

There is 4 ml of grape flavoring to every 100 ml of 200 mg of Amoxicillin. The patient wants apple. You can add $\frac{1}{5}$ the amount of apple as you can grape. How much apple would you use to flavor 300 ml of amoxicillin?

Solution:

We have task with analysis of the relationships between different physical quantities by identifying their dimensions. In our case we consider the physical dimensions related with mass. So, firstly we define its relation expressing these quantities in terms of mass [M]. To solve this task we apply dimensional equation which obtained when a physical quantity is equated with its dimensional formula. In general, formula:

$$[X] = [M^a L^b T^c]$$

The dimensional formula of physical quantity X , whose dimensions in mass, length and time are a , b and c respectively. In our task we have the quantity of mass. We can write:

$$4 \text{ mL} = 200 \text{ mg}$$

$$1 \text{ mL} = 50 \text{ mg}$$

So, we have $300 \text{ mg} (1 \text{ mL} / 50 \text{ mg}) = 6 \text{ mL}$. It will be 6 mL in 300 mL of amoxicillin.

We can add only $\frac{1}{5}$ the amount of apple, so we can add $\frac{6}{5}$ which equal 1.2 mL of apple.

Answer: We should use 1.2 mL of apple.