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Nursing Calculations

Core Nursing Essentials Nursing Calculations

Start with the prescribed quantity, the available concentration and consistent units. Work through the arithmetic, then check the result against the prescription and clinical context.

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Study guide

Start with the prescribed quantity, the available concentration and consistent units. Work through the arithmetic, then check the result against the prescription and clinical context.

How to revise this category

1. Choose a topic and explain its purpose.
2. Identify the observations, equipment or information needed.
3. Connect the findings to documentation, reassessment and escalation.
4. Practise under qualified supervision and review the current local protocol.

Curriculum coverage

- Drug dosage calculation
- IV flow rate calculation
- Drops per minute
- Infusion pump rate
- Unit conversions
- Pediatric drug calculations
- Weight-based medication calculations
- BMI calculation
- Fluid balance calculation
- Urine output per kilogram
- Expected date of delivery
- Gestational age
- Drug dilution and reconstitution

Quick Revision

Use this curriculum guide to organize study. Published summaries are listed separately. Detailed drafts remain in the private content studio until source and clinical checks are recorded.

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References & review status

- WHO - Obesity and overweight (https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight) - Online fact sheet accessed 26 November 2026. BMI formula and global adult cut-offs; not India-specific treatment targets.

Sources checked for the stated scope on 26 November 2026. Original study synthesis; independent clinical review is not claimed. Source attribution is not a copyright-clearance certificate.

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Practice questions

Choose one best answer. The answer key and explanations follow the questions.

1. An authorized prescription is 100 mg. The available liquid contains 250 mg in 5 mL. What volume does the arithmetic give?

A. 0.5 mL
B. 1 mL
C. 2 mL
D. 5 mL

2. What pump rate delivers 1000 mL over 8 hours?

A. 125 mL/hour
B. 80 mL/hour
C. 800 mL/hour
D. 12.5 mL/hour

3. A gravity set delivers 20 drops/mL. For 500 mL over 4 hours, what is the nearest whole-drop rate?

A. 21 drops/min
B. 83 drops/min
C. 125 drops/min
D. 42 drops/min

4. Which mass conversion is correct?

A. 1000 mg = 1 microgram
B. 1000 micrograms = 1 mg
C. 1 mg = 1000 g
D. 1 g = 1 microgram

5. A hypothetical verified prescription is 5 mg/kg per dose for a 12 kg child. What is the calculated amount per dose?

A. 60 mg
B. 2.4 mg

C. 17 mg

D. 600 mg

6. An adult weighs 72 kg and is 1.80 m tall. What is the BMI to one decimal place?

A. 40.0 kg/m2

B. 20.0 kg/m2

C. 22.2 kg/m2

D. 25.9 kg/m2

7. A 70 kg adult produces 210 mL urine during a 6-hour collection. What is the measured output per kg per hour?

A. 3 mL/kg/hour

B. 0.5 mL/kg/hour

C. 5 mL/kg/hour

D. 30 mL/kg/hour

8. Recorded intake is 2200 mL and recorded output is 1700 mL during the same interval. Which statement is correct?

A. The measured balance is -500 mL

B. The measured balance is +3900 mL

C. The patient definitely has fluid overload

D. The measured balance is +500 mL, which needs clinical interpretation

9. For a regular 28-day cycle, the first day of LMP is 29 February 2024. Adding 280 calendar days gives which estimated due date?

A. 5 December 2024

B. 29 November 2024

C. 29 December 2024

D. 5 January 2025

10. An order is written as mg/kg/day in divided doses. What should a nurse avoid when using a calculator labelled mg/kg per dose?

A. Checking the current weight in kg

B. Confirming the number of divided doses

C. Entering the entire per-day dose as though it were the per-dose amount

D. Checking the authorized maximum dose

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Answer key and explanations

1. C - 2 mL

(100 250) x 5 = 2 mL. Independently check the prescription, product and safe dose before any clinical administration.

2. A - 125 mL/hour

1000 8 = 125 mL/hour. This calculation does not confirm that the prescribed rate is clinically appropriate.

3. D - 42 drops/min

500 x 20 (4 x 60) = 41.67, rounded to 42 drops/min. Check the factor printed on the actual tubing.

4. B - 1000 micrograms = 1 mg

One milligram equals 1000 micrograms. Matching units is necessary before a dose calculation.

5. A - 60 mg

5 x 12 = 60 mg per dose. The example is arithmetic, not a recommended regimen; maximum dose and clinical appropriateness must be checked separately.

6. C - 22.2 kg/m2

72 (1.8 x 1.8) = 22.22 kg/m2. Adult BMI screening does not apply directly to children or pregnancy.

7. B - 0.5 mL/kg/hour

210 70 6 = 0.5 mL/kg/hour. Interpret the result using collection accuracy and clinical context; it is not an independent treatment instruction.

8. D - The measured balance is +500 mL, which needs clinical interpretation

2200 - 1700 = +500 mL. Recorded balance excludes unmeasured losses and does not by itself diagnose overload.

9. A - 5 December 2024

Date arithmetic gives 5 December 2024. Clinical or ultrasound dating can revise an LMP-based estimate.

10. C - Entering the entire per-day dose as though it were the per-dose amount

A per-day regimen and a per-dose regimen are different inputs. Clarify the intended daily total and division before calculating an individual administration.

Source and attribution

Original curriculum guide. Source scope and versions are listed in the guide.

Online chapter: https://nursescontent.com/essentials/nursing-calculations/

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