

Algebraic Expressions and Properties of Real Numbers: math test solutions, Grade 9 – download the PDF

Test solutions with the detailed point scale. Add up your points and spot what to review.

Suggested time: 45 minutes. Out of 20 points. Calculator allowed only when the problem says so.

1 Order of operations and evaluating

/ 4 pts

- a) $9 - 4 = 5$, $5^2 = 25$, $2 \cdot 25 = 50$, $50 \div 5 = 10$, then $7 + 10 = 17$. (2 pts)
- b) $2(-3)^2 - 3(-3)(4) + 4 = 2(9) + 36 + 4 = 18 + 36 + 4 = 58$. (2 pts)

2 Properties of real numbers

/ 3 pts

- a) Additive inverse property. (1 pt)
- b) Associative property of multiplication. (1 pt)
- c) Distributive property. (1 pt)

3 Simplifying

/ 4 pts

- a) p terms: $8 + 2 - 1 = 9$, constants: $-3 + 11 = 8$. The result is $9p + 8$. (2 pts)
- b) $10y + 5 - 3y + 12 = 7y + 17$. (2 pts)

4 Classifying real numbers

/ 3 pts

- a) $\sqrt{36} = 6$: natural, whole, integer, and rational. (1 pt)
- b) $-4.5 = -\frac{9}{2}$: rational only. (1 pt)
- c) 30 is not a perfect square: irrational only. (1 pt)

5 Translating and evaluating

/ 3 pts

- a) $\frac{n}{5} + 3$. (1 pt)
- b) $2(n - 8)$. The parentheses are needed because the 2 multiplies the whole difference. (1 pt)
- c) $4 + 2.5m$; for $m = 8$: $4 + 20 = 24$, so the ride costs \$24. (1 pt)

6 The garden

/ 3 pts

- a) $P = 2(2x + 3) + 2x = 4x + 6 + 2x = 6x + 6$. (1 pt)
- b) $A = x(2x + 3) = 2x^2 + 3x$. (1 pt)
- c) For $x = 5$: $P = 6(5) + 6 = 36$ ft and $A = 2(25) + 15 = 65$ square feet. Check: length 13 ft, width 5 ft, so $2(13) + 2(5) = 36$ and $13 \cdot 5 = 65$. (1 pt)



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