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Student Life
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Infusion Calculations
Study Development Worksheet

Example

A patient is given an IV. They need to receive 30ml of the drug administered through the IV per hour, and have been prescribed 285ml of the drug in total. How many hours should the IV take to give the patient their full daily dose?

Answer

$$\text{Volume of fluid given per hour (ml/hour)} = \frac{\text{Volume of fluid (ml)}}{\text{Time (hours)}}$$

We need to find the number of hours in the time period, so we rearrange the formula:

$$\text{Time (hours)} = \frac{\text{Volume of fluid (ml)}}{\text{Volume of fluid given per hour (ml/hour)}} = \frac{285 \text{ (ml)}}{30 \text{ (ml/hour)}} = 9.5 \text{ hours.}$$

Note: Did you understand the rearranging of the formula? If not, check the factsheet on rearranging formulae.

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Questions

1. A patient needs to be given 240ml of fluid over 8 hours. How many ml of fluid will the patient receive in 1 hour?

2. How many ml of fluid will the patient in question 1 receive per minute?

3. A patient receives 45ml of fluid per hour over a period of 6 hours. What volume of fluid will they receive in total?

4. A patient is prescribed 200mg of a drug. The drug comes as a fluid with a concentration of 4mg/5ml. They must be given the fluid in an IV over the course of 8 hours. How many ml per hour of the fluid will the patient receive?

Answers

1. Volume of fluid given per hour (ml/hour) = $\dfrac{\text{Volume of fluid (ml)}}{\text{Time (hours)}} = \dfrac{240 \text{ (ml)}}{8 \text{ (hours)}}$

    = 30 ml/hour.

2. Volume of fluid given per minute (ml/minute) = $\dfrac{\text{Volume of fluid (ml)}}{\text{Time (hours)} \times 60 \text{ (minutes/hour)}} =$

    $\dfrac{240 \text{ (ml)}}{8 \text{ (hours)} \times 60 \text{ (minutes/hour)}}$ = 0.5ml/minute.

3. We need to find the volume of fluid, so we must rearrange the formula:

    Volume of fluid (ml) = Volume of fluid given per hour (ml/hour) x Time (hours)

    Volume of fluid (ml) = 45 ml/hour x 6 hours = 270ml.

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

    Volume of fluid given per hour (ml/hour) = $\dfrac{\text{Volume of fluid (ml)}}{\text{Time (hours)}} = \dfrac{250 \text{ (ml)}}{8 \text{ (hours)}}$

    = 31.25 ml/hour.

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