

Name: _____

Block: _____

2.4/2.5 Practice – Exponent Laws With Order of Operations

1. **Simplify** as much as possible using the exponent laws, then **evaluate**.

a) $2^2 - 2^{20} \times 2^{10} \div 2^{26}$ b) $(-2)^6 \div (-2)^5 - (-2)^5 \div (-2)^3$ c) $2^{11}(2^3) \div 2^{11} - 2^3$

2. **Simplify** as much as possible using the exponent laws, then **evaluate**.

a) $4^{13} \div 4^{12} + 4^2 \times 4$ b) $(-2)^2 + (-2)^{32} \times (-2)^4 \div (-2)^{33}$ c) $\frac{3^4}{3^3} + \frac{4^2 \times 4^{10}}{4^9}$

3. **Simplify** as much as possible using the exponent laws, then **evaluate**.

a) $(3^2 \times 4^3)^2 - (4^4 \div 4^2)^2$ b) $(2^3 \div 2^2)^3 + (7^4 \times 7^3)^0$

c) $[(-1)^3]^4 - [(-1)^4 \div (-1)^3]^2$

d) $(4^2 \times 4^3)^0 - (3^2)^2$

e) $(5^2 \times 5^0)^3 + (2^5 \div 2^3)^3$

f) $(10^6 \div 10^3)^2 + (2^3 \div 2^1)^4$

2.4/2.5 Practice - Answers

1. a) $2^2 - 2^4 = -12$ b) $(-2)^1 - (-2)^2 = -6$ c) $2^3 - 2^3 = 0$

2. a) $4^1 + 4^3 = 68$ b) $(-2)^2 + (-2)^3 = -4$ c) $3^1 + 4^3 = 67$

3. a) $(3^2 \times 4^3)^2 - (4^4 \div 4^2)^2 = (9 \times 64)^2 - (4^2)^2$
 $= 576^2 - 4^4 = 331\,776 - 256 = 331\,520$

b) $(2^3 \div 2^2)^3 + (7^4 \times 7^3)^0 = 2^3 + 1 = 8 + 1 = 9$

c) $[(-1)^3]^4 - [(-1)^4 \div (-1)^3]^2 = (-1)^{12} - (-1)^2$
 $= 1 - 1 = 0$

d) $(4^2 \times 4^3)^0 - (3^2)^2 = 1 - 3^4 = 1 - 81 = -80$

e) $(5^2 \times 5^0)^3 + (2^5 \div 2^3)^3 = 5^6 + 2^6 = 15\,625 + 64 = 15\,689$

f) $(10^6 \div 10^3)^2 + (2^3 \div 2^1)^4 = (10^3)^2 + (2^2)^4 = 10^6 + 2^8 = 1\,000\,000 + 256 = 1\,000\,256$