Problem of the Week
Problem B and Solution
Orange You Glad?

Problem
Betsy is shopping for orange juice. She has discovered that it comes in a variety of containers at different prices.

- At one store, a 2.63 L container of orange juice costs $4.00, and a pack of eight 200 mL orange juice boxes costs $2.64.
- At another store, 2 L of orange juice costs $3.59.
- At both stores, concentrated orange juice in a 295 mL can costs $1.71. (This must be mixed with three cans of water to obtain $4 \times 295 = 1180$ mL of drinkable juice.)

Which purchase will give Betsy the best value for her money?

Solution
The 2.63 L container of orange juice costs $4.00 ÷ 2.63 \approx $1.521 per litre. Since 100 mL is $\frac{1}{10}$ of a litre, the cost is approximately $1.521 ÷ 10 = $0.1521 or 15.2¢ per 100 mL.

The 8-pack costs $2.64 for 1600 mL, or $2.64 ÷ 1600 = $0.00165 per mL. This is equal to $0.00165 \times 100 = $0.165 or 16.5¢ per 100 mL.

The 2 L container costs $3.59 ÷ 2 = $1.795 per litre. Since 100 mL is $\frac{1}{10}$ of a litre, the cost is $1.795 ÷ 10 = $0.1795 or about 18¢ per 100 mL.

The frozen concentrate costs $1.71 ÷ 1180 \approx $0.00145 per mL. Therefore, the cost is approximately $0.00145 \times 100 = $0.145 or 14.5¢ per 100 mL.

The cost per 100 mL for each item is summarized in the completed table below.

<table>
<thead>
<tr>
<th>Amount of Orange Juice</th>
<th>Price</th>
<th>Price per 100 mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.63 L</td>
<td>$4.00</td>
<td>15.2¢</td>
</tr>
<tr>
<td>$8 \times 200 = 1600$ mL</td>
<td>$2.64</td>
<td>16.5¢</td>
</tr>
<tr>
<td>2 L</td>
<td>$3.59</td>
<td>18¢</td>
</tr>
<tr>
<td>1180 mL (mixed from concentrate)</td>
<td>$1.71</td>
<td>14.5¢</td>
</tr>
</tbody>
</table>

Since the concentrated orange juice has the lowest price of 14.5¢ per 100 mL, the best value for her money is the concentrated orange juice.