

Name: _____

Block: _____

2.5 Practice - Exponent Laws (Part 2)

1. Write each expression as a **product of powers** or a **quotient of powers**. DO NOT EVALUATE.

a) $(3 \times 2)^4$

b) $[(-4) \times 3]^2$

c) $[(-2) \times (-4)]^3$

d) $(7 \times 11)^0$

e) $(10 \div 5)^3$

f) $[(-12) \div (-6)]^2$

g) $\left(\frac{8}{4}\right)^4$

h) $\left(\frac{1}{10}\right)^6$

2. Write as a **single power**. DO NOT EVALUATE.

a) $(3^4)^2$

b) $(5^0)^3$

c) $-(7^2)^2$

d) $[(-3)^3]^2$

3. Why is the value of $[(-3)^3]^2$ positive and the value of $[(-3)^3]^3$ negative?

4. **Simplify** using the exponent laws, then **evaluate**.

a) $(2^3 \times 2^1)^2$

b) $(5^4 \div 5^2)^2$

c) $[(-3)^0 \times (-3)^3]^2$

d) $(10^2)^4 \div (10^3)^2$

5. Find and correct any errors in each solution.

a) $(4^3 \times 2^2)^2 = (8^5)^2$
 $= 8^{10}$
 $= 1\ 073\ 741\ 824$

b) $[(-10)^3]^4 = (-10)^7$
 $= -10\ 000\ 000$

c) $(2^2 + 2^3)^2 = (2^5)^2$
 $= 2^{10}$
 $= 1024$

2.5 Practice - Answers

1. a) $3^4 \times 2^4$ b) $(-4)^2 \times 3^2$
c) $(-2)^3 \times (-4)^3$ d) $7^0 \times 11^0$
e) $10^3 \div 5^3$ f) $(-12)^2 \div (-6)^2$
g) $\frac{8^4}{4^4}$ h) $\frac{1^6}{10^6}$

2. a) 3^8 b) 5^0
c) -7^4 d) $(-3)^6$

3. $[(-3)^3]^2$ is positive because it simplifies to $(-3)^6$, and the product of an even number of negative factors is positive. $[(-3)^3]^3$ is negative because it simplifies to $(-3)^9$, and the product of an odd number of negative factors is negative.

4. a) $(2^3 \times 2^1)^2 = (2^4)^2 = 2^8 = 256$
b) $(5^4 \div 5^2)^2 = (5^2)^2 = 5^4 = 625$
c) $[(-3)^0 \times (-3)^3]^2 = [(-3)^3]^2 = (-3)^6 = 729$
d) $(10^2)^4 \div (10^3)^2 = 10^8 \div 10^6 = 10^2 = 100$

5. a) $(4^3 \times 2^2)^2 = 4^6 \times 2^4 = 4096 \times 16 = 65\ 536$
b) $[(-10)^3]^4 = (-10)^{12} = 1\ 000\ 000\ 000\ 000$
c) $(2^2 + 2^3)^2 = (4 + 8)^2 = 12^2 = 144$