

Grade 7 · Equivalent Expressions · Test Answer Key

Common Core 7.EE.A.1, 7.EE.A.2 · mathovore.fr

Use this key to score the test out of 20 points. Each solution shows the full work, and the scoring note tells how partial credit is awarded. Accept any equivalent form of an answer, such as $\frac{5}{2}x - 3$ for $2.5x - 3$.

Grade 7 Common Core: 7.EE.A.1 · 7.EE.A.2

Question 1: Combine like terms (2 points)

$8a + 5a = 13a$ and $-3 + 7 = 4$, so the answer is $13a + 4$.

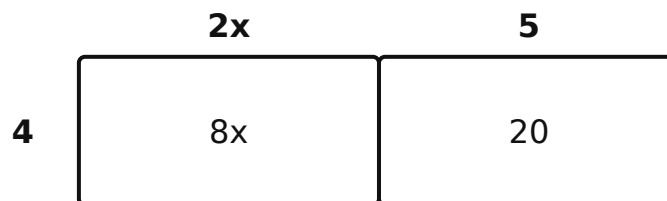
Scoring: 1 point for combining the a terms, 1 point for combining the constants.

Question 2: Expand (2 points)

(a) $4 \cdot 2x = 8x$ and $4 \cdot 5 = 20$: $8x + 20$.

(b) $-3 \cdot x = -3x$ and $-3 \cdot (-6) = 18$: $-3x + 18$.

Scoring: 1 point per part. In (b), award no credit for $-3x - 18$.



Areas $8x$ and 20 .

Question 3: Factor (2 points)

The greatest common factor of 20 and 30 is 10. $20x \div 10 = 2x$ and $30 \div 10 = 3$, so $10(2x + 3)$.

Scoring: 1 point for finding the greatest common factor 10, 1 point for the correct factored form. Award 1 point total for $5(4x + 6)$ or $2(10x + 15)$, which are not factored completely.

Question 4: Equivalent or not (2 points)

$3(2x + 4) = 6x + 12$.

(a) $6x+12$: **equivalent**. (b) $6x+4$: **not equivalent**, because the 4 was not multiplied by 3. (c) $2(3x+6)=6x+12$: **equivalent**. (d) $5x+7$: **not equivalent**; at $x=1$, $3(6)=18$ but $5+7=12$.

Scoring: 2 points for all four decisions with valid justification, 1 point for three correct decisions, 0 otherwise.

Question 5: Subtract expressions (2 points)

$5x-2-2x+7=3x+5$. Answer: $3x+5$. Check with $x=1$: $3-(-5)=8$ and $3+5=8$.

Scoring: 1 point for distributing the negative sign to both terms, 1 point for the final simplified expression.

Question 6: Fraction and decimal coefficients (3 points)

$\frac{1}{4}(8x-12)=2x-3$. Then $2x-3+0.5x=2.5x-3$. Answer: $2.5x-3$.

Check with $x=2$: $\frac{1}{4}(4)+1=2$ and $2.5(2)-3=2$.

Scoring: 1 point for $2x-3$, 1 point for combining $2x+0.5x$, 1 point for the correct final expression.

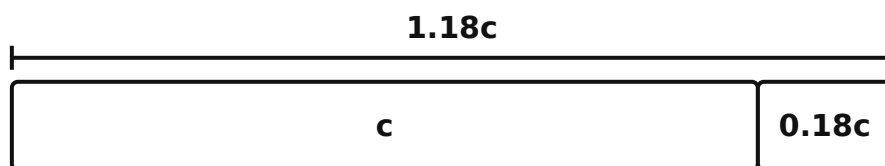
Question 7: Dinner with a tip (3 points)

(a) $c+0.18c=1.18c$.

(b) $1.18(40)=47.20$: \$47.20.

(c) $1.18c=59$, so $c=59\div 1.18=50$: \$50. Check: $1.18(50)=59$.

Scoring: 1 point per part.



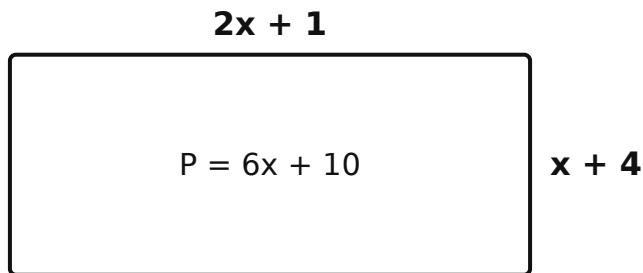
Total with tip: $1.18c$.

Question 8: Perimeter (2 points)

$P=2(2x+1)+2(x+4)=4x+2+2x+8=6x+10$.

Check with $x=2$: sides 5 and 6 give 22, and $6(2)+10=22$.

Scoring: 1 point for a correct unsimplified expression, 1 point for the simplified result.



Perimeter: $6x + 10$.

Question 9: Find the error (2 points)

Ethan multiplied only the first term by 4. He must multiply -3 by 4 as well: $4(x-3) = 4x-12$. A check with $x=5$ shows the difference: $4(2)=8$ and $4(5)-12=8$, but $4(5)-3=17$.

Scoring: 1 point for explaining that the -3 was not multiplied, 1 point for $4x-12$.

Total
20 points