

Section 4.1 Focus Exercises

1. Evaluate each using a rule of exponents.

a) $x^0 =$

b) $4^1 =$

c) $(-4)^0 =$

d) $(-6)^1 =$

e) $y^1 =$

f) $\left(\frac{2}{3}\right)^0 =$

g) $\left(\frac{5}{6}\right)^1 =$

h) $0^1 =$

2. Write each product as one base with one exponent. You may expand and count the number of factors or use the *product rule*.

a) $x^2 \cdot x^6 =$

b) $v^5 \cdot v^9 =$

c) $y^3 \cdot y =$

d) $c \cdot c^4 =$

e) $p^5 \cdot p^0 =$

f) $k^0 \cdot k^6 =$

g) $w \cdot w^0 =$

h) $y^0 \cdot y^0 =$

i) $x^4 \cdot x^{10} =$

j) $c^3 \cdot c^3 =$

k) $p^1 \cdot p^1 =$

l) $m^0 \cdot q^4 =$

3. Write each quotient as one base with one exponent. You may expand and count the number of factors or use the *quotient rule*.

a) $\frac{x^9}{x^5} =$

b) $\frac{w^6}{w^3} =$

c) $\frac{c^5}{c^1} =$

d) $\frac{p^3}{p^0} =$

e) $\frac{y^8}{y} =$

f) $\frac{a^7}{a^7} =$

g) $\frac{m^{12}}{m^6} =$

h) $\frac{x^3}{x^2} =$

i) $\frac{x}{x} =$

j) $\frac{c^3}{c^3} =$

k) $\frac{y^{10}}{y^2} =$

l) $\frac{m^{21}}{m^7} =$

4. Use the *Distributive Properties for Exponents* to rewrite each of these. Simplify if possible.

a) $(k \cdot h)^4 =$

b) $(3m)^4 =$

c) $(-3 \cdot p)^2 =$

d) $(-2x)^3 =$

e) $\left(\frac{y}{x}\right)^5 =$

f) $\left(\frac{5}{h}\right)^0 =$

g) $\left(\frac{p}{6}\right)^1 =$

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

i) $\left(\frac{-7p}{8}\right)^2 =$

j) $\left(\frac{-1v}{2w}\right)^3 =$

k) $(2p)^5 =$

l) $(8x)^0 =$

5. Use the *Power Rule* to rewrite each of these. Simplify if possible.

a) $(x^2)^4 =$

b) $(r^5)^3 =$

c) $(2k^3)^4 =$

d) $(y^4b^3)^2 =$

e) $(4c^3)^3 =$

f) $(xw^2)^5 =$

g) $\left(\frac{p^2}{m^3}\right)^2 =$

h) $\left(\frac{y}{x^4}\right)^3 =$

i) $\left(\frac{2}{k^2}\right)^3 =$

j) $\left(\frac{m^0}{v^1}\right)^4 =$

k) $(x^3w^4)^1 =$

l) $(x^6w)^0 =$

m) $\left(\frac{4c}{k^9}\right)^1 =$

n) $\left(\frac{m^4}{v^4}\right)^0 =$