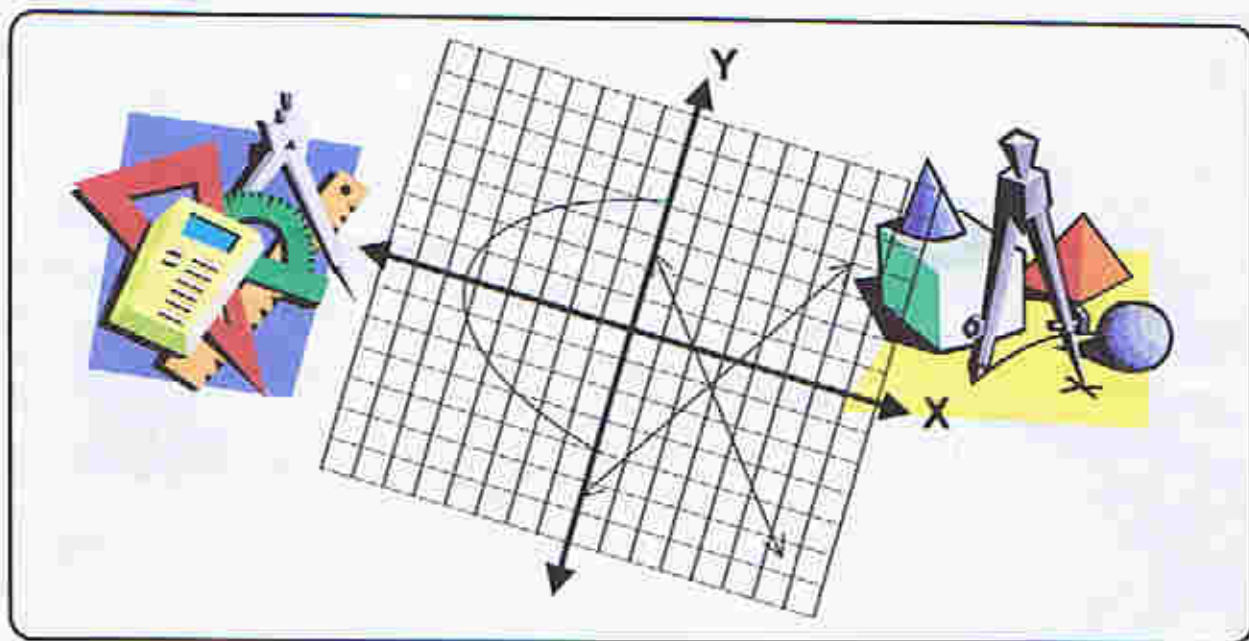# Project EASE

(Effective and Alternative Secondary Education)

MATHEMATICS I

MODULE 1
Be Precise and Accurate

What this module is all about

This module about measurement has multiple purposes. First, it orients you to two systems of measurement, namely, the English system and the metric system. Second, it shows you how to convert one unit of measurement to another unit. Lastly, it helps you determine the appropriate measuring unit to use.

You will study the following lessons in this module:

Lesson 1   **Measurement by estimation**
Lesson 2   **Metric unit of length conversion**
Lesson 3   **Short cut method of conversion**
Lesson 4   **Metric unit of mass (weight)**
Lesson 5   **Metric conversion of mass (weight)**
Lesson 6   **Measurement of time**

What you are expected to learn

After going through this module, you are expected to:

- estimate the length of a given object;
- use the appropriate instrument to measure the length, weight, volume, temperature, time and angle;
- find an equal measure for a given metric measure; and,
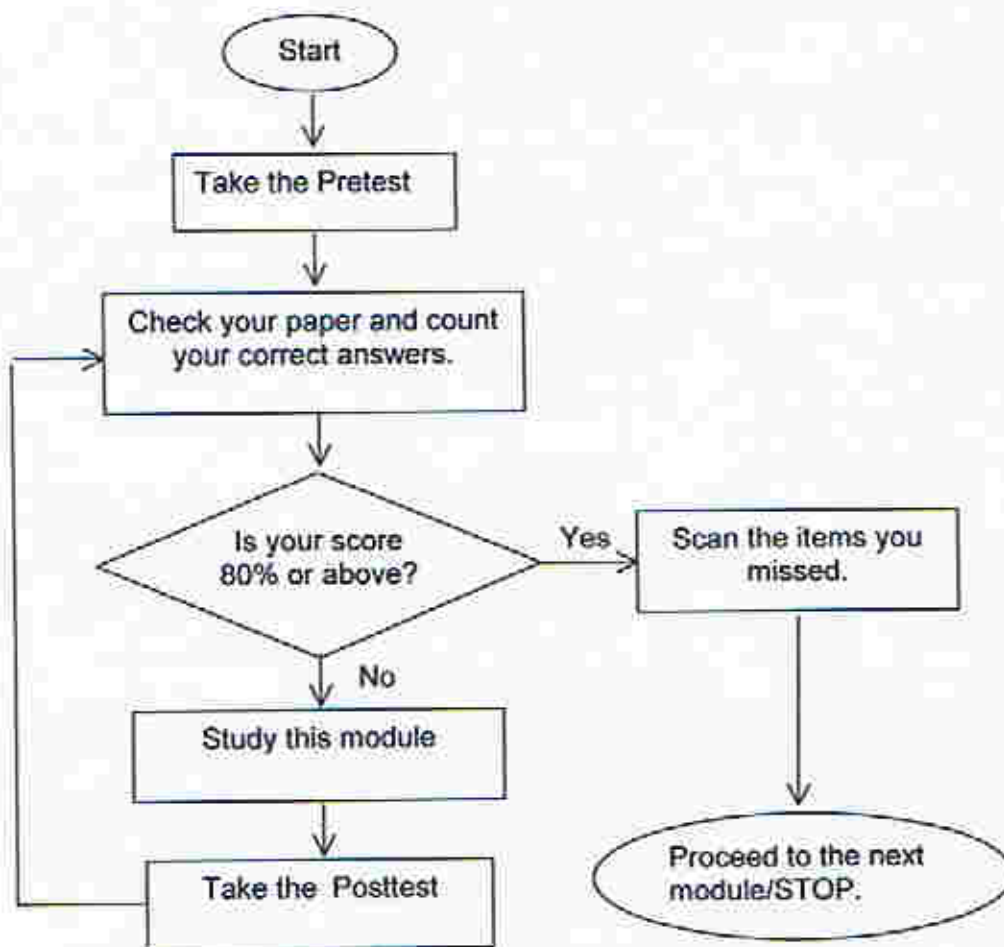- change one unit to another unit of measurement.

How to learn from this module

This is your guide for the proper use of the module:

1. Read the items in the module carefully.
2. Follow the directions as you read the materials.
3. Answer all the questions that you encounter. As you go through the module, you will find help to answer these questions. Sometimes, the answers are found at the end of the module for immediate feedback.
4. To be successful in undertaking this module, you must be patient and industrious in doing the suggested tasks.
5. Take your time to study and learn. **Happy learning!**

The following flowchart serves as your quick guide in using this module.

```
                    ┌─────────┐
                    │  Start  │
                    └────┬────┘
                         ↓
              ┌──────────────────────┐
              │   Take the Pretest   │
              └──────────┬───────────┘
                         ↓
        ┌──────────────────────────────────┐
  ┌────→│  Check your paper and count      │
  │     │      your correct answers.       │
  │     └──────────────┬───────────────────┘
  │                    ↓
  │              ╱─────────────╲      Yes    ┌──────────────────┐
  │             ╱ Is your score  ╲──────────→│ Scan the items you│
  │             ╲ 80% or above?  ╱           │      missed.      │
  │              ╲─────────────╱             └─────────┬─────────┘
  │                    ↓ No                            │
  │         ┌──────────────────────┐                  │
  │         │   Study this module  │                  ↓
  │         └──────────┬───────────┘         ╱──────────────────╲
  │                    ↓                     │ Proceed to the next│
  │         ┌──────────────────────┐         │   module/STOP.     │
  └─────────│  Take the  Posttest  │         ╲──────────────────╱
            └──────────────────────┘
```

Before you use this module, take the following **Pretest**.

Direction: Encircle the letter of your answer.

1. Millimeter, liter and kilogram belong to this system of measurement.
   - a. Metric
   - b. English
   - c. Both a and b
   - d. Traditional

2. Which of these measuring devices will you use to measure a book?
   - a. ruler
   - b. caliper
   - c. meter stick
   - d. tape measure

3. How many decimeters are there in a dekameter?
   - a. 10
   - b. 100
   - c. 1 000
   - d. 10 000

4. What is the approximate weight of a chicken egg?
   - a. 17 mg
   - b. 17 g
   - c. 17 dag
   - d. 17 kg

5. What is the approximate length of an ordinary pencil?
   - a. 20 hm
   - b. 20 dam
   - c. 20 cm
   - d. 20 mm

6. What is the basic unit of length in the metric system of measurement?
   - a. kilometer
   - b. kilogram
   - c. liter
   - d. meter

7. The net weight of a box of powdered milk is 985 grams. What is the equivalent weight in kilogram?
   - a. 9.85 kg
   - b. 98.5 kg
   - c. 0.985 kg
   - d. 0.0985 kg

8. During a rebellion, the President gave the rebel soldiers 2 hours to go back to their barracks. What is the equivalent of 2 hours in seconds?
   - a. 360 seconds
   - b. 600 seconds
   - c. 720 seconds
   - d. 7200 seconds

9. What is the approximate length of one arm length?
   - a. 50 mm
   - c. 50 dm

b. 50 cm   d. 50 m

10. Which of the following weighs about 200 grams?
  a. apple   c. watermelon
  c. jackfruit   d. strawberry

11. The distance between two cities is 5 000 meters. What is the distance between the two cities in kilometer?
  a. 0.5 km   c. 50 km
  b. 5 km   d. 500 km

12. The length of an index finger is 2 inches. What is its length in centimeter?
  a. 2.5 cm   c. 5.08 cm
  b. 4.8 cm   d. 5.58 cm

13. How many hours are there in one week?
  a. 120 hours   c. 200 hours
  b. 168 hours   d. 218 hours

14. A mother was advised by her doctor to take 100 mg of vitamin B supplement everyday for three weeks. How much vitamin B does the mother need in all?
  a. 2.1 g   c. 210 mg
  b. 21 g   d. 21,000 mg

15. How many books each 1.25 cm thick can be placed in a bookshelf that is 3 meters long?
  a. 240   c. 270
  b. 250   d. 300

What you will do

Read carefully the lessons that follow, answer the questions asked and then do the activities patiently to enhance your understanding of measurement.

4

Lesson 1   Measurement by estimation

There are different approaches you can employ in estimating the measurement of a given object and one such technique is to compare the measurement of one object to the measurement of another object. In this lesson you will employ different techniques of estimating the measurement of a given object. You will also learn the disadvantage of not using a standard unit of measurement.

Did you know?

The early Egyptians make use of body parts like the elbow for measuring length and area. The distance from the elbow to the tip of the middle finger is called "cubit".   The earliest known unit for weight was used by early Babylonians. It was known as "mina". Other basic units used by early Greeks were finger for length, "Olympic cubit" for 24 fingers, "talent" for weight and "metrites" for volume (liquid measure).

Exploration

Activity 1. Measuring Using Nonstandard Units

- Using "Dangkal" (from the thumb to the point finger stretched) as the unit of measures find the following:
  - a. length of your table
  - b. width of your door
  - c. height of your window
- Use your elbow to measure the same objects.
- Ask somebody to measure the same table using his/her finger and his/her elbow.
- Using a ruler measure the same objects.
- Tabulate the results you obtained in (1) and the measure obtained by your friend in (2). Summarize the results as follows:

Object measured	Dangkal (Thumb and point finger stretched)	Elbow (From elbow to finger tip)	Ruler
Length of table	1)		
	2)		
Width of the door	1)		
	2)		
Height of the window	1)		
	2)		

- Which type of measurement in the table shows different answers?_____
- Which measurement shows the same answer?_____
- Which unit of measure would you choose to use? _____
- Why?_____

Activity 2. Estimating I

- Estimate the volume of rice your family consumes every meal.
- Compare the amount of rice you cook every meal by using different containers like a small can of sardines, a small can of evaporated milk or a small bottle of soft drink.
- Tabulate the result using the given table.

Kind of container	Number of scoops
Can of sardines	
Can of evaporated milk	
Bottle of soft drink	

- Approximately how many cans of sardines of rice does your family consume every meal? _____
- How many cans of evaporated milk of rice does your family consume every meal? _____
- What is the equivalent of your rice consumption using a bottle of soft drink? _____
- Which of the containers you used has the largest volume? _____
- Which has the least volume? _____
- What kind of container does your family prefer for measuring rice? _____

Activity 3 Estimating II

- Estimate your capacity in drinking water for one meal.
- Compare the amount of water you drink by using different containers of water like cup, glass of water or a bottle of 350 ml soft drink.
- Tabulate the result using the table below.

Kind of container	Number of servings
Cup	
Glass of water	
Bottle of 350 ml soft drink	

- Approximately how many cups of water do you drink every meal? _____
- How many glasses of water do you drink every meal? _____
- What is the equivalent of the water you consumed using the 350 ml bottle of soft drink? _____
- Which of the container has the smallest capacity? _____
- Which has the largest capacity? _____
- What is your preferred container for drinking water?

Activity 4

- Based from the three activities, is there a need to standardize measurement? _____
- Give your reason. _____

Self-check 1

A. Identify the measuring instrument you can use to measure the following:

_____ 1. Amount of water in a glass
_____ 2. The body temperature
_____ 3. weight of 12 pieces of mangoes
_____ 4. length of a pencil
_____ 5. width of a cloth

_____ 6. Length of time
_____ 7. Fever temperature
_____ 8. weight of a bag of guavas
_____ 9. height of a boy
_____ 10. weight of a baby

B. Solve the following problems. Encircle the letter corresponding to the best answer.

1. What is the approximate height of the one liter (1 L) bottle of coke?
   a. 5 cm   b. 25 cm   c. 50 cm   d. 100 cm

2. What is the approximate height of the door of your school?
   a. 2 m   b. 4 m   c. 8 m   d. 10 m

3. What is the approximate number of days a woman conceives a child?
   a. 9 days   b. 90 days   c. 200 days   d. 270 days

4. If a kilo of rice costs P22.00, how many grams of rice can be bought for P10.00?
   a. 300 g   b. 500 g   c. 700 g   d. 900 g

5. How many bottles of regular soft drink containing 235 ml can be poured into a family size soft drink whose capacity is 1 L?
   a. 2   b. 4   c. 6   d. 8

Lesson 2   Metric unit of length conversion

Did you know?

Nowadays the use of the metric system of measurement is recommended because computations are easier in this system since it uses the power of 10. There are prefixes that describe each power of 10. The table below shows some of the prefixes used in the metric system of measurement.

Prefixes	Symbol	Value	Power of 10
Milli	m	0.001 or 1/1000	10^{-3}
Centi	c	0.01 or 1/100	10^{-2}
Deci	d	0.1 or 1/10	10^{-1}
Deka	da	10	10^{1}
Hecto	h	100	10^{2}
Kilo	k	1000	10^{3}

The millimeter (mm), centimeter (cm) and decimeter (dm) are metric units used to measure short lengths.

The meter (m) and kilometer (km) are metric units used to measure long length and distances.

Exploration

Activity 1 Comparison of units

- The table above shows the values of various units in the metric system. What is the basic unit in the metric system?_____
- Which is longer: a meter or kilometer?_____
- Which is longer: a decimeter or hectometer?_____
- Which is longer: a meter or centimeter?_____
- What is the equivalent of 3 meters in centimeter?_____

    Solution: Since there are 100 centimeters in a meter, then there are 300 centimeters in 3 meters.

Activity 2 Conversion of units

Steps in Conversion:

1. Identify the unit you are starting with.
2. Identify the unit you want to end with.
3. Find the conversion factor/s that will convert the starting unit to the ending unit.
4. Set up the mathematical expression so that all units except the unit you want to end with will be cancelled.

Example 1.

   Convert 3 m to cm.

   Solution: $3 \text{ m} \times \dfrac{100 \text{ cm}}{1 \text{ m}} = 300 \text{ cm}$

Example 2.

Convert 34 km to m.

Solution: $34 \text{ km} \times \dfrac{1000 \text{ m}}{1 \text{ km}} = 34\ 000 \text{ m}$

Example 3.

Convert 850 mm to m.

Solution: $850 \text{ mm} \times \dfrac{1 \text{ m}}{1\ 000 \text{ mm}} = 0.85 \text{ m}$

Example 4

Convert 6800 cm to m.

Solution: $6800 \text{ cm} \times \dfrac{1 \text{ m}}{100 \text{ cm}} = 68 \text{ m}.$

Do you find it interesting?

Example 5.

Let's try converting the following:

1. 4 500 cm   = _____ dam
2. 85 200 m   = _____ hm
3. 92 k   = _____ dm
4. 6 000 mm   = _____ km
5. 0.38 da   = _____ m

Self-check 2

A. Find the value of x that will make the equation correct.

1. 8dm • $\dfrac{1\ dam}{x}$ = .08 dam

2. 420 cm • $\dfrac{x}{100\ cm}$ = 4.2 m

3. 55 km • $\dfrac{10\ hm}{1\ km}$ = x

4. 450 dm • $\dfrac{x}{1\ dm}$ = 4,500 cm

5. 34 hm • $\dfrac{x}{1\ hm}$ = 340,000 cm

6. 2.5 km • $\dfrac{100\ dam}{1km}$ = x

7. 86 dm • $\dfrac{x}{1dm}$ = 8,600 mm

8. 3,500 cm • $\dfrac{1\ m}{x}$ = 35 m

9. 7,600 dam • $\dfrac{1km}{x}$ = 76 km

10. 34 km • $\dfrac{x}{1\ km}$ = 340,000 dm

B. Solve the following problems. Encircle the letter corresponding to the best answer.

1. A peso bill is about 6.5 cm wide. What is the width of the bill in millimeter?
   a. 0.65 mm   b. 6.5 mm   c. 65 mm   d. 650 mm

2. The most common ceiling height of Filipino houses is 2.5 m. What is equivalent of this height in centimeters?

a. 0.25 cm   b. 25 cm   c. 250 cm   d. 2 500 cm

3. The distance between two street lamp posts is 25 m. What is the total distance between 5 lamp posts in dekameter?
   a. 1.25 dam   b. 12.5 dam   c. 125 dam   d. 1 250 dam

4. A transmitting power line is 35 m tall. What is the height of a cable which is placed 4/5 of its height?
   a. 25m   b. 28 m   c. 30 m   d. 25 m

5. A carpenter wants to make a rectangular fence whose length is 5 m and whose width is 2 m. How many meters of fencing wire will he need to enclose the whole area?
   a. 10 m   b. 14 m   c. 20 m   d. 28 m

Lesson 3 Short cut method of conversion

In Lesson 2, you have learned how to convert one metric unit to another metric unit. In this lesson, let's take an easier way of converting one metric unit to another metric unit.

Did you know?

The metric system is the most widely used and accepted system of measurement.

The meter is the basic unit of length. The meter used to be defined as one ten-millionth of the distance from North Pole to the equator. Now, it is defined as the distance traveled by light in a vacuum during a time interval of $\dfrac{1}{299792458}$ of a second.

Activity 1

Use the following to convert the metric units.

Milli
↓
Centi
↓
Deci
↓
Meter/Gram/Liter
↓
Deka
↓
Hecto
↓
Kilo

Did you know?

Rules for Conversion

From smaller unit to larger unit.

Move the decimal point of the given number to be converted k places to the left, where the value of k is the number of arrows from the smaller unit to the larger unit in the diagram.

From larger unit to smaller unit

Move the decimal point of the given number to be converted k places to the right, where the value of k is the number of arrows from the larger unit to the smaller unit in the diagram.

Example 1.

Convert 900 cm to dekameter.

Solution:

Since there are 3 arrows from centimeter to dekameter and the movement of decimal is from right to left because the conversion of unit is from smaller to larger unit, then move the decimal point 3 places to the left. Therefore, 900 cm = 0.9 dam.

Example 2.

Convert 3 450 dm to kilometer.

Solution:

There are 4 arrows from decimeter to kilometer and the movement is also from right to left since the conversion is from smaller unit to larger unit. Therefore, move the decimal point 4 places to the left. Thus, 3 450 dm = 0.345 km.

Example 3.

Convert 265 hm to centimeter.

Solution:

Since there are 4 arrows from cm to hm and the movement, this time, is from left to right because the unit being converted is from bigger unit to smaller unit, then move the decimal point 4 places to the right. Thus, 265 hm = 2 650 000 cm.

Example 4

Convert 28 km to centimeter.

Solution:

Since there are 5 arrows from centimeter to kilometer and the movement is from left to right, therefore, 28 km = 2 800 000 cm.

Activity 2.

- How many meters are there in 22 km?_____

- How many millimeters are there in 942 dm?_____

- How many dekameters are there in 5 890 km?_____

- How many hectometers are there in 3 200 cm?_____

- How many meters are there in 840 cm?_____

(✓) *Self-check 3*

Using the shortcut method of conversion, convert the following:

1.	8 256 m = _____km		6.	120 hm = _____dm	
2.	25 000 mm = _____hm		7.	42 km = _____m	
3.	864 dm = _____dam		8.	8.16 m = _____cm	
4.	3 450 000 cm = _____km		9.	0.012 dm = _____mm	
5.	317 000 cm = _____hm		10.	0.59 dam = _____dm	

Answer Key on page 28

Lesson 4 Metric conversion mass(weight)

Mass and weight are very much related, but the two are not the same. The mass of an object is the amount of matter it contains. The weight, on the other hand, is the pull of gravity on the object. The mass of an object does not change but the weight of an object changes. The weight of an astronaut on earth differs from his/her weight on the moon.

In this lesson you will become familiar with the conversion of the unit of mass. The short cut method you have learned in lesson 3 can be used in converting one unit of mass to another unit.

Did you know?

The gram is the unit of mass in the metric system. It is used to weigh light objects. The weight of an ordinary paper clip is about one gram.

A kilogram is the weight of 1 liter of water in its densest state.

The standard metric unit of mass is a cylinder made of a hard metal called platinum – iridium. It weighs one kilogram and is kept in France.

Activity 1

- What things do you usually weigh?_____

- What do you use to measure your weight?_____

- What units of weight are often used for weighing fruits and vegetables?
  _____

- The following table shows the conversion of the different weight measure:

Table of weight measurement

Unit of weight		Equivalent weight
10 milligrams	mg	1 centigram
10 centigrams	cg	1 decigram
10 decigrams	dg	1 gram
10 grams	g	1 dekagram
10 dekagrams	dag	1 hectogram
10 hectograms	hg	1 kilogram (kg)

- From the table, since 10 mg is equivalent to 1 cg and 10 cg is equivalent to 1 dg, therefore, 100 mg is equivalent to 1 dg. What is the equivalent of 1 g to mg?_____

- What is the equivalent of 1 kilogram in gram?_____

- What is the equivalent of 1 kilogram in milligram?_____

Activity 2

- Fill up the table below by converting one unit to the other.

Metric unit	1 gram	1 dekagram	1 hectogram	1 kilogram
milligram	1 000 mg			
centigram		1 000 cg		
decigram			1 000 dg	
gram	1 g			1 000 g

- The table shows that 1 000 mg equals 1 gram. What is the equivalent of 1 dag in centigram? _____

- What is the equivalent of 1 hectogram in decigram?_____

- What is the equivalent of 1 kg in gram?_____

Activity 3

- Construct another conversion table by filling up the table below:

Metric unit	1 milligram	1 centigram	1 decigram	1 gram
Gram	1/1 000 g			
Dekagram		1/1 000 dag		
Hectogram			1/1 000 hg	
Kilogram				1/1000 kg

- The table shows that 1 mg equals 1/1 000 gram. What is the equivalent of 1 centigram in dekagram?_____

- What is the equivalent of 1 dekagram in hectogram?_____

- What is the equivalent of 1 gram in kilogram?_____

Activity 4

Let us convert any unit of metric weight to another unit of metric weight

Example 1.

Convert 350 g to kilogram.

Solution:

$$350 \text{ g} \times \frac{1 \text{ Kg}}{1\ 000 \text{ g}} = 0.35 \text{ kg}$$

Example 2.

Convert 48 hg to centigram.

Solution:

$$48 \text{ hg} \times \frac{10\ 000 \text{ cg}}{1 \text{ hg}} = 480\ 000 \text{ cg}$$

A. Convert the following to the indicated unit:

1. 3 kg = _____ dg

2. 0.5 g = _____ mg

3. 28.6 dag = _____ g

4. 400 hg = _____ dag

5. 5 100 dg = _____ mg

6. 24 cg = _____ g

7. 18 mg = _____ hg

8. 240 dg = _____ kg

9. 540 g = _____ dag

10. 28 000 cg = _____ kg

B. Solve the following problems. Encircle the letter corresponding to the best answer.

1. If a meat costs P130.00 a kilo, how much will 500 grams of meat cost?
   a. P65.00   b. P100.00   c. P130.00   d. P260

2. A box contains 12 cans of sardines. If each can weighs about 250 gram, what is the total weight of the box in kilogram?
   a. 2 kg   b. 3 kg   c. 4 kg   d. 5 kg

3. A bottle contains 90 vitamin C tablets. If each tablet contains 500 mg of vitamins, how many grams of vitamins are there in all?
   a. 4.5 g   b. 45 g   c. 450 g   d. 4 500 g

4. If a boat can accommodate 50 000 kg of goods in its storage, how many boxes of goods can be stored in the boat if each box weighs 20 kg?
   a. 25 boxes   b. 250 boxes   c. 2 500 boxes   d. 25 000 boxes

5. Luna sold fifty (50) kilograms of pork at P130 a kilo. How much did the pork cost in all?
   a. P1 300   b. P6 500   c. P13 000   d. P65 000

Lesson 5 Metric conversion of mass(weight)

Capacity and volume are synonymous terms although they have different meanings. Volume is defined as the amount of space a region takes up while capacity is defined as how much a certain container will hold. It follows that anything that can be poured is measured in capacity units. The lesson focuses only on the unit of capacity and its conversion.

Did you know?

An average person must drink 8 to 10 glasses of water a day!

A cubic centimeter (cm^3) or one millimeter (ml) of water weighs one gram.

A thousand cubic centimeters or one liter of water weighs one kilogram at 4 ^{0}C.

Activity 1 Connecting to health

- Do you know the capacity of your drinking glass or cup?_____
- Get a clean empty bottle of 350 ml soft drink. Fill the 350 ml soft drink bottle with water from your drinking glass or cup. Which has a greater capacity, the 350 ml of soft drink bottle or your drinking glass?_____
- Approximately what is the capacity of your drinking glass or cup?_____
- Fill a liter of soft drink with water from your drinking glass. Approximately how many drinking   cups   of   water   did   you   pour   into   the   liter   of   soft drink?_____
- A glass contains 210 ml of water. How many glassfuls of water can be contained in a liter bottle? _____
- Based from the above activities, how many liters of water must you drink every day?_____

Activity 2

- Fill up the conversion table below:

Metric unit	1 liter	1 dekaliter	1 Hectoliter	1 kiloliter
Milliliter	1 000 ml			
Centiliter	100 cl			
Deciliter	10 dl			
Liter	1 l			

- From the above table, the conversion of 1 000 milliliter equals 1 liter. What is the equivalent of 1 kilo in milliliter? _____

- What is the equivalent of 1 hectoliter in centiliter? _____

- What is the equivalent of 1 dekaliter in liter? _____

Activity 3

- Construct another conversion table by filling up the table below:

Metric unit	1 milliliter	1 centiliter	1 deciliter	1 liter
Liter	1/1 000 l			
Dekaliter	1/10 000 dal			
Hectoliter	1/100 000hl			
Kiloliter	1/1 000 000 kl			

- One mililiter equals 1/1 000 liter. What is the equivalent of 1 centiliter in liter? _____

- What is the equivalent of 1 centiliter in dekaliter? _____

- What is the equivalent of 1 liter in kiloliter? _____

Activity 4

Using the above conversion tables , you can convert any unit of capacity to another unit.

Example 1

Convert 414 600 milliliter to dekaliter.

Solution: 414 600 ml x $\dfrac{1\ dal}{10\ 000\ ml}$ = 41.4 dal

Example 2.

Convert 26 liter to centiliter?

Solution: 26 l x $\dfrac{100,\ cl}{1\ l}$ = 2 600 cl

Self-check 5

Convert the following:

1.	43 kl = _____ cl		6.	4.3 dl = _____ hl	
2.	3.9 dal = _____ dl		7.	35 dl = _____ l	
3.	34.08 hl = _____ l		8.	12 000 l = _____ kl	
4.	240 dl = _____ ml		9.	180 cl = _____ dal	
5.	5 600 l = _____ cl		10.	35 000 ml = _____ dl	

Lesson 6 Measurement of time

This lesson will increase your awareness about the importance of time and will encourage you to spend your time properly.

Did you know?

Time is measured by the rotation of the earth on its axis which is equivalent to a whole day and the revolution of the earth around the sun which is equivalent to one year (365 ¼ days). Every four years, a day is added to account for the ¼ day in excess each year. Such year with 29 days in February is called a leap year.

- Here is how Kenneth spends his time for the whole day.

Schedule of Kenneth

5:00 – 6:00   preparing for school
6:00 – 3:00   attending class
3:00 – 5:00   siesta
5:00 – 7:00   doing his homework
7:00 – 8:00   supper time
8:00 – 5:00   bed time

- How many hours does he attend his class? _____

- Express the time he spends in school in minutes. _____

- Express the time he spends in school in seconds. _____

The table that follows shows the units used to measure time and their equivalences. Use this table to convert measurement of time to another.

60 seconds	1 minute
60 minutes	1 hour
24 hours	1 day
12 months	1 year
365 days	1 year
366 days	1 leap year
10 years	1 decade
20 years	1 score
100 years	1 century
1 000 years	1 millennium

- How many seconds are there in 1 day?

    Solution: 1day x $\frac{24\ hours}{1\ day}$ x $\frac{60\ minutes}{1\ hour}$ x $\frac{60\ seconds}{1\ minute}$
    = 86 400 seconds.

- How many hours are there in a year?
    Solution: 1 year x $\frac{365\ days}{1\ year}$ x $\frac{24\ hours}{1\ day}$ = 8 760 hours

- How many decades are there in 3 centuries?_____
- How many decades are there in 2 millennium? _____
- How many days are there in a score? _____

✓ Self-check 6

Convert the following:

1. 420 days = _____h

2. 8 decades = _____ year

3. 5 centuries= _____ decade

4. 240 min. = _____ second

5. 48 hours = _____ second

6. 18 min. = _____ hour

7. 60 hours= _____ days

8. 12 years = _____ hour

9. 180 seconds = _____ min.

10. 4 800 hours = _____ day

Let's summarize

- Measurement is the method of determining the length, quantity, weight, or amount of something by comparing an unknown quantity to a standard known quantity.

- There are two standard system of measurements that we are using, the English system and the metric system

- Prefixes used in metric system

Prefixes	Symbol	Value	Power of 10
milli	m	0.001 or 1/1000	10^{-3}
centi	c	0.01 or 1/100	10^{-2}
deci	d	0.1 or 1/10	10^{-1}
deka	da	10	10^{1}
hecto	h	100	10^{2}
kilo	k	1000	10^{3}

Rules for short cut method of conversion.

  ❏ *From smaller unit to larger unit:*

   Move the decimal point of the given number to be converted k places to the left, where the value of k is the number of arrows from the smaller unit to the larger unit in the diagram.

  ❏ *From larger unit to smaller unit:*

   Move the decimal point of the given number to be converted k places to the right, where the value of k is the number of arrows from the larger unit to the smaller unit in the diagram.

Direction: Encircle the letter of the best answer.

1. A bag of sugar weighs 35 kilograms. What is its weight in gram?
    a. 3.5 g
    b. 350 g
    c. 350 g
    d. 35,000 g

2. Which of the following devices will you use to measure a fabric?
    a. ruler
    b. measuring cup
    c. tape measure
    d. graduated cylinder

3. Which of the following is the longest time?
    a. 2 days
    b. 50 hours
    c. 3600minutes
    d. 180 000 seconds

4. A dress needs 2 meters of cloth. What is its equivalent in centimeter?
    a. 20 cm
    b. 200 cm
    c. 2 000 cm
    d. 20 000 cm

5. The distance between two electric posts is 500 meters. What is this in kilometers?
    a. 0.25 km
    b. 0.5 km
    c. 5 km
    d. 50 km

6. What is the basic unit of length in the metric system of measurement?
    a. liter
    b. meter
    c. centimeter
    d. kilogram

7. Two decades is equal to _____ years.
   a. 20
   b. 200
   c. 2,000
   d. none of the above

8. The basic unit of capacity is:
   a. liter
   b. meter
   c. gram
   d. Celsius

9. The equivalent of 348 gram to centigram is:
   a. 3.48 cg   c. 348 cg
   b. 34.8 cg   d. 34 800 cg

10. Rosario bought 1.3 kg of bangus fish while Katherine bought 1 200 grams of galunggong fish. Who of the two bought more?
    a. Rosario   c. Both are equal
    b. Katherine   d. none of them

11. Kamille took one hour and 25 minutes to finish her test. How many minutes in all did she spend for the quiz?
    a. 25 minutes   c. 90 minutes
    b. 85 minutes   d. 125 minutes

12. Mayet prepared a chocolate mixture of about 2 000 g. If a chocolate bar she is preparing contains about 50 cg, how many bars of chocolate can she prepare?
    a. 40 bars   c. 4 000 bars
    b. 400 bars   d. 40 000 bars

13. Grace started to study at 6:00 in the evening. If she studied for 100 minutes, when did she stop studying?
    a. 8:00 PM   c. 10:00 PM
    b. 7:40 PM   d. 11:00 PM

14. The height of the flagpole is 5.25 m. What is the length of the flagpole in centimeter?
    a. 0.525 cm   c. 525 cm
    b. 52.5 cm   d. 5 250 cm

15. It takes about 1 hour and 30 minutes to drive from Manila to Tagaytay. What is the approximate time of arrival in Tagaytay if the driver leaves Manila at 7:30 AM?
    a. 8:00 am   c. 9:00 AM
    b. 8:30 AM   d. 9:30 AM

Answer Key on page 29

🔑 Answer Key

Pretest page 3

1	a	6.	d	11	a
2	a	7	d	12	b
3	b	8	d	13	b
4	a	9	b	14	b
5	c	10	a	15	a

Lesson 1 *Self Check 1* page 7

A

					B	
1	Graduated cylinder	6.	Clock		1	B
2	Thermometer	7	Thermometer		2	B
3	Weighing scale	8	Weighing scale		3	D
4	Ruler	9	Meter stick		4	B
5	Tape measure	10	Weighing scale		5	B

Lesson 2 *Self Check 2* page 10

A

					B	
1	x = 100 dm	6.	x = 250 dam		1	C
2	x = 1 m	7	x = 100 mm		2	C
3	x = 550 hm	8	x = 100 cm		3	B
4	x = 10 cm	9	x = 100 dam		4	B
5	x = 10,000 cm	10	x = 10,000 dm		5	B

Lesson 3 *Self Check 3* page 15

1	8.256 km	6.	120,000 dm
2	0.25 hm	7	42 000 m
3	8.64 dam	8	816 cm
4	34.5 km	9	1.2 mm
5	31.7 hm	10	59 dm

Lesson 4 *Self Check 4* page 19

A

					B	
1	30,000 kg	6.	0.24 g		1	A
2	500 mg	7	0.00018 hg		2	B
3	286 g	8	0.02 kg		3	A
4	4,000 dag	9	54 dag		4	C
5	510,000 mg	10	0.28 kg		5	B

Lesson 5 *Self Check 5* page 22

1	4,300,000 cl		6.	0.0043 hl
2	390 dl		7	3.5 l
3	3 408 l		8	12 kl
4	24 000 ml		9	0.18 dal
5	560 000 cl		10	350 dl

Lesson 6 *Self Check 6* page 24

1	10,080 hrs		6.	3/10 hr
2	80 yrs		7	5/2 days
3	50 decades		8	105 120 hrs
4	14,400 sec		9	3 min
5	172 800 sec		10	200 days

Post test page 26

1	d		6.	b		11	b
2	c		7	a		12	c
3	c		8	a		13	b
4	b		9	d		14	c
5	b		10	a		15	c

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