NCLEX pharmacology dose calculation cheat sheet

Unit conversions

From	To
1 kg	1,000 g
1 g	1,000 mg
1 mg	1,000 mcg
1 L	1,000 mL
1 hour	60 minutes

- 2 hours 30 minutes is 2.5 hours or 150 minutes, never 2.30 hours.
- A 1% solution (weight in volume) is 1 g in 100 mL, which is 10 mg/mL.
- A 1:1,000 solution is 1 g in 1,000 mL of final solution, which is 1 mg/mL.

Dose formulas

1. Dimensional analysis: prescribed dose × (available volume ÷ available dose).
2. Ratio and proportion: available dose ÷ available volume = prescribed dose ÷ x.
3. Daily total split into doses: daily total ÷ number of doses, then convert to tablets or mL.

Example: 0.375 g ordered, 250 mg per 5 mL on hand. 375 mg × (5 mL ÷ 250 mg) = 7.5 mL.

IV rate formulas

1. Pump: mL/h = volume (mL) ÷ time (h).
2. Gravity: gtt/min = volume (mL) × drop factor (gtt/mL) ÷ time (min).
3. Unit-based pump: concentration = total units ÷ bag volume (mL), then mL/h = units per hour ÷ concentration.

Example: heparin 25,000 units in 250 mL is 100 units/mL. At 1,000 units/h, the rate is 10 mL/h.

Rounding and writing doses

- Keep the full figure through every step. Round only the final answer.
- Gravity rates are whole drops per minute.
- Pump rates and doses go to the precision the device and policy allow.
- Write a leading zero (0.5 mL) and no trailing zero (5 mg, not 5.0 mg).
- Always label the answer with its unit.
- Use the drop factor printed on the tubing package. Microdrip sets are usually 60 gtt/mL.

Sense-check before you give it

- If the dose ordered is bigger than the dose on hand, the volume should be bigger too.
- An unexpectedly large or small answer means recheck units, concentration and decimal points.
- Never speed up a late infusion without the provider's approval. Watch for fluid overload.

High-alert medicines

Medicine	Monitor	Reversal or key rule
Insulin	Blood glucose (below 70 mg/dL is hypoglycaemia)	Give glucose
Heparin	aPTT, platelets, bleeding	Protamine sulfate
Enoxaparin	Platelets, kidney function, bleeding	No routine aPTT
Warfarin	INR, bleeding	Vitamin K
Opioids	Sedation, breathing, oxygen saturation	Naloxone
IV potassium	Serum potassium, ECG, urine output, IV site	Never IV push

A platelet fall of 30% or more from the pre-heparin baseline is a cue for heparin-induced thrombocytopenia: stop heparin and tell the provider.

Sources: NCSBN 2026 NCLEX-RN test plan; ISMP list of high-alert medications in acute care settings; American Diabetes Association hypoglycaemia guidance. Last checked: 17 November 2026.