Skill Drill 1

This drill deals with material of the preceding Review "Dealing with Numbers." Go through the whole drill, building up speed and accuracy as you proceed. Space is provided for your work.

Periodically you should check your solutions against those given on the corresponding answer page, which is found on the reverse side of each sheet.

1. Express the following numbers in scientific notation, retaining three digits (3 significant figures) in the multiplying factor:

(a) 0.0344

(b) 25.5

(c) 89,310

(d) -735

(e) 0.000542

2. Express the following numbers as their decimal equivalents:

(a) 99.4×10^{-2}

(b) 4.60×10^{6}

(c) 0.4394×10^{3}

(d) -5.50×10^{-4}

(e) 1.41×10^{0}

3. For each of the following numerical expressions *first* make an order of magnitude estimate of the result, *then* find a rough approximation to one or two significant figures. Make the order of magnitude estimate entirely in your head; pencil and paper, but not a calculator, may be used for the rough approximation.

(a) (2.16)(8.151)

(b) (5239)(-6.9)

(c) 0.318/88

(d) 4.66/0.413

4. As in the previous problem first get an order of magnitude answer, then a rough approximation of each of the following expressions:

(a) (92.9)(0.666)/9.33

(b) $\dfrac{649}{(9.367)(-3438)}$

(c) (0.02250)(-8.872)(-70.6)

(d) $\dfrac{33.8}{(840)(-8.09)}$

5. Express each of the following roots or powers as a single number in scientific notation with three significant figures. For this problem use a calculator to take products or roots of the multiplying factors, but find the powers of ten mentally.

(a) $\sqrt{8.72 \times 10^2}$

(b) $\sqrt{46.7 \times 10^3}$

(c) $(3.47 \times 10^{-3})^2$

(d) $(-7.15 \times 10^3)^3$

6. Write each of the following expressions as a single number in scientific notation, rounding off the result to the correct number of significant figures.

(a) $6.56 \times 10^3 + 0.30 \times 10^2$

(b) $4480 - (6.75 \times 10^4)$

(c) $(3.82 \times 10^2) + 8454$

(d) $46.4 + 0.04$

7. In each of the following expressions rewrite each factor and term in scientific notation, then compute its final value expressed in scientific notation with three significant figures. Use a calculator only for combining multiplying factors, not for finding powers of ten.

(a) $(61.3)(0.00541)$

(b) $(27.5 + 0.669)$

(c) $\dfrac{10190}{(85.1 - 0.79)}$

(d) $\dfrac{2345}{(0.0783)(-9.46)}$

8. For each of the following expressions *first* make a rough estimate, and *then* compute a more precise value retaining the appropriate number of significant figures. Feel free to use any of the features of your calculator to get the final answer.

(a) $(8.12 \times 10^3)(24.72 \times 10^{-6})$

(b) $(9.8 \times 10^{-2})/(39.4 \times 10^4)$

(c) $(1.38 \times 10^{3)} + (7.0 \times 10^2)$

(d) $\sqrt{(59.1)(5.35)}$