



Dosage Calculations

Study Development Worksheet

Example

A patient is prescribed 350mg of a drug. At the time they were prescribed the drug, they weighed 85kg, and they are 177cm tall. The drug comes in a solution with a concentration of 15mg/2ml, and can only be measured in whole ml. What volume of the solution should the patient be given?

Answer

This is a liquid dose calculation. The formula to calculate a liquid dose is as follows:

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

The dose prescribed is 350mg, the dose in stock is 15mg, and the stock volume is 2ml. We substitute these values into the equation:

$$\text{Liquid dose (ml)} = \frac{350 \text{ mg}}{15 \text{ mg}} \times 2\text{ml} = 46.67 \text{ ml}.$$

Since the measurement can only be given in whole ml, we have to round the value to the nearest ml. This means that we must look at the first value after the decimal point. Since this is 6 (i.e. it is 5 or more) we round up to 47ml of solution.

Notes: Did you spot the unnecessary information in the question about the patient's height and weight? You will need to get used to ignoring irrelevant information in questions.

You may not have come across rounding before. There are helpsheets on rounding in the maths section if you would like to have a look.

Questions

1. How many tablets should be given to a patient if 1 tablet contains 50mg of a drug and the patient has been prescribed 200mg?
2. A patient must be given a liquid drug orally. The concentration of the liquid drug is 3mg/ml, and the patient requires 45mg. How many ml should the patient take?
3. A painkiller comes in pills that contain 120mg of the drug. The patient weighs 65kg and has been prescribed 480mg of the painkiller daily. If the patient must take 4 doses across the day, how many pills should they take in a single dose?
4. A patient requires an IV. They must be given 200mg of a drug during an 8-hour period that comes in a concentration of 4mg/5ml. How much of the drug fluid must be put into the IV?

Answers

$$1. \text{ Tablet dose (tablets)} = \frac{\text{dose prescribed (mg)}}{\text{dose in stock (mg/tablet)}} = \frac{200 \text{ (mg)}}{50 \text{ (mg/tablet)}} = 4 \text{ tablets.}$$

$$2. \text{ Liquid dose (ml)} = \frac{\text{dose prescribed (mg)}}{\text{dose in stock (mg)}} \times \text{stock volume (ml)} = \frac{45 \text{ (mg)}}{3 \text{ (mg)}} \times 1 \text{ ml} = 15 \text{ ml.}$$

$$3. \text{ Daily tablet dose (tablets/day)} = \frac{\text{dose prescribed (mg/day)}}{\text{dose in stock (mg/tablet)}} = \frac{480 \text{ (mg/day)}}{120 \text{ (mg/tablet)}} = 4 \text{ tablets/day.}$$

$$\text{Single tablet dose (tablets/dose)} = \frac{\text{daily tablet dose (tablets/day)}}{\text{number of doses per day (doses/day)}} = \frac{4 \text{ (tablets/day)}}{4 \text{ (doses/day)}} =$$

1 tablet/dose.

$$4. \text{ Liquid dose (ml)} = \frac{\text{dose prescribed (mg)}}{\text{dose in stock (mg)}} \times \text{stock volume (ml)} = \frac{200 \text{ (mg)}}{4 \text{ (mg)}} \times 5 \text{ ml} = 250 \text{ ml.}$$

Support: Study Development offers workshops, short courses, 1 to 1 and small group tutorials.

- Join a tutorial or workshop on the [Study Development tutorial and workshop webpage](#) or search 'YSJ study development tutorials.'
- Access our Study Success resources on the [Study Success webpage](#) or search 'YSJ study success.'