

Powers, Powers of Ten and Order of Operations

Grade 6 math · Test Answer Key · Standards: 6.EE.A.1, 6.EE.A.2c

Use this answer key to score the test. Each solution shows the steps in the order they must be performed, and the scoring notes explain how to award points, including partial credit.

Standards: 6.EE.A.1, 6.EE.A.2c · **Level:** Grade 6

Question 1 Exponent basics (2 points)

(a) $3^5 = 243$ (9, 27, 81, 243).

(b) $2^7 = 128$.

Scoring: 1 point per part (the exponent form and value are both needed in (a)).

Question 2 Powers of 10 (2 points)

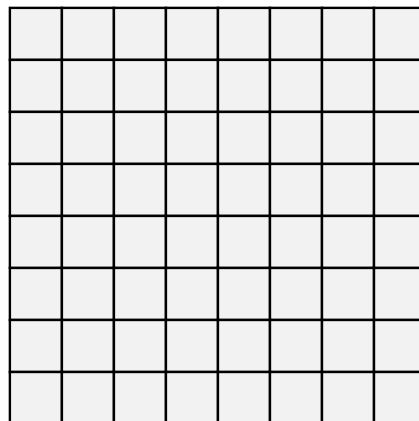
(a) Five zeros: **100,000**.

(b) Four zeros: **10^4** .

Scoring: 1 point per part.

Question 3 Tiles as a power (2 points)

(a) 8^2 . (b) $8 \times 8 = 64$ tiles.



8 tiles per side

$$8 \times 8 = 8^2 = 64.$$

Scoring: 1 point per part.

Question 4 Order matters (2 points)

(a) Divide first: $12 \div 3 = 4$, then $30 - 4 = \mathbf{26}$.

(b) Grouping first: $18 \div 3 = \mathbf{6}$.

Scoring: 1 point per part.

Question 5 Power and subtraction (2 points)

$4^3 = 64$ and $5 \times 6 = 30$, so $64 - 30 = \mathbf{34}$.

Scoring: 1 point for 64, 1 point for the final answer.

Question 6 Multi-step expression (3 points)

Grouping: $11 - 3 = 8$. Exponent: $8^2 = 64$. Multiply and divide left to right: $2 \times 64 = 128$, then $128 \div 4 = 32$. Add: $5 + 32 = \mathbf{37}$.

Scoring: 1 point for grouping and exponent, 1 point for the multiply/divide steps, 1 point for the final answer.

Question 7 Spot the error (3 points)

(a) Jordan added $7 + 3 = 10$ first and then multiplied by 4. Exponents and multiplication come before addition.

(b) $2^2 = 4$, then $3 \times 4 = 12$, then $7 + 12 = \mathbf{19}$.

Scoring: 1 point for (a); 1 point for the order in (b), 1 point for 19.

Question 8 Concert receipt (3 points)

(a) $4 \times (\mathbf{12 + 3}) - 6$.

(b) $12 + 3 = 15$; $4 \times 15 = 60$; $60 - 6 = \mathbf{\$54}$.

$4 \times (12 + 3)$	\$60
Group discount	-\$6
Total	\$54

Total: $60 - 6 = \$54$.

Scoring: 1 point for the expression; 1 point for the order of steps, 1 point for \$54.

Question 9 Power versus product (1 point)

The count is $3 \times 3 \times 3 = \mathbf{3^3} = \mathbf{27}$. It is not 9 because three factors of 3 are multiplied, not just two.

Scoring: 1 point for both values and the comparison.