

Grade 8 · Solving Linear Equations · Test Answer Key

Common Core 8.EE.C.7a, 8.EE.C.7b · mathovore.fr

Use this key to score the test out of 20 points. Each solution shows the full work, and the scoring note explains how partial credit is awarded. Accept any correct method, such as clearing fractions first or working with the fractions directly.

Grade 8 Common Core: 8.EE.C.7a · 8.EE.C.7b

Question 1: Multi-step equations (2 points)

- a. $5x = 25$, so $x = 5$.
- b. $3x - 12 = -21$, so $3x = -9$ and $x = -3$.

Scoring: 1 point per part. Accept a correct answer with minor arithmetic work not shown.

Question 2: Variables on both sides (3 points)

- a. $4x + 5 = 25$, so $4x = 20$ and $x = 5$.
- b. $4x - 8 = x + 10$, so $3x = 18$ and $x = 6$.
- c. $6x + 3 - 4x = 19$, so $2x + 3 = 19$, $2x = 16$ and $x = 8$.

Scoring: 1 point per part.

Question 3: Fractions and decimals (3 points)

- a. $\frac{2}{5}x = 8$, so $x = 8 \times \frac{5}{2} = 20$.
- b. $0.5x - 0.5 = 2$, so $0.5x = 2.5$ and $x = 5$.
- c. Multiply by 6: $2(x + 6) = 3x - 6$, so $2x + 12 = 3x - 6$ and $x = 18$. Check: $\frac{1}{3}(24) = 8$ and $\frac{1}{2}(18) - 1 = 8$.

Scoring: 1 point per part.

Question 4: Number of solutions (3 points)

- a. $7x - 2 = 7x - 2$ is always true: **infinitely many solutions**.
- b. $3x + 12 = 3x + 9$ gives $12 = 9$, false: **no solution**.
- c. $6x - 4 = 2x + 4$, so $4x = 8$: **one solution**, $x = 2$.

Scoring: 1 point per part: 1 for the correct classification with supporting work, solving for part (c).

Question 5: Choose the constant (2 points)

- a. $3(x+2)=3x+6$, so the sides match only when $k=6$.
b. Any value other than 6 works, for example $k=10$: $3x+6=3x+10$ gives $6=10$, which is false.

Scoring: 1 point per part. Accept any k other than 6 in part (b).

Question 6: Equal perimeters (2 points)

Rectangle: $2(2x+1+5)=4x+12$. Square: $4(x+7)=4x+28$.

Equation: $4x+12=4x+28$. Subtract $4x$: $12=28$, which is false.

No solution. The square's perimeter is always 16 more, so the perimeters are never equal.

x	Rectangle perimeter	Square perimeter
1	16	32
2	20	36
3	24	40

The square is always 16 more.

Scoring: 1 point for a correct equation; 1 point for no solution with a reason.

Question 7: Savings plans (3 points)

- a. Priya: $64+8w$. Sam: $28+14w$.
b. $64+8w=28+14w$, so $36=6w$ and $w=6$. After **6 weeks**.
c. $64+8(6)=112$. Each has **\$112**.

Week	Priya	Sam
5	\$104	\$98
6	\$112	\$112
7	\$120	\$126

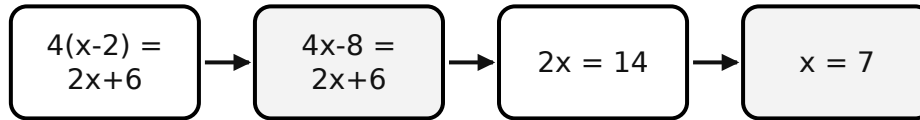
The totals match at week 6.

Scoring: 1 point per part.

Question 8: Find the error (2 points)

Noah did not multiply -2 by 4 when he distributed. Correct: $4(x-2) = 4x-8$.

Then $4x-8 = 2x+6$, so $2x = 14$ and $x = 7$. Check: $4(5) = 20$ and $2(7)+6 = 20$.



The corrected solution.

Scoring: 1 point for identifying the distribution error; 1 point for the correct solution $x = 7$.

Total
20 points