



Math Study Strategies

Nursing Math

Finding the flow rate in an IV



Your patient is to receive 3 liters of IV fluid per day. The IV tubing drop factor is 20gtts/cc. What should be the IV flow rate in gtts/min so that the patient receives the necessary amount of fluid?

1. What is the given information?
 - a) The patient needs 3L IV per day.
 - b) The IV tubing drop factor is 20 gtts/cc
2. What is the question ?
What is the IV flow rate?
3. What is the measurement unit for the answer?
Gtts/min (gtts per minute) but we are given 20gtts/cc
First we change liters to cc, then we change the day to hours and finally hours to minutes.
4. Using this information, we write the dimensional analysis:

$$\frac{20\text{gtts}}{1\text{cc}} \times \frac{1,000\text{cc}}{1\text{L}} \times \frac{3\text{L}}{1\text{day}} \times \frac{1\text{day}}{24\text{hours}} \times \frac{1\text{hour}}{60\text{min}}$$

5. Cross-cancel equivalent dimensions (for example, cc with cc; L with L, day with day, hour with hour) and then multiply all fractions.

$$\frac{20 \times 1000 \times 3 \times 1 \times 1}{1 \times 1 \times 1 \times 24 \times 60} = \frac{60,000}{1440}$$

$$60,000 \div 1440 = 41.666$$

The necessary IV flow rate is 41.666gtts/min, and rounding to the nearest drop gives:

42gtts/min