

Student Learning Advisory Service

Contact us

Please come and see us if you need any academic advice or guidance.

Canterbury

Our offices are next to Santander Bank

Open

Monday to Friday, 09.00 – 17.00

E: learning@kent.ac.uk

T: 01227 824016

Medway

We are based in room G0-09, in the Gillingham Building and in room DB034, in the Drill Hall Library.

Open

Monday to Friday, 09.00 – 17.00

E: learningmedway@kent.ac.uk

T: 01634 888884

The Student Learning Advisory Service (SLAS) is part of the Unit for the Enhancement of Learning and Teaching (UFLT)

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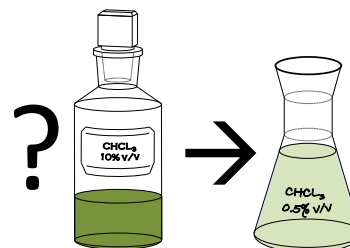
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AT A GLANCE/ PHARMACY CALCULATIONS SERIAL DILUTIONS

Calculating the amount of a concentration needed to produce a final desired concentration and volume.



Example 1

What volume of 20% v/v solution is required to make 500mL of 5% v/v solution?

Method

Step 1: Use $c_1 \times V_1 = c_2 \times V_2$ **percentages cancel out**

$$20(\%) \times x = 5(\%) \times 500$$

Step 2: Transpose for x and solve

$$x = \frac{5 \times 500}{20} = 125\text{mL} \checkmark$$

Example 2

What volume of 10% v/v solution is required to make 1.25L of 0.05% v/v solution?

Method

Step 1: Use $c_1 \times V_1 = c_2 \times V_2$ **percentages cancel out**

$$10(\%) \times x = 0.05(\%) \times 1250$$

Step 2: Transpose for x and solve

$$x = \frac{0.05 \times 1250}{10} = 6.25\text{mL} \checkmark$$

Example 3

What volume of 1 in 50 v/v solution is required to make 450mL of 1 in 2000 v/v solution?

Method

Step 1: Using $c_1 \times v_1 = c_2 \times v_2$

$$\frac{1}{50} \times x = \frac{1}{2000} \times 450$$

Step 2: Simplify

$$\frac{x}{50} = \frac{450}{2000}$$

Step 3: Transpose for x and solve

$$x = \frac{450 \times 50}{2000} = 11.25\text{mL} \checkmark$$

Example 4

How much 1 in 40 v/v solution should you use to make up 1200mL of 0.04% v/v solution?

Method

Step 1: Using $c_1 \times v_1 = c_2 \times v_2$

$$\frac{1}{40} \times x = \frac{0.04}{100} \times 1200$$

Step 2: Simplify

$$\frac{x}{40} = \frac{0.04 \times 1200}{100}$$

Step 3: Transpose for x and solve

$$x = \frac{0.04 \times 1200 \times 40}{100} = 19.2\text{ml} \checkmark$$

Example 5

How much 0.5g/15mL solution should you use to make 75mL of 1 part in 400 w/v solution?

Method

Step 1: Use $c_1 \times v_1 = c_2 \times v_2$

$$\frac{0.5}{15} \times x = 75 \times \frac{1}{400}$$

Step 2: Simplify

$$\frac{0.5x}{15} = \frac{75}{400} \rightarrow \frac{x}{30} = \frac{75}{400}$$

Step 3: Transpose for x and solve

$$x = \frac{75 \times 30}{400} = 5.625\text{mL} \checkmark$$

Q1

What volume of 15% v/v solution is required to make 1.4L of 3% v/v solution?

Q2

What volume of 5% v/v solution is required to make 125mL of 0.25% v/v solution?

Q3

What volume of 0.5% v/v solution is required to make 125mL of 1 in 10,000 v/v solution?

Q4

How much 0.05% v/v solution is required to make 1200L of 25ppm v/v solution?

Q5

How much 200mg/mL solution is required to make up 80mL of a 2% w/v solution?

Answers

Q1 = 280mL. **Q2** = 6.25mL. **Q3** = 2.5mL. **Q4** = 60L.
Q5 = 8mL.