark each; accept an equivalent unsimplified answer for half credit at tutor's discretion.

A

Fluency *answers and working*

/ 16 marks

Q	Answer	Working
1	$x = 8$	$15 - 7 \rightarrow x = 8$
2	$y = 15$	$11 + 4 \rightarrow y = 15$
3	$m = 7$	$35 \div 5 \rightarrow m = 7$
4	$n = 18$	$6 \times 3 \rightarrow n = 18$
5	$p = 7$	$12 - 5 \rightarrow p = 7$
6	$v = 120$	$12 \div 0.1 \rightarrow v = 120$
7	$w = 6.5$	$4 + 2.5 \rightarrow w = 6.5$
8	$k = \frac{1}{4}$	$2 \div 8 \rightarrow k = \frac{1}{4}$
9	$k = \frac{1}{8}$	$\frac{3}{8} - \frac{2}{8} \rightarrow k = \frac{1}{8}$
10	$w = 1$	by inspection $\rightarrow w = 1$
11	$a = 5$	$45 \div 9 \rightarrow a = 5$
12	$e = 1$	$-2 + 3 \rightarrow e = 1$
13	$m = 14$	$11 + 3 \rightarrow m = 14$
14	$x = 6$	$1.2 \times 5 \rightarrow x = 6$
15	$y = 6.5$	$10 - 3.5 \rightarrow y = 6.5$
16	$t = 0.12$	$0.84 \div 7 \rightarrow t = 0.12$

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B

Core *answers, working and marks*

/ 21 marks

Q	Answer	Working / sample response	Marks
1	$s + 15 = 42$; $s = 27$	$42 - 15$ <i>1 mark: equation</i> <i>1 mark: 27</i>	2
2	$5n = 17.50$; \$3.50	$17.50 \div 5$ <i>1 mark each</i>	2
3	$\frac{n}{4} = 9.5$; $n = 38$	9.5×4 <i>1 mark each</i>	2
4	$t + 8 = 5$; $t = -3^\circ\text{C}$	$5 - 8$ <i>1 mark each</i>	2
5	$7w = 42$; $w = 6\text{ cm}$	$42 \div 7$ <i>1 mark each</i>	2
6	$m - 23.60 = 16.40$; \$40	$16.40 + 23.60$ <i>1 mark each</i>	2
7	$\frac{n}{3} = 9$; $n = 27$	9×3 <i>1 mark each</i>	2
8	$3s = 22.5$; $s = 7.5\text{ cm}$	$22.5 \div 3$ <i>1 mark each</i>	2
9	$4b = 2$; $b = 0.5\text{ kg}$	$2 \div 4$ <i>1 mark each</i>	2
10	$s - 4 = 13$; $s = 17$	$17 - 4 = 13 \checkmark$ <i>1 mark: equation</i> <i>1 mark: 17</i> <i>1 mark: check</i>	3

C

Reasoning *sample answers and marking criteria*

/ 9 marks

Q	Answer	Working / sample response	Marks
1	Divide both sides by 5	m is multiplied by 5, so undo it by dividing both sides by 5: $m = 7$. <i>2 marks</i>	2
2	(a) $15 = 15$ (b) No: $4 \neq 6$	Substitute and compare both sides <i>1 mark each</i>	2
3	$m = 29$	He subtracted instead of adding. Undo -9 by $+9$: $20 + 9 = 29$. <i>1 mark: explanation</i> <i>1 mark: 29</i>	2

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Q	Answer	Working / sample response	Marks
4	$w = 1$	w is being subtracted, so undoing gives $6 - 5 = w$. Or by inspection: $6 - 1 = 5$. <i>1 mark: why</i> <i>1 mark: method</i> <i>1 mark: $w = 1$</i>	3

D

Challenge solutions and marking criteria

/ 9 marks

Q	Answer	Working / sample response	Marks
1	$n = 1.6$	$3n = 4.8$ <i>1 mark: $3n$</i> <i>1 mark: 1.6</i>	2
2	$0.25n = 7$; $n = 28$	$7 \div 0.25 = 28$ <i>1 mark each</i>	2
3	e.g. $x + 1.5 = 5$; $2x = 7$	Any correct equations <i>1 mark each</i>	2
4	75	Total = $4 \times 78 = 312$ $72 + 85 + 80 + s = 312 \rightarrow 237 + s = 312 \rightarrow s = 75$ <i>1 mark: 312</i> <i>1 mark: equation</i> <i>1 mark: 75</i>	3