

3.3 – Exponent Laws Worksheet #1

MPM1D

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1. Write each expression as a single power and then evaluate.

a) $7^2 \times 7^4$

b) $3^5 \times 3^3$

c) 5×5^2

d) $3^2 \times 3^4 \times 3^3$

e) $(-2)^2 \times (-2)^3$

f) $(-1)^3 \times (-1)^2 \times (-1)$

g) $0.5^3 \times 0.5^2$

h) $\left(\frac{1}{2}\right) \times \left(\frac{1}{2}\right)^3$

2. Write each expression as a single power and then evaluate.

a) $8^6 \div 8^4$

b) $5^5 \div 5^3$

c) $7^7 \div 7^2$

d) $4^8 \div 4^5 \div 4$

e) $(-9)^7 \div (-9)^6$

f) $0.1^6 \div 0.1^4$

g) $(-0.3)^4 \div (-0.3)$

h) $\left(\frac{2}{3}\right)^5 \div \left(\frac{2}{3}\right)^3$

3. Write each expression as a single power and then evaluate.

a) $(2^2)^4$

b) $(6^2)^2$

c) $(3^3)^2$

d) $[(-2)^4]^3$

e) $[(-1)^8]^6$

f) $[(-1)^5]^7$

g) $(0.3^2)^2$

h) $\left[\left(\frac{2}{5}\right)^2\right]^2$

4. Use the exponent laws to simplify each expression. Then, evaluate.

a) $4^3 \times 4^4 \div 4^5$

b) $8^7 \div 8^7 \times 8$

c) $\frac{9^6 \times 9^3}{9^7}$

d) $\frac{6^5 \times 6^2}{6 \times 6^3}$

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

f) $\frac{(3^2)^4 \times 3^3}{3^8}$

Answers

1. a) $7^6 = 117\,649$
b) $3^8 = 6561$
c) $5^3 = 125$
d) $3^9 = 19\,683$
e) $(-2)^5 = -32$
f) $(-1)^6 = 1$
g) $0.5^5 = 0.031\,25$
h) $\left(\frac{1}{2}\right)^4 = \frac{1}{16}$

2. a) $8^2 = 64$
b) $5^2 = 25$
c) $7^5 = 16\,807$
d) $4^2 = 16$
e) $(-9)^1 = -9$
f) $0.1^2 = 0.01$
g) $(-0.3)^3 = -0.027$
h) $\left(\frac{2}{3}\right)^2 = \frac{4}{9}$

3. a) $2^8 = 256$
b) $6^4 = 1296$
c) $3^6 = 729$
d) $(-2)^{12} = 4096$
e) $(-1)^{48} = 1$
f) $(-1)^{35} = -1$
g) $0.3^4 = 0.0081$
h) $\left(\frac{2}{5}\right)^4 = \frac{16}{625}$

4. a) $4^2 = 16$
b) $8^1 = 8$
c) $9^2 = 81$
d) $6^3 = 216$
e) $2^{11} = 2048$
f) $3^3 = 27$