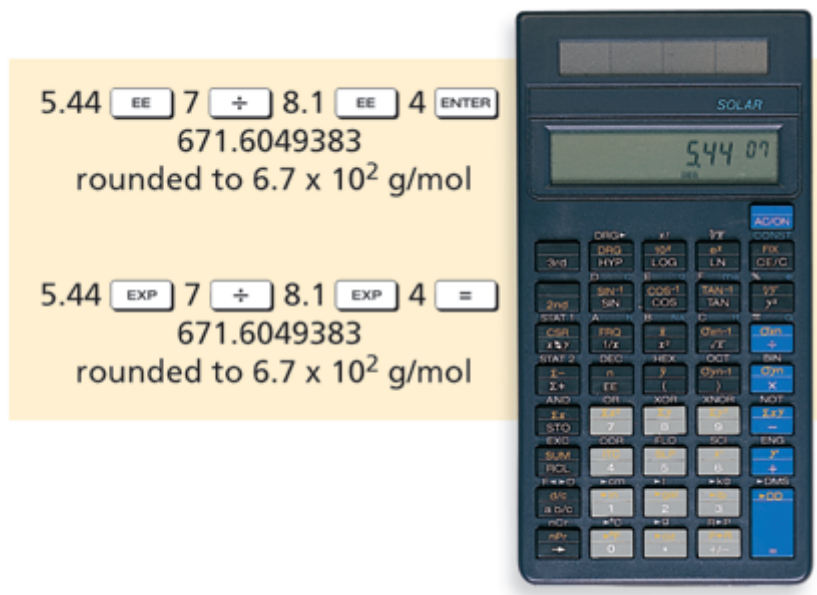


**FIGURE 10** When you use a scientific calculator to work problems in scientific notation, don't forget to express the value on the display to the correct number of significant figures and show the units when you write the final answer.



- 2. Multiplication** The  $M$  factors are multiplied, and the exponents are added algebraically.

Consider the multiplication of  $5.23 \times 10^6 \mu\text{m}$  by  $7.1 \times 10^{-2} \mu\text{m}$ .

$$\begin{aligned}(5.23 \times 10^6 \mu\text{m})(7.1 \times 10^{-2} \mu\text{m}) &= (5.23 \times 7.1)(10^6 \times 10^{-2}) \\ &= 37.133 \times 10^4 \mu\text{m}^2 \text{ (adjust to two significant digits)} \\ &= 3.7 \times 10^5 \mu\text{m}^2\end{aligned}$$

Note that when length measurements are multiplied, the result is area. The unit is now  $\mu\text{m}^2$ .

- 3. Division** The  $M$  factors are divided, and the exponent of the denominator is subtracted from that of the numerator. The calculator keystrokes for this problem are shown in **Figure 10**.

$$\begin{aligned}\frac{5.44 \times 10^7 \text{ g}}{8.1 \times 10^4 \text{ mol}} &= \frac{5.44}{8.1} \times 10^{7-4} \text{ g/mol} \\ &= 0.6716049383 \times 10^3 \text{ (adjust to two significant figures)} \\ &= 6.7 \times 10^2 \text{ g/mol}\end{aligned}$$

Note that the unit for the answer is the ratio of grams to moles.

## Using Sample Problems

Learning to analyze and solve such problems requires practice and a logical approach. In this section, you will review a process that can help you analyze problems effectively. Most Sample Problems in this book are organized by four basic steps to guide your thinking in how to work out the solution to a problem.