TEMPLE UNIVERSITY
DEPARTMENT OF NURSING

DOSAGE CALCULATION PACKET
SOPHOMORES

TO BE COMPLETED BY THE FIRST DAY OF CLASS
Introduction
The “Dosage Calculation Study Packet for Sophomores” is designed to assist nursing students in preparing for the safe administration of medications in NUR 2589: Generalist Nursing Practice I. The study packet provides an opportunity for students to engage in self-evaluation of their math skills, review basic mathematics, and learn how to accurately perform oral drug calculations for adults and children.

Directions
Students should carefully review and complete all practice problems in the Pickar textbook (Chapters 1 – 10). Students should also complete the Oral Dosages Worksheets included in the packet and the practice tests. The practice tests closely resemble the dosage calculation pre-test that will be given at the end of the fall semester. In addition, it is important to memorize the common abbreviations used when administering medications.

Objectives
1. Perform the basic mathematical computations essential for calculating drug dosages.
2. Recognize and recall the basic systems of measurement used to calculate dosages (to include metric and household equivalents).
3. Convert between and within systems of measurement.
4. Read and interpret medication orders; including abbreviations and symbols.
5. Calculate oral dosages of medications utilizing the equation Desire/Have x Quantity.
6. Compute the amount of drug to be administered per pound or per kilogram of body weight.

Required Textbook
SBN-13: 9781439058473

Textbook Assignment
Chapter 1  Diagnostic Evaluation
Chapter 2  Math Review for Dosage Calculations
Chapter 3  Systems of Measurement
Chapter 4 & 5  Conversions
Chapter 6  Equipment Used in Dosage Measurement (oral only)
Chapter 7  Interpreting Drug Orders
Chapter 8  Understanding Drug Labels
Chapter 9  Preventing Medication Errors
Chapter 10  Oral Dosage of Drugs

Dosage Calculation Competency Policy:
All students entering NUR 2589: Generalist Nursing Practice I must verify competency by achieving a 100% in basic math/dosage calculation by taking a ten-point pretest. A conversion table will be included with this exam. If 100% is not achieved on the exam, the student will have one additional opportunity to pass the exam without penalty. Passing the exam is a pre-requisite for participation in this clinical course. If the student does not pass the exam on the second attempt, the student will not be permitted to register for NUR 2589. No calculators may be used for the pre-test.
CALCULATION CONVERSION CHART

(most commonly used)

1000 g = 1 kg.  
1000 mg = 1 g

1000 mcg = 1 mg.  
1 mL = 1 cc

5 mL = 1 tsp. (t.)  
15 mL = 1 tbsp. (T.)

30 mL = 1 oz.  
2.2 lb = 1 kg

2.5 cm = 1 inch  
1000 mL = 1 L

DOSAGE EQUATIONS

1. \[D \text{ (desired)} \times Q \text{ (quantity)} = X \text{ (dose)}\]
   
   \[H \text{ (have)}\]

2. Intravenous:

   \[
   \frac{\text{Total mLs}}{\text{Time (as expressed in minutes)}} \times \frac{\text{drops}}{\text{mL}} = \frac{\text{drops}}{\text{min}}
   \]

   IVPB: To calculate mL/hr to program a pump -

   \[
   \text{Total mLs} \times 60 \over \text{Time (as expressed in minutes)}
   \]

3. \[\text{lbs.} = \frac{\text{kg}}{2.2}\]

4. Converting in the metric system:

   - Gram to mg - move the decimal RIGHT 3 places (Example: 0.5 g = 500 mg)
   - mg to mcg - move the decimal RIGHT 3 places (Example: 0.325 mg = 325 mcg)
   - mg to gram - move the decimal LEFT 3 places (Example: 350 mg = 0.350 g)
   - mcg to mg - move the decimal LEFT 3 places (Example: 125 mcg = 0.125 mg)

   Move decimal RIGHT 3 places

   \[\frac{\text{Kg}}{\text{g}} \text{ mg mcg} \]

   Move decimal LEFT 3 places

5. Temperature Conversions

   Fahrenheit to Celsius: \[C = \frac{F - 32}{1.8}\]

   Celsius to Fahrenheit: \[F = C (1.8) + 32\]

6. Body Surface Area Formula

   \[m^2 = \sqrt{\frac{\text{height (cm)} \times \text{weight (kg)}}{3600}}\]

7. Body Mass Index (BMI)

   \[\text{BMI} = \frac{\text{weight in kg}}{(\text{height in millimeters})^2}\]
**Temple University Department of Nursing**  
**Basic Medication Administration Abbreviations**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
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<tbody>
<tr>
<td><strong>Route:</strong></td>
<td></td>
</tr>
<tr>
<td>IM</td>
<td>Intramuscular</td>
</tr>
<tr>
<td>IV</td>
<td>Intravenous</td>
</tr>
<tr>
<td>IVPB</td>
<td>Intravenous Piggyback</td>
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<tr>
<td>subcut</td>
<td>subcutaneous</td>
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<tr>
<td>SL</td>
<td>sublingual</td>
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<tr>
<td>ID</td>
<td>intradermal</td>
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<tr>
<td>GT</td>
<td>gastrostomy tube</td>
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<tr>
<td>NG</td>
<td>nasogastric tube</td>
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<tr>
<td>p.o.</td>
<td>by mouth, orally</td>
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<tr>
<td>p.r.</td>
<td>pr rectum, rectally</td>
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<tr>
<td><strong>Frequency:</strong></td>
<td></td>
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<tr>
<td>a.c.</td>
<td>before</td>
</tr>
<tr>
<td>p.c.</td>
<td>after</td>
</tr>
<tr>
<td>ad.lib.</td>
<td>as desired, freely</td>
</tr>
<tr>
<td>p.r.n.</td>
<td>when necessary</td>
</tr>
<tr>
<td>stat</td>
<td>immediately</td>
</tr>
<tr>
<td>b.i.d.</td>
<td>twice a day</td>
</tr>
<tr>
<td>t.i.d.</td>
<td>three times a day</td>
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<tr>
<td>q.i.d.</td>
<td>four times a day</td>
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<tr>
<td>min</td>
<td>minute</td>
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<tr>
<td>h</td>
<td>hour</td>
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<tr>
<td>q.h.</td>
<td>every hour</td>
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<tr>
<td>q2h</td>
<td>every two hours</td>
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<tr>
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<td>every three hours</td>
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<tr>
<td>q.4h</td>
<td>every four hours</td>
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<tr>
<td>q.6h</td>
<td>every six hours</td>
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<tr>
<td>q.8h</td>
<td>every 8 hours</td>
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<tr>
<td>q.12</td>
<td>every 12 hours</td>
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<td><strong>General:</strong></td>
<td></td>
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<tr>
<td>b</td>
<td>before</td>
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<td>qs</td>
<td>every shift</td>
</tr>
<tr>
<td>aq</td>
<td>aqua (water)</td>
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<tr>
<td>NPO</td>
<td>nothing by mouth</td>
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<tr>
<td>gtt</td>
<td>drop</td>
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<tr>
<td>tab</td>
<td>tablet</td>
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<tr>
<td>cap</td>
<td>capsule</td>
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<tr>
<td>SR</td>
<td>slow-release</td>
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<tr>
<td>Susp</td>
<td>suspension</td>
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</table>
TEMPELE UNIVERSITY NURSING DEPARTMENT
WORKSHEET - HOUSEHOLD/METRIC CONVERSIONS

1. 1 tbsp. = ml.

2. 130 lb. = kg.

3. 2 tsp. = ml.

4. 2 tbsp. = ml.

5. 6 kg. = lbs.

6. 7 lb. = kg.

7. 55 kg. = lb.

8. 15 ml. = tsp.

9. 180 lb. = kg.

10. 5000 g. = kg.

11. 1800 g. = kg.

Answers: 1) 15 mls, 2) 59.1 kg, 3) 10 mls, 4) 30 mls, 5) 13.2 lb, 6) 3.18 or 3.2 kg, 7) 121 lb, 8) 3 tsp, 9) 81.8 kg, 10) 5 kg, 11) 1.8 kg
1. 99.8 degrees F = ____ C  
2. 38.2 degrees C = ____ F  
3. 61.5 kg. = ____ lb.  
4. 1500 mg = ____ grams  
5. 6 g = ____ mg  
6. 30 mL = ____ Tbsp  
    Supply: Synthroid 150 mcg./tab.  
    GIVE: ____  
8. Order: codeine 30 mg  
    Supply: codeine 60 mg/tab.  
    GIVE: ____  
9. Order: Elixir of Benadryl 25 mg  
    Supply: Elixir of Benadryl 12.5 mg/5 mL  
    GIVE: ____  
    Supply: Vitamin B12 1 mg/mL  
    GIVE: ____  
11. Order: Fentanyl 0.125 mg.  
    Supply: Fentanyl 250 mcg./5 mL  
    GIVE: ____  
    Supply: Amoxil suspension 250 mg/5 mL  
    GIVE: ____  
13. The primary care providers orders Robitussin cough syrup 2 tsp. prn every 4 hours for cough. How many mLs of Robitussin will you give?  
    GIVE: ____

Answers: 1) 37.6 2) 100.76 or 100.8 3) 135.3 4) 1.5 5) 6000 6) 2 7) 1.5 tab 8) ½ tab 9) 10 mL 10) 1 mL 11) 2.5 mL 12) 4 mL 13) 10 mL
Calculate the following dosages.

1. The order is for Ampicillin 0.25 gram. The dose supplied is Ampicillin 125 mg tablets. How many tablets will you give? (2 tabs)

2. The order is for Polycillin 250 mg po q 4 hours. The dose supplied is 100 mg per 5 mL. How many milliliters will you administer? (12.5 mL)

3. The patient is to receive Elixir of Phenobarbital 15 mg po q 8 hours. Pharmacy sends Elixir of Phenobarbital 20 mg/5 mL. How many milliliters will you administer? (3.75 mL = 3.8 mL)

4. Lanoxin 0.25 mg is ordered for your patient. You have Lanoxin 0.125 mg tablets. How many tablets will you give? (2 tabs)

5. Antivert 25 mg po tid is ordered for your patient. On hand you have Antivert 10 mg scored tablets. How many tablets will you administer? (2 1/2 tabs)

6. The patient is ordered Ampicillin 1 Gram po q 8 hours. The medication comes from pharmacy labeled Ampicillin 500 mg/capsule. How many will you give? (2 caps)

7. Your patient is ordered to have Chloral Hydrate 250 mg po hs. The medication comes from pharmacy labeled Chloral Hydrate 500mg/5 mL. How many milliliters will you administer? (2.5 mL)
8. Your patient is ordered to have Potassium Chloride 30 mEq po today. The medication is labeled Potassium Chloride 20 mEq/10 mL. How much will you give? (15 mL)

9. The patient is ordered Elixir of Phenobarbital 75 mg po. The medication is supplied from pharmacy as Elixir of Phenobarbital 100 mg/10 mL. How much will you administer? (7.5 mL)

10. You are to administer Elixir of Lanoxin 0.025 mg to your patient. The medication is supplied as Elixir of Lanoxin 0.05 mg/5 mL. How much will you give? (2.5 mL)

11. Your patient is to receive Synthroid 50 mcg po daily. The medication is available as Synthroid 0.1 mg per tablet. How much will you administer? (¼ tab)

12. The patient is ordered Benadryl 50 mg. You have Benadryl 25 mg capsules in stock. How many capsules will you give? (2 caps)

13. Ceclor 100 mg is ordered for your patient. The medication comes from pharmacy labeled Ceclor 250 mg/5mL. How much will you give? (2 mL)

14. Procanbid 1 Gm is ordered for your patient. It is supplied as Procanbid 1000mg tablets. How many tablets will you administer? (1 tab)

15. The patient is ordered Nitroglycerine 0.3 mg po prn. The bottle received from pharmacy is labeled Nitroglycerine 0.6 mg per tablet. How many will you give? (¼ tab)
1. Mevacor 40 mg daily with breakfast. (Label Mevacor 20 mg per tablet)
   
   GIVE: ________
   (2 tabs)

2. Benztropine mesylate 250 mcg bid. (Label Benztropine mesylate tablets 0.5 mg)
   
   GIVE: ________
   (1/2 tab)

3. Tylenol 650 mg po q 3-4 hours prn for fever > 101°F. (Label Tylenol 325 mg tablets)
   
   GIVE: ________
   (2 tabs)

4. Slow K 24 mEq stat and then 8 mEq tid. (Label Slow-K 8 mEq tablets)
   
   A. Calculate the stat dose.
   
   GIVE: ________
   (3 tabs)

   B. Calculate the dose to be given tid.
   
   GIVE: ________
   (1 tab)

5. Spironolactone 50 mg bid. (Label Spironolactone 25 mg tablets)
   
   GIVE: ________
   (2 tabs)

6. Ferrous sulfate 150 mg tid with meals. (Label Ferrous Sulfate 300 mg tablets)
   
   GIVE: ________
   (1/2 tab)

7. Lactulose 30 grams stat. (Label Lactulose 20 grams per 30 mL)
   
   GIVE: ________
   (45 mLs)
8. Levoxine 0.025 mg daily. (Label Levoxine 50 mcg (0.05 mg) per tablet)

GIVE: ________
(½ tab)

9. Allopurinol 0.6 grams tid. (Label Allopurinol 300 mg tablet)

GIVE: ________
(2 tabs)

10. DiaBeta 5 mg q am before breakfast. (Label DiaBeta 2.5 mg tablets)

GIVE: ________
(2 tabs)

11. Capoten 6.25 mg bid. (Label Capoten 12.5 mg tablets)

GIVE: ________
(½ tab)

12. Zestril 7.5 mg daily. (Label Zestril 5 mg tablets)

GIVE: ________
(1 ½ tabs)

13. Dilantin 100 mg tid. (Label Dilantin 125 mg per 5 mL)

GIVE: ________
(4 mL)

14. Erythromycin 300 mg po q8h. (Label EryPed 200 mg per 5 mL)

GIVE: ________
(7.5 mL)

15. Cefadroxil 0.5 grams p.o. b.i.d. (Label Cefadroxil 500 mg tablets)

GIVE: ________
(1 tab)

16. Allopurinol 0.2 grams p.o. b.i.d. (Label Allopurinol 100 mg tablets)

GIVE: ________
(2 tabs)
CASE STUDY #1

A 13 year old child (weight 88 lb.) with cerebral palsy being cared for in a children's facility is admitted to the hospital for seizure evaluation. The orders from the primary care provider include:

- CBC, chemistry panel, urinalysis, dilantin level, EEG and CT scan
- Vitals q4h
- Seizure precautions
- Lactulose 3 G po tid
- Valproic acid (Depakote) 30 mg/kg/day po in three divided doses
- Diazepam (Valium) 2.5 mg po daily
- Chlorothiazide (Thiazide) 250 mg po daily
- Phenytoin (Dilantin) 5 mg/kg/day po in four divided doses.

1. Calculate how many mL of lactulose the child will receive per dose. Supply: 10g/15 mL

2. Calculate how many mL of Depakote the child will receive per dose. Supply: 250 mg/5 mL

3. Calculate how many tablets of diazepam the child will receive per dose. Supply: 5 mg/tablet

4. Calculate how many tablets of chlorothiazide the child will receive per dose. Supply: 250 mg/tablet

5. Calculate how many mL of Dilantin the child will receive per dose. Supply: 125 mg/5mL

Answers: 1) 4.5 mL; 2) 8 mL; 3) ½ tab; 4) 1 tab; 5) 2 mL
TEMPLE UNIVERSITY DEPARTMENT OF NURSING
DOSAGE CALCULATION PRACTICE PRE-TEST #1

Directions: Either place your answer in the space provided or circle your final answer; be sure your answer is labeled (mLs, tabs, caps, kg, etc.). You must show all of your work.

1. A client is ordered 50 mg of Amitriptyline p.o. (Label: Amitriptyline 25 mg per tablet)

   Give: ________
   (2 tabs)

2. A client is ordered 37.5 mg of Dothiepin p.o. (Label: Dothiepin 75 mg per tablet)

   GIVE: ______
   (½ tab)

3. A client states he weighs 154 pounds. How many kg does the client weigh? (70 kg)

4. The caregiver of a 3 year old child reports the child’s temperature as 102.2 degrees Fahrenheit. What is the child’s temperature in Celsius? (39 degrees C)

5. A client is ordered 300 mg of Thoridazine p.o. (Label: Thoridazine 100 mg per tablet)

   GIVE: ______
   (3 tabs)

6. A client is ordered 50 mg of Amoxicillin p.o. (Label: Amoxicillin 125 mg in 5 mL)

   GIVE: ______
   (2 mL)

7. A client is ordered 0.5 mg of Digoxin p.o. (Label: Digoxin 250 mcg per tablet)

   GIVE: ______
   (2 tabs)

8. A client is ordered 5 mg of Haloperidol p.o. (Label: Haloperidol 2 mg/mL)

   GIVE: ______
   (2.5 mL)
9. A client is ordered Amoxil suspension 10mg/kg. Client weighs 176 pounds. (Label: Amoxil suspension 400/5mL)

**GIVE: _______**

(10 mL)

10. The client tells the nurse he has consumed two 8 oz. cans of diet soda. How many mLs of soda did the client consume? (480 mL)
TEMPLE UNIVERSITY DEPARTMENT OF NURSING
DOSAGE CALCULATION PRACTICE PRE-TEST #2

Directions: Either place your answer in the space provided or circle your final answer; be sure your answer is labeled (mLs, tabs, caps, kg, etc.). You must show all of your work.

1. The client has consumed 6 oz. of water and 8 oz. of milk. How many mL has the client consumed in total? (420 mL)

2. A client’s temperature is 39.4 degrees Celsius. The temperature, when converted to Fahrenheit would be? (102.9 degrees C)

3. A client is ordered 300 mg of Carbamazepine p.o. (Label: Carbamazepine 200 mg per tablet)
   
   GIVE: ______ 
   
   (1.5 tabs)

4. A client is ordered 1 mg of Diazepam p.o. (Label: Diazepam 2 mg per tablet)
   
   GIVE: ______ 
   
   (½ tab)

5. A client is ordered 4 mg of Trifluoperazine p.o. (Label: Trifluoperazine 5 mg/5 mL)
   
   GIVE: ______ 
   
   (4mL)

6. You are caring for a pre-mature newborn who weighs 5500 grams. How many Kg does the infant weight? (5.5 kg)

7. A client is ordered 2.5 grams of Neomycin sulphate. (Label: Neomycin sulphate 500 mg per tablet)
   
   GIVE: ______ 
   
   (5 tabs)

8. A client is ordered 125 mcg of Benztropine Mesylate. (Label: Benztropine Mesylate 0.25 mg per tablet)
   
   GIVE: ______ 
   
   (¼ tab)
9. A client is ordered 200 mg of Sodium Valproate. (Label: Sodium Valproate 100 mg/10 mL)
   GIVE: ________
   (20 mL)

10. A client is ordered Ceclor suspension 25 mg/kg. Client weighs 110 lbs. (Label: Ceclor suspension 250mg/5 mL)
    GIVE: ________
    (25 mL)