1. Convert the following measurements to the units specified.

   a. 2.5 days to seconds \( 2.16 \times 10^5 \) s
   
   b. 35 km to millimeters \( 3.5 \times 10^7 \) mm
   
   c. 43 cm to kilometers \( 4.3 \times 10^{-5} \) km
   
   d. 22 mg to kilograms \( 2.2 \times 10^{-5} \) kg
   
   e. 671 kg to micrograms \( 6.71 \times 10^{11} \) µg
   
   f. \( 8.76 \times 10^7 \) mW to gigawatts \( 8.76 \times 10^{-5} \) GW
      (better this way)
   
   g. \( 1.753 \times 10^{-13} \) s to picoseconds \( 1.753 \times 10^4 \) ps or \( 0.1753 \) ps

2. According to the rules given in Chapter 1 of your textbook, how many significant figures are there in the following measurements?

   a. 0.0845 kg \( 3 \)
   
   b. 37.00 h \( 4 \)
   
   c. 8 630 000.000 mi \( 10 \)
   
   d. 0.000 000 0217 g \( 3 \)
   
   e. 750 in. \( 2 \)
   
   f. 0.5003 s \( 4 \)
3. **Without calculating the result,** find the number of significant figures in the following products and quotients.

   a. \(0.005032 \times 4.0009\)
      
      \[4\] \[0.02128\]

   b. \(0.0080750 \div 10.037\)
      
      \[5\] \[8.0452 \times 10^{-4}\]

   c. \((3.52 \times 10^{-11}) \times (7.823 \times 10^{11})\)
      
      \[3\] \[27.5\]

4. Calculate \(a + b\), \(a - b\), \(a \times b\), and \(a \div b\) with the correct number of significant figures using the following numbers.

   a. \(a = 0.005\ 078;\ b = 1.0003\)
      
      \[a + b = 1.0054\] \[a - b = -0.9952\]
      \[a \times b = 5.076 \times 10^{-3}\] \[a \div b = 5.080 \times 10^{-3}\]

   b. \(a = 4.231\ 19 \times 10^7;\ b = 3.654 \times 10^6\)
      
      \[a + b = 4.5966 \times 10^7\] \[a - b = 3.8658 \times 10^7\]
      \[a \times b = 1.546 \times 10^{14}\] \[a \div b = 11.58\]

5. Calculate the area of a carpet 6.35 m long and 2.50 m wide. Express your answer with the correct number of significant figures.

\[15.9\ m^2\]

6. The table below contains measurements of the temperature and volume of an air balloon as it heats up.

   In the grid at right, sketch a graph that best describes these data.

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Volume (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.0502</td>
</tr>
<tr>
<td>27</td>
<td>0.0553</td>
</tr>
<tr>
<td>52</td>
<td>0.0598</td>
</tr>
<tr>
<td>77</td>
<td>0.0646</td>
</tr>
<tr>
<td>102</td>
<td>0.0704</td>
</tr>
<tr>
<td>127</td>
<td>0.0748</td>
</tr>
<tr>
<td>152</td>
<td>0.0796</td>
</tr>
</tbody>
</table>

![Graph of temperature vs. volume](image-url)