



# Problem of the Week

## Problem B

### Bytes Rule!

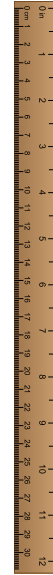
**Problem**

Measurements depend critically on the units used. Here are some sample measures of length, and of computer memory.

- a) When measuring length, the metric system uses different prefixes to go with the base unit, metres (m). Complete the table using the following metric prefixes:

centi (c), deca (da), deci (d), hecto (h), milli (m)

| term       | prefix | shortform | conversion from m |
|------------|--------|-----------|-------------------|
| kilometre  | kilo   | km        | $\times 1000$     |
| hectometre | hecto  | hm        | $\times 100$      |
| decametre  | deca   | dam       | $\times 10$       |
| metre      |        | m         |                   |
| decimetre  | deci   | dm        | $\div 10$         |
| centimetre | centi  | cm        | $\div 100$        |
| millimetre | milli  | mm        | $\div 1000$       |



- b) Computer memory also uses metric prefixes, but on a larger scale. The base unit for memory is a byte. Fill in the table using the prefixes. mega (M), tera (T), giga (G).

| term     | prefix | shortform | conversion                     |
|----------|--------|-----------|--------------------------------|
| terabyte | tera   | TB        | $\times 1\,000\,000\,000\,000$ |
| gigabyte | giga   | GB        | $\times 1\,000\,000\,000$      |
| megabyte | mega   | MB        | $\times 1\,000\,000$           |
| kilobyte | kilo   | kB        | $\times 1000$                  |
| byte     |        | B         |                                |



- c) What will happen as computer memory continues to expand? Do some research and fill in the table for the future of amounts of memory.

| term      | prefix | shortform | conversion                                    |
|-----------|--------|-----------|---|
| zettabyte | zetta  | ZB        | $\times 1\,000\,000\,000\,000\,000\,000\,000$ |
| exabyte   | exa    | EB        | $\times 1\,000\,000\,000\,000\,000\,000$      |
| petabyte  | peta   | PB        | $\times 1\,000\,000\,000\,000\,000$           |
| byte      |        | B         |   |

## Solution

The answers are given in the completed tables within the problem statement above.

