



Dosage Calculation - Worksheet

Dosage calculation is done to calculate the required number/volume of drug(s) to administer to the patient. The medication might be administered in two ways; tablet form and fluid form. To solve these kinds of problems, you need good knowledge of **Fractions**, **Long division**, **Decimals**, and **Unit conversions**.

Formula

$$\text{Oral Dose: } \frac{\text{Stock Required (SR)}}{\text{Stock Strength (SS)}}$$

$$\text{Intravenous Dose: } \frac{\text{Stock Required (SR)}}{\text{Stock Strength (SS)}} \times \text{Volume of stock}$$

Stock required is the amount of drug you need to administer to the patient. In other words, this is what you want.

Stock strength the dosage strength available in the current stock. In other words, this is what you have got.

** the units for SR and SS need to be same. If the units are different one unit needs to be converted before doing any further calculations.

Example

The doctor has prescribed 50 mg of Amitriptyline to a client. There are 10 mg tablets available in stock. How many tablets will you administer?

Answer

Stock required: 50 mg

Stock strength: 10 mg

This is an oral dose.

$$\text{So, tablet dosage} = \frac{50 \text{ mg}}{10 \text{ mg}}$$



= 5 tablets

Example

A client with acute cholecystitis is to receive 90 mg Gentamycin IV. On hand are vials containing 80mg/ 2ml. How many mls should be given?

Answer

Stock required: 90 mg

Stock strength: 80 mg/2ml

Volume of stock: 2 ml

$$\text{So, Dosage} = \frac{90 \text{ mg}}{80 \text{ mg}} \times 2 \text{ ml}$$

= 2.25 ml

Including unit conversion

Example

A client is ordered 0.4 mg Thyroxine. Each tablet contains 200 mcg. How many tablets will you administer?

Answer

Stock required: 0.4 mg

Stock strength: 200 mcg

Need to convert the SR amount to mcg.

So, SR= 0.4mg= 0.4 X 1000 = 400mcg

$$\text{Dosage} = \frac{400 \text{ mcg}}{200 \text{ mcg}}$$

= 2 tablets.

Example

A client is ordered 80mcg of Fenatyl citrate intravenously. 0.2 mg in 2 mls of liquid for IV Injection is available. How many mls will you administer?

Answer

Stock required (SR): 80 mcg

Stock strength (SS): 0.2mg/2ml

Need to convert the SR amount to mg.

$$\text{So, SR} = 80\text{mcg} = \frac{80}{1000} = 0.08\text{mg}$$

$$\begin{aligned} \text{Dosage} &= \frac{0.08 \text{ mg}}{0.2 \text{ mg}} \times 2\text{ml} \\ &= 0.8 \text{ ml} \end{aligned}$$

Example

The client was ordered Oral Phenergan 0.1g, TDS (three times a day). The pharmacy has dispensed Phenergan 25mg tablets.

How many tablets will you administer?

What dose of Phenergan will this client receive in 24 hours?

Answer

Stock required (SR): 0.1g

Stock strength (SS): 25mg/tablet

You need to convert the SR amount to mg.

$$\text{So, SR} = 0.1\text{g} = 0.1 \times 1000 = 100 \text{ mg}$$

$$\text{Dosage} = \frac{100 \text{ mg}}{25 \text{ mg}}$$

$$= 4 \text{ tablets}$$

One dosage is 4 tablets. So the dose that the client will receive in 24 hours;

4 tablets x TDS (three times a day) = 12 tablets of 25 mg Phenergan

Paediatrics: Calculation by body weight

Drug calculations for children include another important component, which is the body weight of the child. The dosage depends on the weight and it needs to be calculated with the following formula:

$$\text{Dose} = \left(\frac{\text{Stock required}}{\text{Stock strength}} \times \text{volume} \right) \times \text{Weight}$$



Example

A child weighs 12kg and is ordered 20mg/kg/dose. Stock contains 6mg/ml. Find how many mls you would administer.

$$SR = 20\text{mg/kg/dose}$$

$$SS = 6\text{mg/ml}$$

$$\text{Child's weight} = 12\text{kg}$$

$$\text{Dose} = \left(\frac{\text{Stock required}}{\text{Stock strength}} \times \text{volume} \right) \times \text{Weight}$$

$$\text{Dose} = \frac{20}{6} \times 1 \times 12 = 40\text{ml}$$

So, you should administer 40 mls.

If the dose needs to be administered more than once a day, e.g. every 6 hours or 8 hours, there would be a small added step to find out the volume to administer.

Example

A child weighs 24kg and is ordered 12mg/kg/day every 6/24, stocked as 40mg/4ml. Find the mg per dose, the equivalent mls and the total dose over 24hrs to be given.

$$SR = 12\text{mg/kg/day}$$

$$SS = 40\text{mg/4ml}$$

$$\text{Child's weight} = 24\text{kg}$$

Dosage frequency 6/24, i.e. every 6 hours, so, four times a day.

$$\text{Total dose} = \left(\frac{\text{Stock required}}{\text{Stock strength}} \times \text{volume} \right) \times \text{Weight}$$

$$\text{Total dose} = \frac{12}{40} \times 4 \times 24 = 28.8\text{ml}$$

$$\text{So, mls per dose} = \frac{28.8}{4} = 7.2 \text{ mls}$$

$$\begin{aligned} \text{mg per dose} &= \left(\frac{\text{Stock mg}}{\text{Stock volume}} \times \text{SR volume} \right) \\ &= \left(\frac{40}{4} \times 7.2 \right) = 72 \text{ mg} \end{aligned}$$



Practice Exercises

Question 1

Fergon Elixir contains 250 mg of Ferrous Sulphate dissolved in 8 ml of solvent. How many mls of elixir contain 100 mg of Ferrous Sulphate?

Question 2

A client is ordered 8 mg of Trifluoperazine orally. 0.04g in 6 ml of liquid forte is available. How many millilitres will you administer?

Question 3

A client is ordered 450 mg of Carbamazepine. Available tablets are of 150mg. How many tablets will you give?

Question 4

A doctor has ordered 62.5mcg of Benztropine Mesylate to a client but the pharmacy has dispensed 0.125 mg tablets. How many tablets will you administer to the client?

Question 5

The client has been ordered codeine -2 tablets QID (four times a day). The stock strength of Codeine is 30mg per tablet. How many mg of codeine will this client receive per day?

Question 6

A child weighs 25kg and is ordered 12mg/kg/day to be given TDS. Stock contains 10mg/2ml. Find how many mls are to be given in each dose.