MATHSFORNURSES

Drug Concentration – Worked Solutions

Question 1

A patient is prescribed 6g of a drug that is available in a 2% solution. What volume of the solution should the patient be given?

A 2% solution means that there are 2g of the drug in 100ml of the fluid, so you can use this as the stock dose, and then your calculation will be the prescribed dose divided by the stock dose, multiplied by the volume the stock dose is in.

The prescribed dose is 6g. The stock dose is 2g and it is in a volume of 100ml.

First, work out 6 ÷ 2, which is 3.

Then work out 3 × 100ml, which will be 300ml.

Answer: 300ml

Question 2

A patient is prescribed 4g of a drug that is available in a 1% solution. What volume of the solution should the patient be given?

A 1% solution means that there is 1g of the drug in 100ml of the fluid, so you can use this as the stock dose, and then your calculation will be the prescribed dose divided by the stock dose, multiplied by the volume the stock dose is in.

The prescribed dose is 4g. The stock dose is 1g and it is in a volume of 100ml.

First, work out 4 ÷ 1, which is 4.

Then work out 4 × 100ml, which will be 400ml.

Answer: 400ml

Question 3

A patient is prescribed 2g of a drug that is available in a 5% solution. What volume of the solution should the patient be given?

A 5% solution means that there are 5g of the drug in 100ml of the fluid, so you can use this as the stock dose, and then your calculation will be the prescribed dose divided by the stock dose, multiplied by the volume the stock dose is in.

The prescribed dose is 2g. The stock dose is 5g and it is in a volume of 100ml.

First, work out 2 ÷ 5, which is 0.4 (you could do this either using short division, or by realising that the fraction $^{2}/_{5}$ is equivalent to $^{4}/_{10}$, and 4 ÷ 10 = 0.4).

Then work out 0.4 × 100ml, which will be 40ml.

Answer: 40ml

Question 4

A patient is prescribed 80mg of a drug that is available in a 0.1% solution. What volume of the solution should the patient be given?

A 0.1% solution means that there are 0.1g of the drug in 100ml of the fluid, so you can use this as the stock dose, and then your calculation will be the prescribed dose divided by the stock dose, multiplied by the volume the stock dose is in.

Because the prescribed dose is in milligrams, you need to convert the 0.1g of the stock dose into milligrams. You are converting from a larger unit to a smaller one so multiply by the scale factor of 1000. This means that 0.1g = 0.1 × 1000 = 100mg

The prescribed dose is 80mg. The stock dose is now 100mg and it is in a volume of 100ml.

First, work out 80 ÷ 100, which is 0.8.

Then work out 0.8 × 100ml, which will be 80ml.

Answer: 80ml

Question 5

A patient is prescribed 250mg of a drug that is available in a 2.5% solution. What volume of the solution should the patient be given?

A 2.5% solution means that there are 2.5g of the drug in 100ml of the fluid, so you can use this as the stock dose, and then your calculation will be the prescribed dose divided by the stock dose, multiplied by the volume the stock dose is in.

Because the prescribed dose is in milligrams, you need to convert the 2.5g of the stock dose into milligrams. You are converting from a larger unit to a smaller one so multiply by the scale factor of 1000. This means that 2.5g = 2.5 × 1000 = 2500mg

The prescribed dose is 250mg. The stock dose is now 2500mg and it is in a volume of 100ml.

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First, work out 250 ÷ 2500, which is 0.1.

Then work out 0.1 × 100ml, which will be 10ml.

Answer: 10ml