

Algebra 1 · Linear Equations and Literal Equations · Test Answer Key

Common Core A-REI.A.1, A-REI.B.3, A-CED.A.1, A-CED.A.4 · mathovore.fr

Use this key to score the test out of 20 points. Each solution shows the full work and a scoring guide that explains how partial credit is awarded. Award full credit for any correct method, and deduct only the points listed when a step is missing or wrong.

Algebra 1 Common Core: A-REI.A.1 · A-REI.B.3 · A-CED.A.1 · A-CED.A.4

Question 1: Variables on both sides (2 points)

Subtract $3x$: $2x - 8 = 12$. Add 8: $2x = 20$. Divide: $x = 10$. Check: $42 = 42$.

Scoring: 1 point for collecting variable terms and constants, 1 point for the correct solution.

Question 2: Distribute and combine (2 points)

Distribute: $6x - 3 - 4 = 5x + 2$, so $6x - 7 = 5x + 2$. Subtract $5x$ and add 7: $x = 9$. Check: $3(17) - 4 = 47$ and $5(9) + 2 = 47$.

Scoring: 1 point for distributing and combining correctly, 1 point for the correct solution.

Question 3: Fractions on both sides (2 points)

Multiply every term by 4: $3x + 8 = 2x - 4$. Subtract $2x$ and 8: $x = -12$. Check: $-9 + 2 = -7$ and $-6 - 1 = -7$.

Scoring: 1 point for clearing the denominators, 1 point for the correct solution.

Question 4: Justify each step (3 points)

Steps and reasons are shown in the figure: distribute, subtract $2x$, add 4, divide by 2. $x = 7$. Check: $4(6) = 24$ and $2(7) + 10 = 24$.

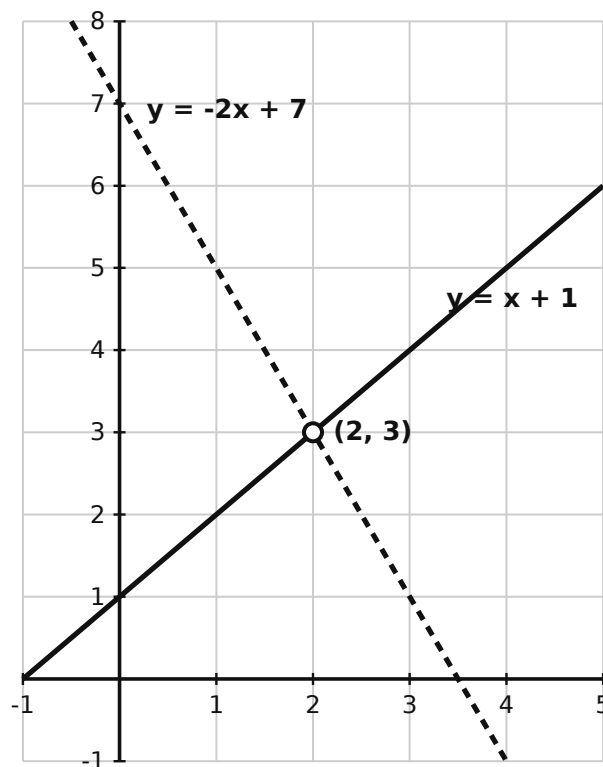
$4(x - 1) = 2x + 10$	→ Given
$4x - 4 = 2x + 10$	→ Distributive property
$2x - 4 = 10$	→ Subtraction property of equality
$2x = 14$	→ Addition property of equality
$x = 7$	→ Division property of equality

Reasons for each step.

Scoring: 1 point for the correct solution, 2 points for the reasons (1 point if two of the four reasons are correct).

Question 5: Solve using a graph (2 points)

- The lines cross at $(2,3)$, so $x=2$.
- Add 2x: $3x+1=7$; so $3x=6$ and $x=2$. Both sides equal 3.



Graphs of $y = x + 1$ and $y = -2x + 7$.

Scoring: 1 point for reading the x-coordinate, 1 point for a correct algebraic check.

Question 6: How many solutions? (2 points)

- a. Right side: $6x-4$, so $6x-4=6x-4$ is always true: **infinitely many solutions**.
- b. Subtract $5x$: $1=-3$ is false: **no solution**.

Scoring: 1 point for each part, including the explanation.

Question 7: Rearranging formulas (2 points)

- a. $2A=bh$, so $b=\frac{2A}{h}$.
- b. Subtract $3x$: $-2y=12-3x$. Divide by -2 : $y=\frac{3}{2}x-6$.

Scoring: 1 point for each part.

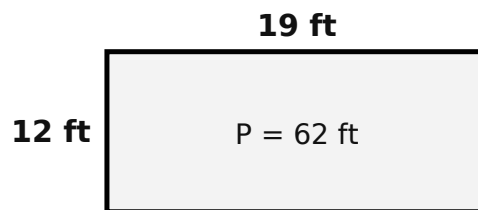
Question 8: Text messages (3 points)

- a. $20+0.05t=27.50$
- b. Subtract 20: $0.05t=7.50$. Divide: $t=150$.
- c. Sofia sent **150 text messages**. Check: $20+0.05(150)=27.50$.

Scoring: 1 point for a correct equation, 1 point for solving, 1 point for interpreting the answer in context.

Question 9: Garden perimeter (2 points)

- a. $2(w+w+7)=62$
- b. Simplify: $4w+14=62$, so $w=12$. **Width 12 ft, length 19 ft.**



The solved garden.

Scoring: 1 point for the equation, 1 point for both dimensions.

Total
20 points