

Exponent Trouble Answer Key

1. Error: None.

Why it is incorrect: It is not incorrect. The Product of Powers law was applied correctly.

Correct solution: 2^7

2. Error: The exponents were added instead of subtracted.

Why it is incorrect: When dividing powers with the same base, subtract the exponents.

Correct solution: 5^4

3. Error: The exponents were added instead of multiplied.

Why it is incorrect: For a power raised to a power, multiply the exponents.

Correct solution: 3^8

4. Error: The exponent was applied to only one factor.

Why it is incorrect: A power of a product applies to both factors.

Correct solution: $4^2 \times 6^2$

5. Error: The exponent was applied to only the numerator.

Why it is incorrect: A power of a quotient applies to both the numerator and the denominator.

Correct solution: $18^2 \div 3^2$

6. Error: The Product of Powers law was used with different bases.

Why it is incorrect: Exponents can only be combined using the Product of Powers law when the bases are the same.

Correct solution: The expression cannot be combined into one power. It remains $7^2 \times 8^2$.

Teacher's Guide

- Remind students that the goal is to identify the reasoning error, not just write the correct answer.
- Encourage students to name the exponent law that should have been used for each problem.
- For students needing support, provide a reference chart of the exponent laws during the activity.
- Have pairs discuss each incorrect solution before writing their explanations to promote mathematical reasoning.
- Increase engagement by asking students to vote whether each worked example is "Correct" or "Needs Fixing" before revealing the answer.