Drug Calculations Refresher Sheet

Conversions:

<table>
<thead>
<tr>
<th>Grams</th>
<th>mg</th>
<th>mcg</th>
</tr>
</thead>
<tbody>
<tr>
<td>X 1000</td>
<td>X 1000</td>
<td>X 1000</td>
</tr>
<tr>
<td>÷ 1000</td>
<td>÷ 1000</td>
<td>÷ 1000</td>
</tr>
</tbody>
</table>

Body Weight:

4mg/kg means give 4mg for every kg the person weighs.

A 75 kg person would need 75 x 4 = 300mg.

Tablets:

| Amount prescribed | = |
| Number required | Amount in a tablet |

Dosage Calculations (liquids or injections):

| Required drug dose | Amount you want x Volume it’s in | Amount you have |

e.g. 50mg of a drug is required and your stock is 150mg in 6ml.

\[
\text{Required dose} = \frac{\text{want}}{\text{have}} \times \frac{50 \times 6}{150} = \frac{1}{2} \text{ml}
\]

Hours 60

Remember:

Before doing any calculations – make sure your units are the same.
You may find this a useful way to find infusion rates (as taught on *Safe Medicate ®*).

**Infusion Rates:**

You could be asked for **ml/hour** (ml per hour) or **drops/min** (drops per min).

A standard giving set will administer:
- Clear: 20 drops/ml
- Blood: 15 drops/ml
- Paediatric: 60 drops/ml

To calculate:

\[
\text{ml per hour} = \frac{\text{Volume (ml)}}{\text{Hours}}
\]

To calculate:

\[
\text{Drops per min} = \left(\frac{\text{Volume (ml)}}{\text{Hours}}\right) \div \text{drop rate denominator}
\]

Where:

\[
\text{drop rate denominator (DRD)} = \frac{60}{\text{drops per ml}}
\]

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**To complete the boxes in Safe Medicate:**

1st part: \[
\frac{\text{volume (ml)}}{\text{hrs}} = \text{ml/hr}
\]

2nd part: \[
\frac{\text{answer (to part 1)}}{\text{DRD}} = \text{drops per min}
\]

e.g. A prescription asks for 800ml, via I.V. infusion for 5 hours. The I.V. administration set administers 15 drops/ml.

1st part: \[
\frac{800}{5} = 160 \text{ ml/hr}
\]

2nd part: \[
\frac{160}{4} = 40 \text{ drops per min}
\]

(DRD = \[
\frac{60}{15} = 4 \text{ because the set administers 15 drops per ml}\]
Try some conversions:

1. 685 micrograms (mcg) = ? mg
2. 24 ml = ? litres
3. 1500g = ? kg
4. 4.5 litres = ? ml
5. 0.02mg = ? mcg
6. 7mg = ? mcg
7. 0.4kg = ? g
8. 8 grams = ? mcg

Tricky questions:

9. 200mg/4ml = ? mg/ml
10. 280mg/7ml = ? mcg/ml

Drug Calculation Questions (give answers to 3dp where appropriate):

1) How many 40mg tablets of codeine are required for a dose of 0.08g?

2) Gentamycin dose is 7mg/kg daily given in divided doses three times. How much should a patient weighing 84kg receive at each dose?

3) A 70mg post immunisation dose of paracetamol is required. Stock available is 140mg in 5ml. What volume is required?

4) A 40mg dose of Amoxicillin is required. Stock available is 200mg in 10ml. What volume is required?

5) Using an infusion pump what rate is required, in ml/hr, for 1 litre of 0.9% sodium chloride over 4 hours?

6) Using an infusion pump what rate is required, in ml/hr, for 3 litre of 0.9% sodium chloride over 6 hours?

7) 800ml of sodium chloride 0.9% is to run over 8 hours. Calculate the drip rate in drops per minute. The I.V. set administers 20 drops/ml.
8) A unit of blood with a volume of 380ml is to run over 4 hours. Calculate the drip rate. The I.V. set administers 15 drops/ml.

9) 1.8 litres of drug x is to run over 9 hours. Calculate the drip rate in drops per minute. The I.V. set administers 12 drops/ml.

10) 900ml of drug y is to run over 3 hours. Calculate the drip rate in drops per minute. The I.V. set administers 10 drops/ml.