

Cumulative Review Exercises

Review your mastery of previous chapters.

1. 7.8 g = _____ mg
2. 0.25 mg = _____ mcg
3. 4.5 L = _____ mL
4. 12 T = _____ oz
5. 1,200 mL = _____ L
6. 7.6 kg = _____ g
7. Convert 750 mL to liters.
8. How many teaspoons are contained in 5 T?
9. The order reads Carafate 1 g PO q.i.d. Convert this dose to milligrams.
10. The patient must receive 250 mg of Cloxacillin PO q6h. Change to grams.
11. Change 0.65 mg to micrograms.
12. The physician ordered 2 T of Mylanta PO q2h. How many teaspoons of this antacid would you prepare?
13. The order is Colace 150 mg PO t.i.d. the label reads 150 mg/15 mL. How many milliliters would you prepare?
14. Change 250 mL to liters.
15. Change 0.032 g to milligrams.

MediaLink
www.prenhall.com/giangrasso
 Animated examples, interactive practice questions with animated solutions, and challenge tests for this chapter can be found on the Pearson Dosage Calculation Tutor that accompanies this text. Additional, unique, interactive resources and activities can be found on the Companion Web site.

Converting from One System of Measurement to Another

Chapter



Learning Outcomes

1. State the equivalent units of weight between the metric and household systems.
2. State the equivalent units of volume between the metric and household systems.
3. State the equivalent units of length between the metric and household systems.
4. Convert a quantity from one system of measurement to its equivalent in another system of measurement.

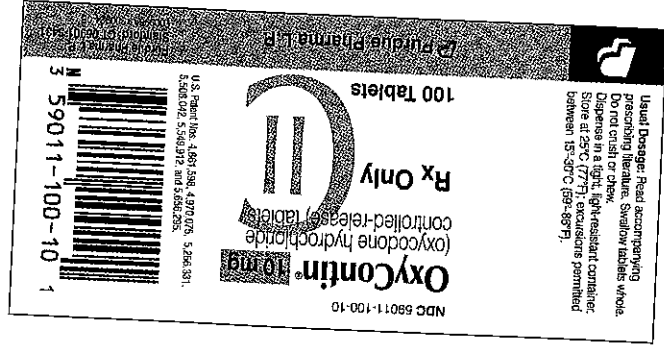
1 kilogram (kg)
 \approx
 2.2 pounds (lb)

After completing this chapter, you will be able to

When calculating drug dosages, you will sometimes need to convert a quantity expressed in one system of measurement to an equivalent quantity expressed in a different system of measurement. For example, you might need to convert a quantity measured in ounces to the same quantity measured in milliliters. This chapter will show you how to accomplish such conversions.

Workspace

2. Use the label in ● Figure 4.1 to determine the number of grams of OxyContin in 1 tablet of the drug.



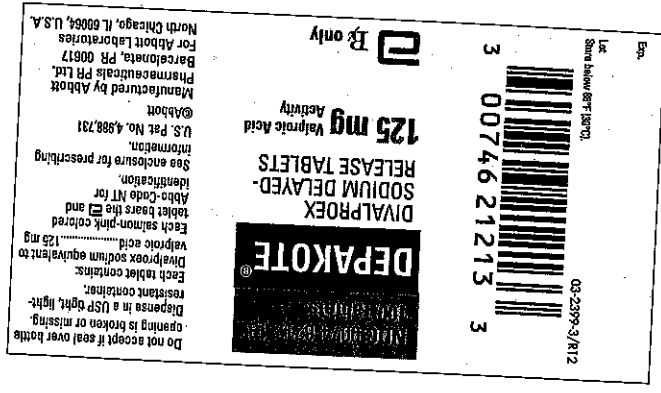
● Figure 4.1
Drug label for OxyContin.
(Reprinted with permission of Purdue Pharma.)

- The prescriber ordered *methorexate 2.5 mg PO q12h*, for a patient with psoriasis. How many micrograms of this drug are administered in a day?
- The urinary output of a patient with an indwelling Foley catheter is 1,800 mL. How many liters of urine are in the bag?
- If a patient drank $1\frac{1}{2}$ quarts of water, how many pints of water did the patient drink?

Exercises

Reinforce your understanding in class or at home.

- 400 mg = _____ g
- 0.07 g = _____ mg
- 2,500 mL = _____ L
- 1.7 L = _____ mL
- 2.5 kg = _____ g
- 5 T = _____ oz
- 32 oz = _____ pt
- 4 T = _____ qt
- $4\frac{1}{2}$ qt = _____ pt
- 600 mcg = _____ mg
- 3 L = _____ mL
- 0.003 g = _____ mg



● Figure 4.2
Drug label for Depakote.
(Reproduced with the permission of Abbott Laboratories.)

13. Using the drug label in ● Figure 4.2, determine the number of micrograms of Depakote in one tablet.

15. According to the physician's order sheet in ● Figure 4.3, what is the dose in grams of the chlorpromazine?

FORM 01 109 12085 - 0989

DATE	TIME		
7/3/2010	4 PM	Chlorpromazine 50 mg	PO t.i.d.

PHYSICIAN'S ORDERS

CHART COPY

PATIENT CERTIFICATION

PLEASE INDICATE BEEPER # →

238945
Abdul Danish
2 Omer St.
Boulder, Co
43612

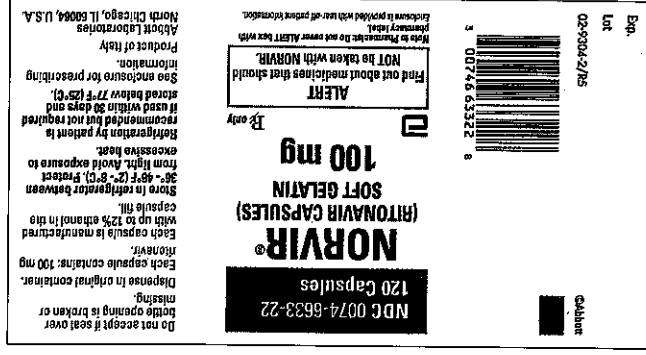
12/24/30
Buddhist
Aetna

7/3/10

Mae Ling MD

● Figure 4.3
Physician's order sheet.

- A patient is drinking $\frac{1}{2}$ pint of orange juice every two hours. At this rate, how many quarts of orange juice will the patient drink in eight hours?
- Use the label in ● Figure 4.4 to determine the number of grams in one capsule of Norvir.



● Figure 4.4
Drug label for Norvir.
(Reproduced with the permission of Abbott Laboratories.)

18. An infant weighs 3,400 grams. How much does the infant weigh in kilograms?

19. 2.1 cm = _____ mm

20. 5 ft = _____ in

Additional Exercises

Now, test yourself!

1. 6.5 mg = _____ mcg

2. 0.05 g = _____ mg

Workspace

In metric conversions of liquid volumes and weights, the decimal point is always moved 3 places. However, in metric conversions of length (cm and mm) the decimal point is moved only one place.

NOTE

The basic metric units of meter, liter, and gram have the following relationship: 1 cubic centimeter of water has a volume of 1 milliliter and weighs 1 gram.

the diameter of a tumor might be measured in *centimeters* or *millimeters*. Because *centimeters* and *millimeters* are adjacent units, conversion between them will require a movement of one decimal place.

EXAMPLE 4.10

A wound has a length of 0.7 centimeters. What is the length of this wound in millimeters?

$$0.7 \text{ cm} = ? \text{ mm}$$

To convert *centimeters* to *millimeters*, jump 1 place to the right.

meter	decimeter	centimeter	millimeter
m	dm	cm	mm



So, in 0.7 cm move the decimal point 1 place to the right.

$$0.7 \text{ cm} = 0.7 \text{ . mm} = 7 \text{ . mm} = 7 \text{ mm}$$

So, the wound has a length of 7 millimeters.

Summary

In this chapter, the metric and household systems of measurement were introduced.

- The metric system is the dominant system used in health care.
- The apothecary system is being phased out.
- It is important to memorize the equivalences between the various units of measurement of the household and metric systems.
- It is important to memorize the abbreviations for the various units of measurement.
- To convert units of measure in the household system, use ratio and proportion.
- To convert units of measure in the metric system, use the shortcut method of moving the decimal point. Always jump 3 places except for cm-mm conversions, which use a 1 place jump.

- Remember, each jump is 3 places in this chart:

kilogram	gram	milligram	microgram
kg	g, L	mg, mL	m _{cg}

- Abbreviations for units of measurement are not followed by periods.
Example: 40 mg and 5 t (not 40 mg. and 5 t.).
- Abbreviations for units of measurement are not made plural by adding the letter s.
Example: 70 mcg and 3 oz (not 70 mcgs and 3 ozs).
- Insert a leading zero for decimal numbers less than 1.
Example: 0.05 g and 0.34 mL (not .05 g and .34 mL).

- Numbers greater than 999 need commas.
Example: 2,500 mL and 20,000 mcg (not 2500 mL and 20000 mcg).
- Leave space between the number and the unit of measurement.

measurement.
Example: 0.5 mL and 1.5 g (not ½ mL and 1½ g).

Practice Sets

The answers to *Try These for Practice*, *Exercises*, and *Cumulative Review Exercises* are found in Appendix A. Ask your instructor for the answers to the *Additional Exercises*.

Try These for Practice

Test your comprehension after reading the chapter.

1. You need to memorize all the metric and household equivalents. To test yourself, fill in the missing numbers in the following chart.

Metric System

- (a) 1 L = _____ mL
 (b) 1 mL = _____ cc
 (c) 1 L = _____ cm³
 (d) 1 kg = _____ g
 (e) 1 g = _____ mg
 (f) 1 mg = _____ mcg
 (g) 1 cm = _____ mm

Household System

- (h) 1 qt = _____ pt
 (i) 1 pt = _____ cups
 (j) 1 glass = _____ oz
 (k) 1 measuring cup = _____ oz
 (l) 1 oz = _____ T
 (m) 1 T = _____ t
 (n) 1 ft = _____ in
 (o) 1 lb = _____ oz

Workspace