

To Calculate the Amount of Drug Reaching Systemic Circulation (Absorbed Dose)

Absorbed Dose = Oral Dose \times (F \div 100)

Example Calculation:

- A patient takes **200 mg** of **Drug X** orally.
- **Bioavailability (F) = 40%.**

Absorbed Dose = $200 \times (40 \div 100) = 200 \times 0.4 = 80 \text{ mg}$

Answer: 80 mg of the drug reaches systemic circulation.

To Calculate the Equivalent IV Dose

If you need to find out the **IV dose** that provides the same systemic drug **exposure** as the oral dose:

$$\text{IV Dose} = (\text{Oral Dose} \times F) \div 100$$

Example Calculation:

- A patient is taking **500 mg** orally.
- **Bioavailability (F) = 50%.**
- What is the **equivalent IV dose**?

IV Dose = $(500 \times 50) \div 100 = 250 \text{ mg}$

Answer: 250 mg IV gives the same systemic drug exposure as **500 mg orally**.

To Calculate the Required Oral Dose for a Given IV Dose

If you want to determine the **oral dose** needed to match an **IV dose**, use:

$$\text{Oral Dose} = (\text{IV Dose} \times 100) \div F$$

Example Calculation:

- The required **IV dose** is **100 mg**.
- The drug's **oral bioavailability** is **25%.**
- What oral dose should be given?

Oral Dose = $(100 \times 100) \div 25 = 400 \text{ mg}$

Answer: 400 mg orally is needed to match a **100 mg IV dose**.

Summary of Formulas

Calculation	Formula
Absorbed Drug Dose (mg)	$\text{Oral Dose} \times (F \div 100)$
IV Equivalent Dose (mg)	$(\text{Oral Dose} \times F) \div 100$
Oral Dose Required for IV Equivalent (mg)	$(\text{IV Dose} \times 100) \div F$