

Grade 7 · Two-Step Equations · Test Answer Key

Common Core 7.EE.B.3, 7.EE.B.4a · mathovore.fr

Use this key to score the test out of 20 points. Each solution shows the full work and a check, and the scoring note tells how partial credit is awarded. Accept any correct method, such as distributing first in a parentheses problem or giving a fraction answer in place of a decimal.

Grade 7 Common Core: 7.EE.B.3 · 7.EE.B.4a

Question 1: Add, then multiply (2 points)

$6x = 36$, so $x = 6$. Check: $6(6) + 9 = 45$.

Scoring: 1 point for subtracting 9 correctly, 1 point for dividing by 6.

Question 2: Fraction of a variable (2 points)

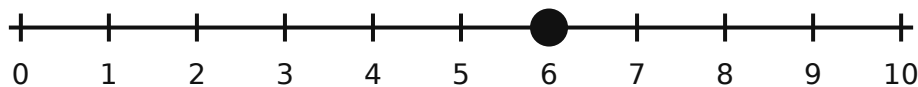
Add 4: $\frac{x}{3} = 9$. Multiply by 3: $x = 27$. Check: $\frac{27}{3} - 4 = 5$.

Scoring: 1 point for $\frac{x}{3} = 9$, 1 point for $x = 27$.

Question 3: Negative coefficient (2 points)

Subtract 7: $-2x = -12$. Divide by -2 : $x = 6$. Check: $-2(6) + 7 = -5$. The graph is a point at 6.

Scoring: 1 point for $-2x = -12$, 1 point for $x = 6$ correctly graphed.

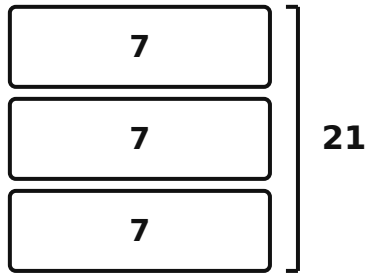


The solution $x = 6$.

Question 4: Parentheses (2 points)

Divide by 3: $x - 5 = 7$. Add 5: $x = 12$. Check: $3(12 - 5) = 3(7) = 21$.

Scoring: 1 point for a correct first step ($x - 5 = 7$ or $3x - 15 = 21$), 1 point for $x = 12$.



Each group is 7, so $x = 12$.

Question 5: Decimal coefficients (2 points)

Subtract 2.25: $1.5x = 7.5$. Divide by 1.5: $x = 5$. Check: $1.5(5) + 2.25 = 7.5 + 2.25 = 9.75$.

Scoring: 1 point for $1.5x = 7.5$, 1 point for $x = 5$.

Question 6: Fraction coefficient (2 points)

Add 4: $\frac{2}{3}x = 10$. Multiply by $\frac{3}{2}$: $x = 10 \cdot \frac{3}{2} = 15$. Answer: $x = 15$. Check: $\frac{2}{3}(15) - 4 = 10 - 4 = 6$.

Scoring: 1 point for $\frac{2}{3}x = 10$, 1 point for $x = 15$.

Question 7: Find the error (2 points)

Liam added 6 to both sides, but the equation has $+6$, so he must subtract 6: $4x = 30 - 6 = 24$. Then $x = 6$. Check: $4(6) + 6 = 30$, while $4(9) + 6 = 42$.

Scoring: 1 point for explaining that 6 must be subtracted, 1 point for $x = 6$.

Question 8: School store receipt (3 points)

(a) $4n + 3.50 = 17.50$.

(b) Subtract 3.50: $4n = 14$. Divide by 4: $n = 3.50$. A notebook costs \$3.50.

(c) $4(3.50) + 3.50 = 14 + 3.50 = 17.50$. It checks.

Scoring: 1 point per part.

4 notebooks, \$3.50 each	\$14.00
1 pen	\$3.50
Total	\$17.50

Each notebook costs \$3.50.

Question 9: Two ways to find a number (3 points)

(a) $4(x+7)=52$.

(b) Divide by 4: $x+7=13$. Subtract 7: $x=6$.

(c) Work backward: $52 \div 4 = 13$, then $13 - 7 = 6$. These are the same two operations as in the algebra, in the same order. Check: $(6+7) \cdot 4 = 52$.

Scoring: 1 point per part. In (c), the explanation must mention the same inverse operations.

Total
20 points