Extra Practice 5 – Master 2.21

Lesson 2.5

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 is the square of a power, and the square of any number 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)** $(3^2 \times 4^3)^2 - (4^4 \div 4^2)^2 = (9 \times 64)^2 - (4^2)^2$
$= 576^2 - 4^4 = 331\ 776 - 256 = 331\ 520$
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) $(10^6 \div 10^3)^2 + (2^3 \div 2^1)^4 = (10^3)^2 + (2^2)^4 = 10^6 + 2^8 = 1\ 000\ 000 + 256 = 1\ 000\ 256$

6. **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) $(2^2 + 2^3)^2 = (4 + 8)^2 = 12^2 = 144$