

8-2 Skills Practice: Apply Exponent Properties Involving Quotients**Alg 1****1. Simplify the expression. Write your answer using exponents.**

a. $\frac{6^{14}}{6^8}$

b. $\frac{14^5}{14^4}$

c. $\frac{(-5)^7}{(-5)^2}$

d. $\frac{12^5 \cdot 12^3}{12^4}$

e. $\frac{8^{17}}{8^3 \cdot 8^7}$

f. $\left(\frac{3}{4}\right)^5$

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

h. $3^8 \cdot \frac{1}{3^1}$

i. $\left(\frac{1}{4}\right)^5 \cdot 4^{13}$

2. Simplify the expression.

a. $\frac{1}{y^9} \cdot y^{15}$

b. $z^{16} \cdot \frac{1}{z^7}$

c. $\left(\frac{a}{b}\right)^{68}$

d. $\left(-\frac{6}{z}\right)^3$

e. $\left(\frac{a^3}{2b^5}\right)^4$

f. $\left(\frac{3x^4}{y^6}\right)^5$

g. $\left(\frac{m^4}{5n^9}\right)^3$

h. $\left(\frac{3x^7}{2y^{12}}\right)^4$

i. $\left(\frac{2m^5}{3n^9}\right)^5$

3. The area of New Zealand is 104,454 square miles and the area of Saint Kitts and Nevis, islands in the Caribbean Sea, is 104 square miles. Use order of magnitude to estimate how many times greater New Zealand's area is than Saint Kitts and Nevis' area.

4. The table below shows the approximate number of cell phone subscribers in selected countries in 2001.

Country	Algeria	Dominican Republic	Poland	Soloman Islands
Number of subscribers	10^5	10^6	10^7	10^3

- a. How many times greater is the number of cell phone subscribers in Poland than in the Solomon Islands?
- b. How many times greater is the number of cell phone subscribers in the Dominican Republic than in the Solomon Islands?
5. You are taking a glass-blowing class and have created a vase in the shape of a sphere. The vase will have a hole in the top so you can put flowers in it and it will sit on a stand. The radius of your vase is $\frac{21}{2}$ inches. Use the formula $V = \frac{4}{3}\pi r^2$ to write an expression for the volume of your vase.