

**Chapter Five**  
**Lesson Three:**

**MOBIUS**  
**Masters the**  
**Metric System**

**Concepts and Skills**  
**Addressed:**

Addition  
Multiplication  
Weights and Measures  
Metric Conversion

**Materials Needed:**

Paper  
Pencil or pen

**Materials Supplied:**

Word Problems  
Conversion tables

**Students will** learn and sharpen mathematical skills in addition, multiplication and metric conversions while learning the concepts of weights and measures as applied to recycling and waste disposal.

**A. Procedure:**

1. Read the lesson outline and questions on the following pages.
2. Photocopy the lesson for each class member or for pairs or groups of students.
3. Give students time to work through problems. You may consider assigning each student group certain problems.
4. Work through the answers in class.
5. You may consider adding to the questions given here to better address the skills of your students.



## B. MOBIUS Measures Up Recycling

There are many different ways to measure things. You may have noticed that all through this book we have put *metric* measurements after those used in the United States, which uses the Imperial System. MOBIUS loves to learn and he wants to see how these systems work together. Let's take a look.

### Metric Measurements:

10 grams = 1 decagram  
10 decagrams = 1 hectogram  
10 hectograms = 1 kilogram  
1,000 kilograms = 1 metric ton  
900 kilograms = 1 short ton

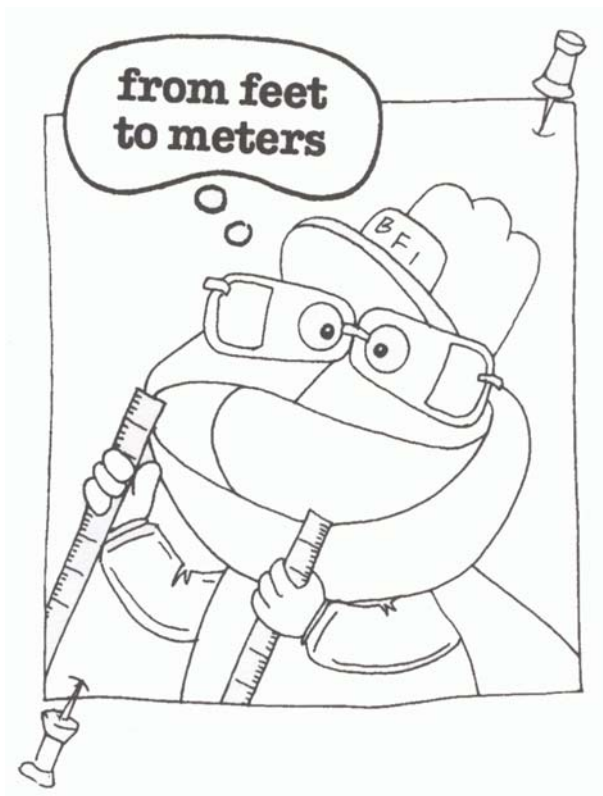
10 meters = 1 decameter  
10 decameters = 1 hectometer  
10 hectometers = 1 kilometer (or 1,000 meters)

### Imperial Measurements:

16 ounces = 1 pound  
100 pounds = 1 hundredweight  
2,000 pounds = 1 ton (also called a short ton)

12 inches = 1 foot  
3 feet = 1 yard  
1,760 yards = 1 mile (5,280 feet)

From:	To:	Multiply by:
Pounds	Kilograms	.045
Kilograms	Pounds	2.21
Feet	Meters	0.3048
Meters	Feet	3.28
Metric tons	Short tons	0.91
Short tons	Metric Tons	1.10



1. If we throw away 3.5 pounds of garbage everyday, how many kilograms do we throw away in a week?
2. If your family recycles 11 kilograms of aluminum cans in a month, how many pounds of cans do you recycle in a year?
3. By recycling one ton of newspapers, you are preserving about 3 cubic yards of landfill space, or a box 3 feet by 3 feet by 9 feet. How much space are you preserving in meters?
4. The MOBIUS Recycling Center is one kilometer from your home. You can only carry ten pounds that far or you'll have to take your bicycle. You have six kilograms of recyclables. How many pounds of recyclables do you have and how will you get to the Recycling Center?
5. What's the fastest way to get to the neighborhood paper drive taking place at your school? Past Michael's house, which totals one kilometer from your house to school, or past Jennifer's, which is a one mile trip from your house to school?
6. How much do you weigh in kilograms? In pounds?
7. In the United States, each of us generate 17 pounds of plastic trash per year. How many kilograms of plastic trash does each of us produce?
8. Of the 14,400,000 tons of plastic trash generated, 200,000 pounds is recycled each year; how many kilograms are generated? How many kilograms are recycled?

