



# Dosage Calculations

Study Development Factsheet

## Formulae

$$\text{Tablet dose (tablets)} = \frac{\text{dose prescribed (mg)}}{\text{dose in stock (mg/tablet)}}$$

$$\text{Liquid dose (ml)} = \frac{\text{dose prescribed (mg)}}{\text{dose in stock (mg)}} \times \text{stock volume (ml)}$$

- The dose prescribed is how much of the drug the patient needs to take.
- The dose in stock is how much of the drug is in one unit (for example, if there is 10mg of a drug per tablet, the dose in stock is 10mg. If a liquid drug contains 5mg/2ml, the dose in stock is 5mg).
- The stock volume is the amount of liquid needed to get the dose in stock (so in the earlier example, the stock volume is 2ml).

## Tablet example

A patient is prescribed 200mg of a painkiller. A tablet contains 50mg. How many tablets should the patient take?

## Tablet answer

We begin by picking out the appropriate information. Since the patient is taking the drug in tablet form, we use the tablet dose formula. Therefore, we need the dose prescribed (200mg) and the dose in stock (50mg). We then substitute these values into the equation:

$$\text{Tablet dose (tablets)} = \frac{\text{dose prescribed (mg)}}{\text{dose in stock (mg/tablet)}} = \frac{200 \text{ mg}}{50 \text{ mg/tablet}} = 4 \text{ tablets.}$$

We can check this by reversing the calculation. If the patient takes 4 tablets, and each tablet contains 50mg of the drug, how much of the drug will they have in total? 4 tablets x 50mg/tablet = 200mg, so they are getting the correct dose when they take 4 tablets.

## Liquid example

400mg of a drug is required for a patient. The drug comes in vials with a concentration of 10mg/3ml. What volume of fluid should the patient be given?

## Liquid answer

Since the patient is being given the drug in liquid form, we need to use the liquid dose formula. Therefore, we need to know the dose prescribed (400mg), the dose in stock (10mg) and the stock volume (3ml). We then substitute these values into the equation:

$$\text{Liquid dose (ml)} = \frac{\text{dose prescribed (mg)}}{\text{dose in stock (mg)}} \times \text{stock volume (ml)} = \frac{400 \text{ mg}}{10 \text{ mg}} \times 3\text{ml} = 120\text{ml}.$$

Again, we can use the same method to check the answer. If there is 10mg/3ml of the drug in the fluid, and we are giving the patient 120ml, then we can find out how many mg of the drug is in this by calculating:  $\frac{120 \text{ ml}}{3\text{ml}} \times 10\text{mg} = 400\text{mg}$  in 120ml. So, the patient is receiving the correct amount.

## Things to be aware of

Quite often when we calculate a dosage it does not make a nice, whole-number value. There are various ways of dealing with this. Depending on the drug, we may be able to round the answer to the nearest appropriate measure. For example, if a pill can be broken in half, we can round the answer to the nearest half pill. If not, then the nearest whole pill. For liquid doses, depending on the amount of liquid being given, we may be able to measure to the nearest ml, or perhaps the nearest 10ml. There are helpsheets on rounding if you need a refresher on how to do this.

Make sure the correct units are chosen. Has the question asked for a number of tablets? Make sure you write 'tablets' after your answer. Has the question asked for a volume? Often this will be measured in ml.

Make sure to do any conversions that are needed before you attempt the use a formula.

Check the question carefully. Has the patient already received treatment that day? This may mean you have to reduce the amount of the drug that they will be given.



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