

NAME_____

Checker_____

MATH PROBLEMS

The following client scenarios are realistic examples of medication administration at SCVMC. The medication orders are written here, as you will see them on the client's MAR in their electronic record. The medication dosage range (**minimum to maximum amount**) **is ALWAYS** taken from the Pediatric Dosage Handbook. The directions for reconstitution of powdered medications are on the med vial, the med circular (insert). Of vital importance is the **concentration** of the med after reconstitution.

Pediatric nurses may not give medications ordered until they determine that the amount ordered is appropriate for the specific child. Appropriate dosages are calculated based on the child's weight. The child's weight has been given in each of these scenarios in order to do the calculations. If the calculations prove the dosage ordered to be out of the appropriate range, the nurse checks her math with another nurse. If the incorrect dosage is confirmed, the Charge Nurse is notified and the physician called. A student will **independently** check all math before **any** med is given. ALL meds will be given with the instructor, who will also check the math.

Standardized Math Instructions to Students

1. You are allowed to use a calculator.
2. You must show all your work. You must show logical mathematical problem construction and solving for each problem.
3. Answers should be accurate to **2 decimal places** (right of the decimal point) examples: 3.56 ml, 3.565 would be rounded to 3.57, 3.564 would be rounded to 3.56
4. Drops must be expressed as whole numbers, (e.g. 13.2 gtts = 13 gtts).
5. Whole numbers NEVER include decimal point, (e.g. 4 ml, **not** 4.00 ml).
6. ALWAYS include a zero **before** a decimal point, (e.g. 0.6 ml, **not** .6 ml).
7. Answers must include the appropriate measurable units (mls, gtts, tabs, etc.).
8. Circle your final answer for each problem.
8. There is only one answer for each problem.
9. Answers and mathematical problem construction must be legible.

NAME _____

#1. ORDER: Ampicillin 190 mg IV q6h

Range for infants & children: 100-200 mg/kg/day in 4-6 divided doses

Vial: 500mg

Label states: add 1.8 ml SW for a concentration of 250 mg/ml

Client: 5.8 kg infant

1. How much med is child receiving in one day _____mg
2. What is the appropriate dosage range? _____mg/d - _____mg/d
3. Is an appropriate amount of medication ordered for this child? _____

Answer all following questions, regardless if dosage appropriate

4. Amount of diluent (sw/ns) to draw up? _____ml
5. Amount of med to draw up after reconstitution? _____ml

#2 ORDER: Gentamicin 64 mg IV q12h

Range: 2.5 mg/kg/dose q 8-12h

Vial: 2 ml vial, already fluid

Label states concentration is 40 mg/ml

Client: 6 yr. old 48 lbs

1. How much med is child receiving in one day? _____mg
2. What is the appropriate dosage range? _____ mg/d - _____ mg/d
(q 12h) (q 8h)
3. Is an appropriate amount of medication ordered for this child? _____

Answer all the following questions, regardless of dosage appropriate

4. Amount of med to draw up? _____ ml
5. How many vials do you need? _____?

#3 ORDER: Vancomycin 400 mg IV q6h

Range for infants > 1 mo. & children: 40 mg/kg/day in divided doses q6h

Vial: 500 mg

Circular states add 10 ml SW, resulting concentration is 50 mg/ml

Client: 10 yr. old, 88 lbs.

1. How much med is child receiving in one day? _____ mg
2. What is the appropriate dosage range? _____ mg/d - _____ mg/d
3. Is an appropriate amount of medication ordered for this child? _____

Answer all following questions, regardless if dosage appropriate

4. Amount of diluent (sw/ns) to draw up? _____ ml
5. Amount of med to draw up after reconstitution? _____ ml

#4 ORDER: Cefuroxime 510 mg IV tid

Range for children: 75 – 150 mg/kg/day

Vial: Zinacef (Cefuroxime) 750 mg

Circular states add 8 ml diluent for a concentration of 90 mg/ml

Client: 20 kg child

1. How much med is child receiving in one day? _____ mg
2. What is the appropriate dosage range? _____ mg/d - _____ mg/d
3. Is an appropriate amount of medication ordered for this child? _____

Answer all following questions, regardless if dosage appropriate

4. Amount of diluent (sw/ns) to draw up? _____ ml
5. Amount of med to draw up after reconstitution? _____ ml

MEDICATION ORDERS

How much would you give?
Circle your answer.

1. Nafcillin IV 250 mg (250 mg/2 cc)
2. Cefotaxime IV 250 mg (95 mg/1 cc)
3. Ceftriaxone 550 mg q 24^o (280 mg/cc)
4. Nafcillin 175 mg IV q 6^o (250 mg/cc)
5. Phenergan IV 6 mg on call (10 mg/1 ml)
6. Cefotan 350 mg IV q 8^o (95 mg/1 cc)
7. Ampicillin 190 mg IV q 12^o (125 mg/1 cc)
8. Gentamicin 9.2 mg IV q 12^o (10 mg/1 cc)
9. Ceftazidime 800 mg IV q 6^o (100 mg/1 cc)
10. Zinacef 150 mg IV q 8^o (200 mg/1 cc)

11. Ampicillin 250 mg IV q 6^o (250 mg/1 cc)
12. Gentamicin 25 mg IV q 8^o (20 mg/1 cc)
13. Tobramycin Sulfate 65 mg IV q 8^o (130 mg/1cc)
14. Ceftazidime 800 mg IV q 8^o (100 mg/1cc)
15. Reglan 0.5 mg IV q 8^o (5 mg/1 cc)
16. Gentamicin 7 mg IV q 8^o (20 mg/2 cc)
17. Ampicillin 150 mg IV q 8^o (250 mg/1 cc)
18. Penicillin G 250,000 IV q 6^o (100,000 units/1 ml)
19. Phenobarbital 30 mg po/ IV q AM (130 mg/1 ml)
20. Cefotaxime 350 mg IV q 8^o (95 mg/1 cc)

PRACTICE IV ANTIINFECTIVE MATH CALCULATIONS for PEDIATRICS

Using the Pediatric Dosage Handbook or the Antimicrobial Order Form as indicated by each question, look up the following medications and answer these questions. Show ALL calculations. Put answers in blanks. There are numerical answers for each blank. Answer even if (c) is 'NO'.

- a. What is the appropriate dosage range for this child, based on his weight? ____ - ____mg/day
Write lowest possible to highest possible dosage.
- b. How much has been ordered per day for this child? _____ mg/day
- c. Has an appropriate dose been ordered for this child? Yes or No (circle)
- d. How much medication will you give? _____ ml

1. Clindamycin 600 mg IV q 8h (600 mg/4 ml vial) wt 64.5 kg 15 y

- a. ____ - ____ mg/day
- b. ____ mg/day
- c. Yes or No
- d. ____ ml

2. Clindamycin 40 mg IV q 8h (600 mg/4 ml vial) wt 36.9 kg 7y

- a. ____ - ____ mg/day
- b. ____ mg/day
- c. Yes or No
- d. ____ ml

3. Nafcillin 780 mg IV q 6h (1 gm/3 ml vial) wt 38 kg 6y

- a. ____ - ____ mg/day
- b. ____ mg/day
- b. Yes or No
- d. ____ ml

4. Ceftriaxone 1700 mg IV q 24h (2 gm/4 ml vial, Rocephin) wt 66kg 17y
- a. _____ - _____ mg/day
 - b. _____ mg/day
 - b. Yes or No
 - d. _____ ml
5. Meropenem 780 mg IV q 8h (500 mg/2 ml vial, Merrem) wt 25 kg 6y
- a. _____ - _____ mg/day
 - b. _____ mg/day
 - b. Yes or No
 - d. _____ ml
6. Acyclovir 430 mg IV q 8h (500 mg/3 ml vial, Zovirax) wt 44 kg 13 y
- a. _____ - _____ mg/day
 - b. _____ mg/day
 - b. Yes or No
 - d. _____ ml
7. Ampicillin 1 gm IV q 6h (1 gm/2 ml vial, Polycillin) wt 39 kg 10y
- a. _____ - _____ mg/day
 - b. _____ mg/day
 - b. Yes or No
 - d. _____ ml
8. Cefuroxime 20 mg IV q 8h (750 mg/4 ml vial, Zinacef) wt 3.84 kg 2.5 m
- a. _____ - _____ mg/day
 - b. _____ mg/day
 - b. Yes or No
 - d. _____ ml

9. Cefuroxime 1.5 gm IV q 8h (1.5 gm/2 ml vial, Kefurox) wt 42 kg 11y

a. _____ - _____ mg/day

b. _____ mg/day

b. Yes or No

d. _____ ml

10. Ampicillin 1 gm IV q 8h (1 gm/1.5 ml vial, Polycillin) wt 49 kg 12 y

a. _____ - _____ mg/day

b. _____ mg/day

b. Yes or No

d. _____ ml

11. Cefazolin 75 mg IV q 8h (1 gm/2 ml vial, Ancef) wt 23.63 kg 6y

a. _____ - _____ mg/day

b. _____ mg/day

b. Yes or No

d. _____ ml

12. Gentamicin 125 mg IV q 8h (80 mg/2 ml, Garamycin) wt 50.4 kg 10y

a. _____ - _____ mg/day

b. _____ mg/day

b. Yes or No

d. _____ ml