

Rewriting Linear Expressions in Equivalent Forms

Grade 7 math · Test Answer Key · Standards: 7.EE.A.1, 7.EE.A.2

Mark each question with the point values shown. Give credit when a correct method is followed even if one earlier sign error carries through, and require the final expression to be fully simplified or factored as the question asks.

Standards: 7.EE.A.1, 7.EE.A.2 · **Level:** Grade 7

Question 1 Expand Two Expressions (2 points)

a. $7 \cdot 3x - 7 \cdot 4 = \mathbf{21x - 28}$.

b. $-2.5 \cdot 4x = -10x$ and $-2.5 \cdot 6 = -15$, so $\mathbf{-10x - 15}$.

Scoring: 1 point per part.

Question 2 Combine Like Terms (2 points)

x terms: $5 - 3 + 2 = 4$. Constants: $-8 + 14 = 6$.

$\mathbf{4x + 6}$

Scoring: 1 point for each correctly combined group.

Question 3 Factor Out the GCF (2 points)

a. GCF of 28 and 42 is 14: $\mathbf{14(2x + 3)}$.

b. GCF is 3, and factoring out -3 gives $\mathbf{-3(3x + 5)}$. Accept $3(-3x - 5)$.

Scoring: 1 point per part; award it only if the factoring is complete.

Question 4 Simplify and Verify (3 points)

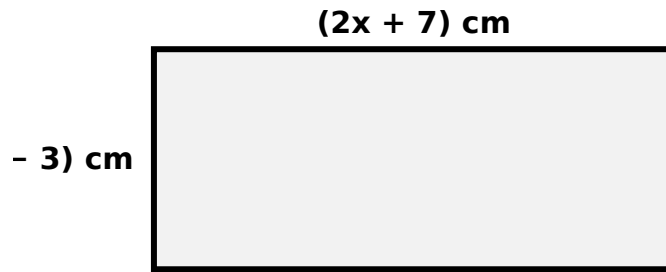
a. $2(5x - 3) = 10x - 6$ and $-4(x - 2.5) = -4x + 10$. Combine: $\mathbf{6x + 4}$.

b. At $x = 3$: $2(12) - 4(0.5) = 24 - 2 = 22$, and $6(3) + 4 = 22$. Both equal 22.

Scoring: part a, 1 point for each correct distribution; part b, 1 point.

Question 5 Rectangle Perimeter (3 points)

- a. $P = 2(2x + 7) + 2(x - 3) = 4x + 14 + 2x - 6 = \mathbf{6x + 8}$ cm.
b. For $x = 6$: $6(6) + 8 = \mathbf{44}$ cm. Check: sides 19 and 3, so $2(19 + 3) = 44$.



Perimeter = $2 \times$ (sum of two adjacent sides).

Scoring: part a, 1 point for setting up the sum and 1 point for the simplified result; part b, 1 point.

Question 6 Fraction Coefficients (2 points)

$\frac{3}{4}(12x - 8) = 9x - 6$ and $\frac{1}{2}(6x + 10) = 3x + 5$. Sum: $12x - 1$.

$12x - 1$

Scoring: 1 point for both distributions, 1 point for the sum.

Question 7 Price Increase (3 points)

- a. $p + 0.12p = \mathbf{1.12p}$.
b. $1.12 \times 75 = 84$, so **\$84**.
c. 1.12 means the new price is 112% of the old price: the original 100% plus a 12% increase.

Scoring: 1 point per part.

Question 8 Error Analysis (3 points)

- a. The student multiplied -3 by -7 and got -21 ; a negative times a negative is positive.
b. $-3(2x - 7) = -6x + 21$, so **$-6x + 21$** .
c. At $x = 2$: original $-3(4 - 7) = 9$; student $-12 - 21 = -33$; correct $-12 + 21 = 9$. Since $-33 \neq 9$, the student's answer is not equivalent.

Scoring: 1 point per part.