Combining numerical index laws

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Simplify $\frac{(5^2)^3}{5^4}$ and evaluate. [2 marks]

The exponent is $2 \times 3 - 4 = 2$.

Answer: $5^2 = 25$

2. Simplify $\frac{2^3 \times 2^4}{2^5}$ and evaluate. [2 marks]

$3 + 4 - 5 = 2$.

Answer: $2^2 = 4$

3. Simplify $\frac{(10^2)^3 \times 10^0}{10^4}$ and evaluate. [2 marks]

$2 \times 3 + 0 - 4 = 2$.

Answer: $10^2 = 100$

4. Simplify $\frac{(4^3 \div 4)^2}{4^2}$ and evaluate. [3 marks]

$4^3 \div 4 = 4^2$.

$(4^2)^2 \div 4^2 = 4^{4-2} = 4^2 = 16$.

Answer: $4^2 = 16$

5. Evaluate $(6^2)^2 \div 6^4$. [2 marks]

$6^{4-4} = 6^0 = 1$.

Answer: 1

6. Explain the error in $(2^3)^2 = 2^5$ and give the correct value. [3 marks]

$(2^3)^2 = 2^{3 \times 2} = 2^6 = 64$.

Answer: The exponents multiply; the correct value is 64.