



## What Is This Module About?

Measurement is used in many things that you do every day. You measure the lengths of pieces of cloth that you buy in the store, the length of your skirt or your pants. You want to maintain your figure, so you measure your waistline. You might also want to measure or estimate the distance between two places you want to visit. You will find computing the perimeter and circumference of varying geometric shapes useful in your day-to-day activities.



## What Will You Learn From This Module?

In this module, you will learn more about linear measurements. You will also learn how to determine the perimeter of polygons and circles. More importantly, you will be able to use your knowledge of measurements in everyday life situations.

This module is divided into three lessons. These are:

Lesson 1 – *Linear Measurements*

Lesson 2 – *Finding the Perimeter*

Lesson 3 – *Finding the Circumference*

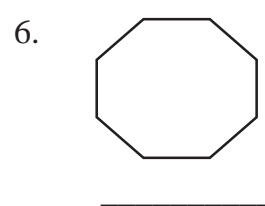
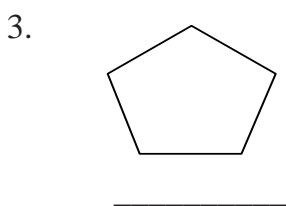
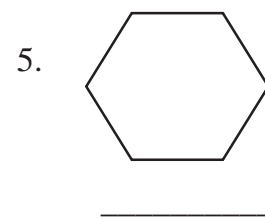
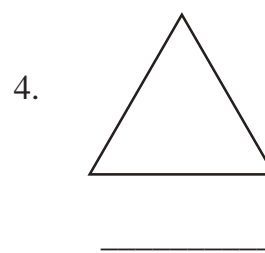
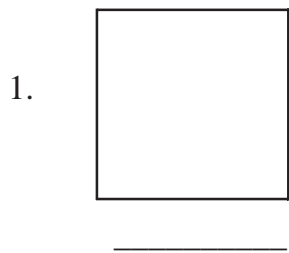


## Let's See What You Already Know

Before you start reading this module, answer first the questions that follow to determine how much you already know the topics to be discussed.

- A. Identify the figures on the next page by writing your answers on the lines provided. The words in the box below will help you find the answers.

square	hexagon
rectangle	octagon
pentagon	triangle



**B. Fill in the blanks.**

1. A meter is \_\_\_\_\_ than a kilometer.
2. There are \_\_\_\_\_ centimeters (cm) in 1 meter (m).
3. A yard is \_\_\_\_\_ than a meter.
4. My height in centimeters is \_\_\_\_\_.
5. Draw a rectangle 3 cm wide and 6 cm long.
  
6. My house is about \_\_\_\_\_ meters away from my school.
7. Mang Pandoy's backyard garden is 12 meters long and 8 meters wide. What is its perimeter? \_\_\_\_\_

8. How many meters of wire are needed to fence a garden 24 meters wide and 28 meters long? \_\_\_\_\_
9. The diameter of a *bilao* is 18 centimeters. What is its circumference?  
\_\_\_\_\_
10. Mrs. Perez owns a round dining table. Its diameter is 120 cm. What is its circumference? \_\_\_\_\_

Well, how was it? Do you think you fared well? Compare your answers with those in the *Answer Key* on page 27 to find out.

If all your answers are correct, very good! This shows that you already know much about the topics in this module. You may still study the module to review what you already know. Who knows, you might learn a few more new things as well.

If you got a low score, don't feel bad. This means that this module is for you. It will help you understand some important concepts that you can apply in your daily life. If you read this module carefully, you will learn the answers to all the items in the test and a lot more! Are you ready?

You may go now to the next page to begin Lesson 1.

## Linear Measurements

Welcome to Lesson 1. In this lesson, you will do some practical exercises in measuring objects using different metric units such as the meter, centimeter and kilometer. You will be converting standard units to larger units and vice versa. You will also identify probably some indigenous units of measurement that are still used in rural areas. You probably love to travel and visit interesting places. In this lesson, you will get to do exercises in estimating the distance between two places.



### Let's Try This

How tall are you?

Work with a friend or a member of your family. Get a ruler or measuring tape. Make an improvised height scale against a wall in your home. Use the centimeter as your unit.

Measure the height of your partner.

What is his/her height in centimeters? \_\_\_\_\_

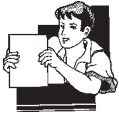
How about you, what is your height in centimeters? Record it in your notebook.

Who is taller? \_\_\_\_\_ By how many centimeters? \_\_\_\_\_

When you use the centimeter as your unit of measurement, you are using the metric system. When you use yards, feet and inches, you are using the English system.

Choose five objects in your home. Measure the length and width of each object in centimeters. Make a chart similar to the one below and record your answers.

Object	Length (cm)
1.	
2.	
3.	
4.	
5.	



## Let's Learn

Study the table below.

1 centimeter (cm)	=	10 millimeters (mm)
1 meter (m)	=	100 centimeters (cm)
1 meter (m)	=	10 decimeters (dm)
1 decimeter (dm)	=	10 centimeters (cm)
1 kilometer (km)	=	1000 meters (m)

Using the table, convert the following measurements.

- $\frac{1}{2}$  m = \_\_\_\_\_ cm
- $1\frac{1}{2}$  m = \_\_\_\_\_ cm
- 500 m = \_\_\_\_\_ km
- 20 dm = \_\_\_\_\_ m
- 20 cm = \_\_\_\_\_ dm

You will see in the table that the symbol for meter is m; for centimeter, cm; for decimeter, dm; and for kilometer, km.

Compare your answers with mine.

- 50 cm
- 150 cm
- $\frac{1}{2}$  km
- 2 m
- 2 dm

In some stores, yards, feet and inches are still used as units of length. There are (approximately) 90 cm in one yard and 30 cm in 1 foot.

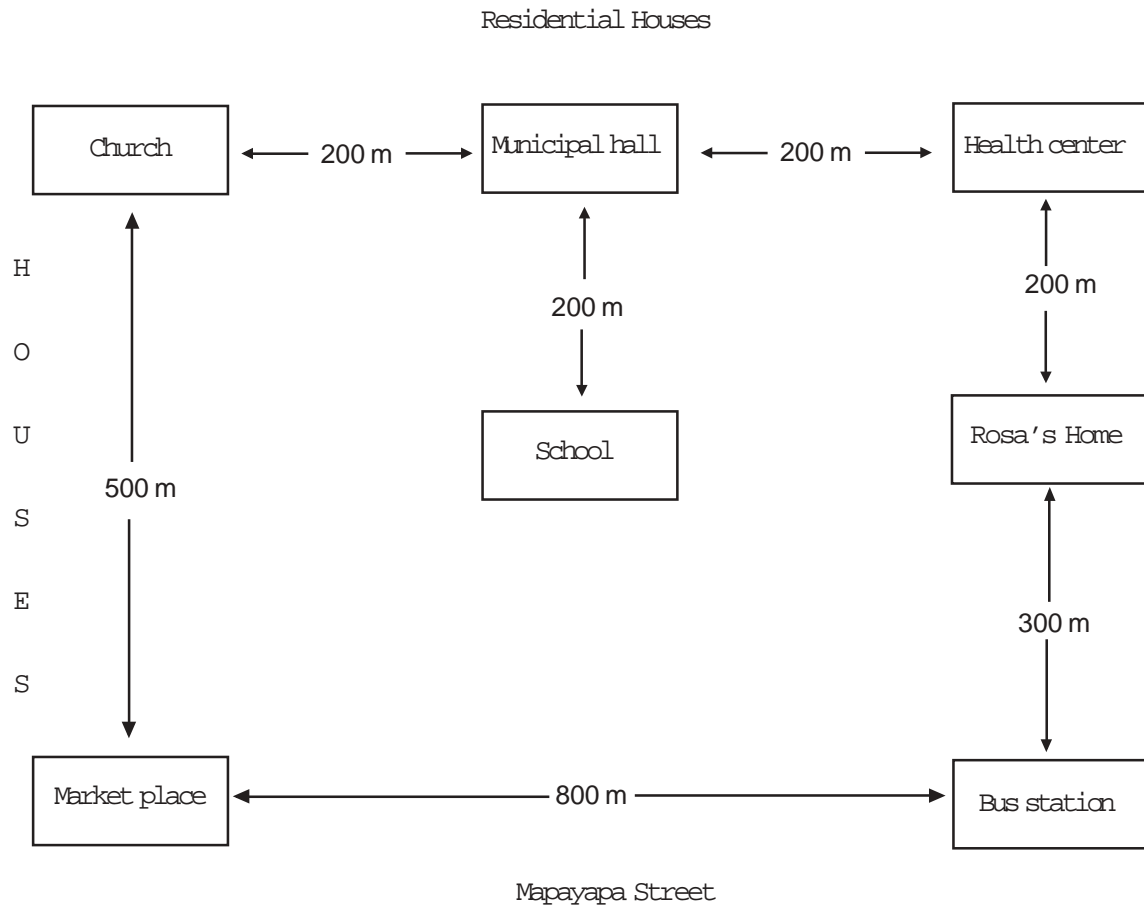
In remote areas where a meterstick is not available, what do the people use to measure objects? Have you heard people say such words as *dangkal*, *dipa* and *hakbang*? These are called **indigenous units of measurement**. Are measurements using these units precise? Why?

The *dangkal*, *dipa* and *hakbang* are not precise units of measurement. The results depend on how long the feet and fingers of the person doing the measurement are. Hence, measurements using these as units usually vary and cannot be precise. Most of the time, they are not accurate either.



## Let's Study and Analyze

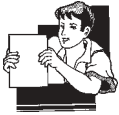
Look at the map below then answer the questions that follow.



1. How far is the school from the municipal building? \_\_\_\_\_
2. What building is nearest Rosa's home? \_\_\_\_\_
3. How far is the market from the bus station? \_\_\_\_\_
4. What unit of measurement is used? \_\_\_\_\_

Compare your answers with mine:

1. The school is 200 m from the municipal building.
2. The health center is the building nearest Rosa's home.
3. The market is 800 m away from the bus.
4. The meter is the unit of measurement used.



## Let's Learn

Do you know why the meter is the standard unit of measurement in the Philippines? In 1978, Batas Pambansa Bilang 8 was issued, prescribing the use of the metric system in all transactions, contracts, documents, business or trade. The metric system is easy to use since the units are in multiples of ten. You will notice that the kilometer is used for measuring distances while the meter is used for measuring fabrics, plastic ropes and other similar items. Your height is measured either in meters or in centimeters.

Do you think it is generally easier and more convenient to use the metric system in all transactions? Why?



## Let's Try This

The base unit of length of the metric system is the meter. All other metric units of length are derived from the meter. Get a meterstick, ruler or measuring tape. Then answer the following questions.

1. What smaller units of measurement can you find in the meterstick, ruler or measuring tape?

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2. How many centimeters are there in one meter? How many millimeters are there in one centimeter? \_\_\_\_\_

---

3. What unit of measurement is used for measuring distances? How many meters are there in a kilometer?

---

4. Have you seen the sign 60 kph along the road? What does it mean?

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Compare your answers with mine:

1. Smaller units of measurement that can be found on the meterstick, ruler or measuring tape are the millimeter and/or centimeter.
2. There are 100 centimeters in 1 meter. There are 10 millimeters in 1 centimeter.
3. The kilometer is used for measuring distances. One kilometer contains 1000 meters.
4. 60 kph means 60 kilometers per hour. This is the speed limit for vehicles passing through the road.



## Let's Review

A. Write the equivalent measurement in each box.

1. 5 m =  cm
2. 100 m =  cm
3. 200 cm =  m
4. 20 dm =  m
5. 3000 m =  km
6. 2 km =  m

- B.
1. What is the height in meters of the flagpole in front of your municipal/city hall? Ask somebody to get its actual length. How good was your estimate?
  2. Get the height of your father or your brother in centimeters.
  3. What is the length of your dining table in meters? Get the actual length. How good was your estimate?
  4. How far is your house from the health center?
  5. How far is your town from the capital of your province?

Compare your answers with the sample answers in the *Answer Key* on pages 27 and 28.





## Let's See What You Have Learned

- A. Put a check (✓) on the line before the pair of equivalent measurements and a cross (X) on the line before non-equivalent measurements.

\_\_\_\_\_ 1. 50 cm =  $\frac{1}{2}$  m

\_\_\_\_\_ 2. 200 cm = 2 m

\_\_\_\_\_ 3. 20 mm = 10 cm

\_\_\_\_\_ 4. 1 yd. = 100 cm

\_\_\_\_\_ 5. 1 dm = 10 cm

- B. Solve the following problems. Write your computations on a separate sheet of paper.

1. Dina has two pieces of cloth that are 90 cm and 60 cm long respectively. How many meters of cloth does she have in all?
2. Dindo finished a 1500-meter race. How many kilometers did he run?
3. What is the length of a ten-peso bill in centimeters?
4. The municipal hall is about 500 m away from the school. What is the equivalent distance in kilometers?

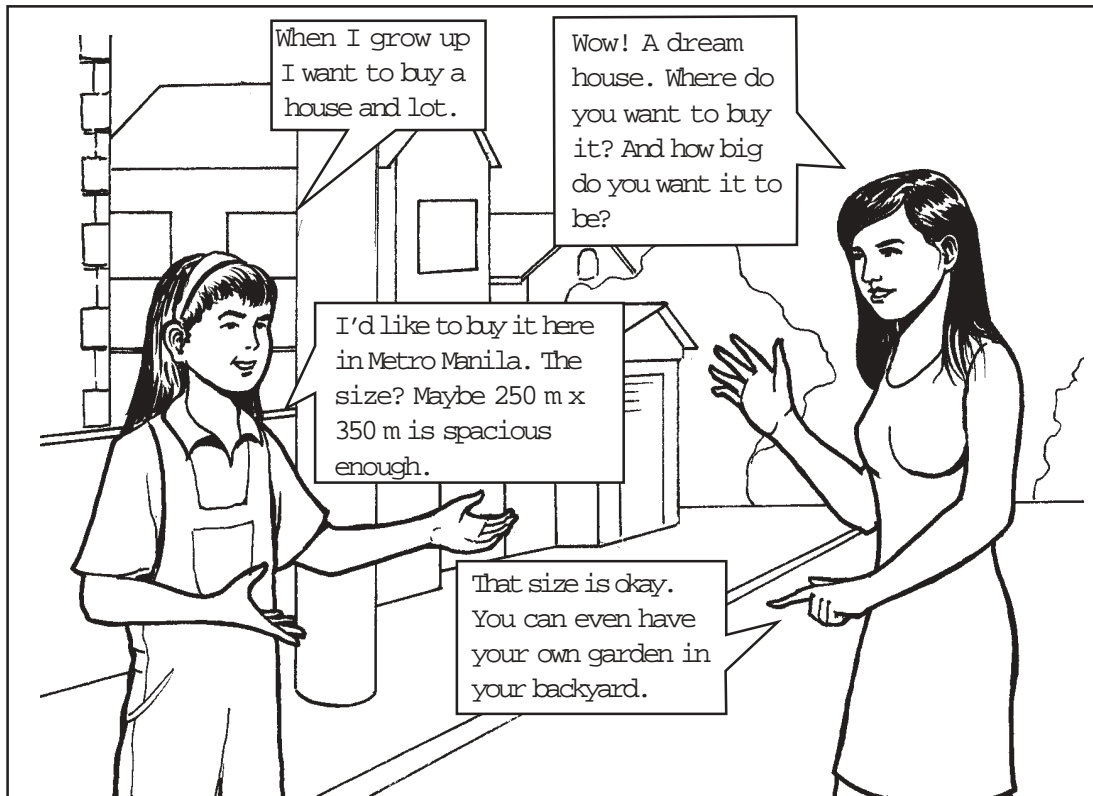
Compare your answers with those in the *Answer Key* on page 28. Did you get a perfect score? If you did, congratulations! You are ready to move on to Lesson 2. If not, that's okay. Just review this lesson before proceeding to Lesson 2.



## Let's Remember

- ◆ The metric system is the measurement system used in the Philippines. Measurements in this system are in multiples of 10. There are also indigenous units of measurement but these are not precise and are rarely accurate.
- ◆ The base unit of length of the metric system is the meter.

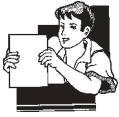
### Finding the Perimeter



You probably dream of having your own house someday. Just keep in mind that you will realize that dream if you work really hard.

How big is the house that the girl in the picture above wants to have? Can you tell how spacious her house will be? In this lesson you will learn to find the distance around a lot, farm or house.

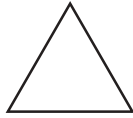
The distance around an area is called the **perimeter**. There are many practical advantages of knowing how to compute for the perimeter.



## Let's Learn

Look at the polygons below. Try to name the polygons in the spaces provided.

1.



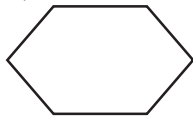
\_\_\_\_\_

4.



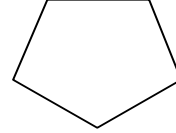
\_\_\_\_\_

2.



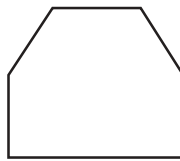
\_\_\_\_\_

5.



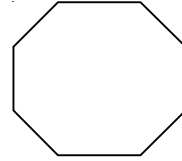
\_\_\_\_\_

3.



\_\_\_\_\_

6.



\_\_\_\_\_

Are your answers the same as mine?

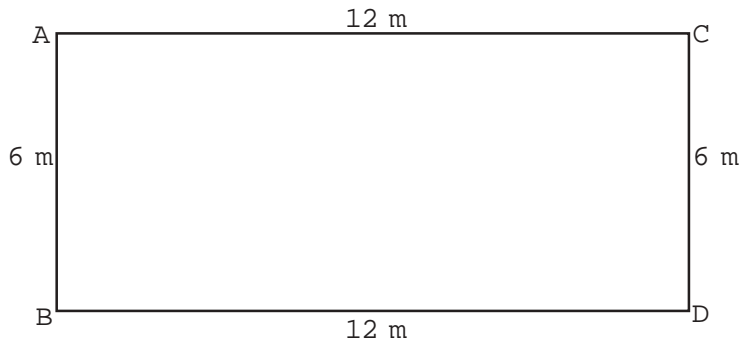
1. triangle
2. hexagon
3. hexagon
4. rectangle
5. pentagon
6. octagon

Are all your answers correct? If they are, that's very good!

Examine closely the different shapes of polygons again. Count the sides of each polygon. What do you notice about the name of the polygon and the number of its sides? Did you notice that the name of the polygon is related to the number of its sides? Well, you are right! The name of a polygon is derived from the number of its sides. Study the table on the next page. It is a list of polygons and their corresponding numbers of sides.

Polygon	Number of Sides
Triangle	3
Quadrilateral	4
Pentagon	5
Hexagon	6
Heptagon	7
Octagon	8

What do you call the polygon below? How many sides does it have?



The polygon above is a quadrilateral because it has four sides. What type of a quadrilateral is it? It is a rectangle. Notice the measurements of the sides of the rectangle. Suppose you are asked to find the perimeter of a rectangle, how are you going to do this?

The **perimeter** of a polygon is the sum of the measurements of all its sides.

To find the perimeter of the rectangle above, you only have to add the lengths of its sides.

The following are the sides of the rectangle and their given measurements:

$$AC = 12 \text{ m}$$

$$BD = 12 \text{ m}$$

$$AB = 6 \text{ m}$$

$$CD = 6 \text{ m}$$

To get the perimeter, add the measurements of the four sides.

$$\begin{array}{r}
 12 \text{ m} \\
 12 \text{ m} \\
 6 \text{ m} \\
 + 6 \text{ m} \\
 \hline
 36 \text{ m} \text{---the perimeter of the rectangle}
 \end{array}$$

Let's look at the sides of the rectangle again. What do you notice about sides AC and BD? What about sides AB and CD? Did you notice that sides AC and BD are equal? Did you also notice that sides AB and CD are equal? If you did, that's very good!

Examine the sides of the rectangle more closely. Which sides of the rectangle do you think represent its length? Which sides represent the width of the rectangle?

In the rectangle, sides AC and BD represent the length of the rectangle. Sides AB and CD represent the width.

You now know that in order to find the perimeter of a rectangle, you have to add the measurements of all its sides. You also know that two sides of the rectangle represent its length while the other two sides represent its width.

$AC = BD = \text{length } l \text{ of the rectangle}$

$AB = CD = \text{width } w \text{ of the rectangle}$

From this, you can come up with a formula for the perimeter of a rectangle:

$$P = (l \times 2) + (w \times 2)$$

where  $P$  = perimeter

$l$  = the length of the rectangle

$w$  = the width of the rectangle

In the rectangle in our example:

$$AC = BD = 12 \text{ m} = l$$

$$AB = CD = 6 \text{ m} = w$$

Using the formula,

$$\begin{aligned} P &= (l \times 2) + (w \times 2) \\ &= (12 \text{ m} \times 2) + (6 \text{ m} \times 2) \\ &= (24 \text{ m}) + (12 \text{ m}) \\ &= 36 \text{ m} \end{aligned}$$

The answer you got when you added the measurements of all the sides of the rectangle is the same as the answer you got when you used the formula above, right?

Now that you know the formula for finding the perimeter of a rectangle, it will be easy for you to find the perimeter of any rectangle.

Study the following problem:

**EXAMPLE :** Ana is interested in buying the vacant lot beside her house. The real estate broker informed her that the lot is 15 meters long and 10 meters wide. What is the perimeter of the lot?

**Solution:** The given facts are:  $l = 15 \text{ m}$   
 $w = 10 \text{ m}$

The problem is: What is the perimeter of the lot?

Using the formula:

$$P = (l \times 2) + (w \times 2)$$

Substitute the values of  $l$  and  $w$  in the formula:

$$\begin{aligned} P &= (15 \text{ m} \times 2) + (10 \text{ m} \times 2) \\ &= (30 \text{ m}) + (20 \text{ m}) \\ &= 50 \text{ m} \end{aligned}$$

Therefore, the perimeter of the lot is 50 meters.

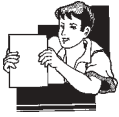


## Let's Review

Find the perimeter of each of the following:

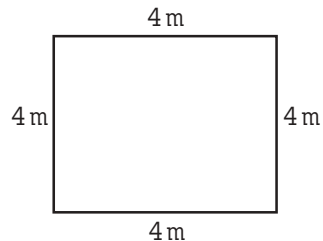
1. A garden 15 meters long and 12 meters wide
2. A lot 10 meters long and 7 meters wide
3. A swimming pool 20 meters long and 12 meters wide
4. The town park 45 meters long and 32 meters wide

Compare your answers with those in the *Answer Key* on page 28.



## Let's Learn

Another type of quadrilateral is the square. The square is a polygon with four equal sides. See the picture below.



Notice that the measurements of all the sides of the square are the same. If you were to compute for the perimeter of a square, how would you do it?

Recall that the perimeter of a rectangle is simply the sum of the measurements of all its sides. The same process is used in finding the perimeter of square.

$$4 \text{ m} + 4 \text{ m} + 4 \text{ m} + 4 \text{ m} = 16 \text{ m}$$

Suppose we represent a side of a square as  $s$ . The perimeter of a square then is:

$$s + s + s + s = 4s$$

Since  $s = 4 \text{ m}$ , then  $4s = 4(4 \text{ m}) = 16 \text{ m}$ .

Did you also arrive at the same answer? Well done!

For a square,  $P = 4s$   
where  $P =$  perimeter of the square  
 $s =$  length of one side of the square



## Let's Try This

Compute for the perimeter of each of the following squares having the given length of side:

1.  $s = 8 \text{ m}$

2.  $s = 12 \text{ m}$

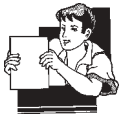
3.  $s = 10.5 \text{ m}$

4.  $s = 25 \text{ m}$

Compare your answers with mine:

1.  $P = 4s$   
 $= 4 (8 \text{ m})$   
 $= 32 \text{ m}$
2.  $P = 4s$   
 $= 4 (12 \text{ m})$   
 $= 48 \text{ m}$
3.  $P = 4s$   
 $= 4 (10.5 \text{ m})$   
 $= 42 \text{ m}$
4.  $P = 4s$   
 $= 4 (25 \text{ m})$   
 $= 100 \text{ m}$

Did you get the correct answers? If you did, that means you're doing great!

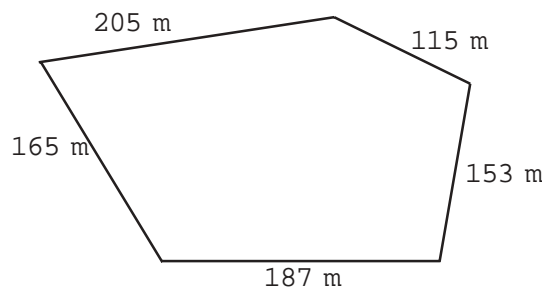


## Let's Learn

There are other polygons aside from the rectangle and square. Some other polygons are the triangle, hexagon, pentagon and octagon. You can also find the perimeters of these polygons by adding the measurements of all their sides.

**EXAMPLE 1:** A rice field is pentagonal in shape. The lengths of its sides are 205 m, 115 m, 153 m, 187 m and 165 m respectively. If the owner wants to fence it with three strands of barbed wire, how many meters of wire in all will be needed?

**Solution:** To find the total number of meters of barbed wire needed to fence the pentagonal rice field, you have to compute for the perimeter of the rice field. Given the measurement of the sides of the field, it would look like this:



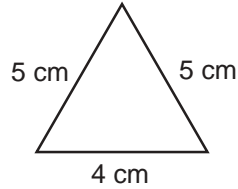
To get its perimeter, simply add all its sides:

$$205 \text{ m} + 187 \text{ m} + 165 \text{ m} + 153 \text{ m} + 115 \text{ m} = 825 \text{ m}$$



The perimeter of the field is 825 m. But the owner wants to fence it with 3 strands of barbed wire. To get the total number of meters of barbed wire needed, we multiply the perimeter by 3. Therefore,  $825 \text{ m} \times 3 = 2475 \text{ m}$ .

**EXAMPLE 2:** Find the perimeter of the triangle below.



**Your solution:** To find the perimeter, \_\_\_\_\_

So, \_\_\_\_\_ = \_\_\_\_\_

Therefore,  $P =$  \_\_\_\_\_

Compare your answers with mine:

To find the perimeter, add the measurements of its sides.

So,  $5 \text{ cm} + 5 \text{ cm} + 4 \text{ cm} = 14 \text{ cm}$

Therefore,  $P = 14 \text{ cm}$



## Let's Review

A. Find the perimeter of each of the following polygons.

1.	3 cm	3.	6 m 8 m
2.	4 cm 2 cm	4.	4 cm 4 cm 10 cm

B. Solve the following problems. Write your computations on a separate sheet of paper.

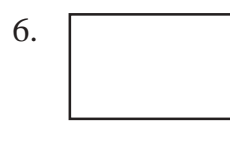
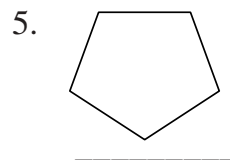
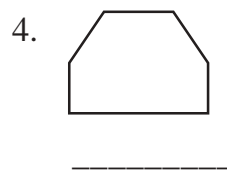
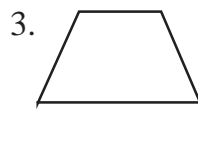
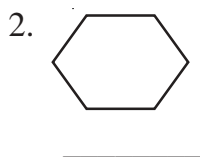
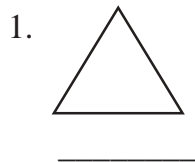
1. Find the perimeter of a dining table 3 meters long and 1 meter wide.
2. Gina bought a residential lot that is 24 meters long and 22 meters wide. How many meters of wire will she need to fence her lot?
3. Mang Pedro's garden is 28 meters long and 25 meters wide. How many meters of cyclone wire will be needed to fence his garden?
4. Mang Pedro's son has a small tilapia pond that is 8 meters long and 6 meters wide. How many meters of rope will be needed to enclose the fish pond?
5. Find the perimeter of your house.

Compare your answers with those in the *Answer Key* on page 29.



## Let's See What You Have Learned

A. Write the names of the polygons in the spaces provided.



B. Solve the following word problems.

1. There are two lots for sale. Lot A is 18 meters long and 12 meters wide while Lot B is 19 meters long and 11 meters wide. Which lot will require a longer barbed wire to fence it?

2. How many meters of rope will Jimmy need to enclose a play area for children that is 12 meters long and 10 meters wide?
3. A barangay health center is 9 meters long and 7 meters wide. What is its perimeter?
4. Behind the health center is a herbal garden that grows aloe vera, oregano and basil. The garden is 12 meters long and 8 meters wide. What is its perimeter?

Compare your answers with those in the *Answer Key* on page 29. If all your answers are correct, that's very good. If not, that's okay. Just review this lesson before moving on to the next lesson.

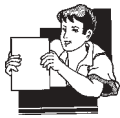


## Let's Remember

- ◆ The perimeter of a polygon is the sum of the measurements of all its sides.
- ◆ For a rectangle,  $P = (l \times 2) + (w \times 2)$   
                   where  $P =$  perimeter of a rectangle  
                                    $l =$  measure of the length  
                                    $w =$  measure of the width
- ◆ For a square,  $P = 4s$   
                   where  $P =$  perimeter of a square  
                                    $s =$  measure of a side of a square

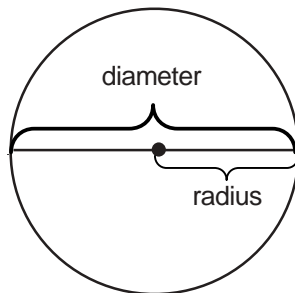
## Finding the Circumference

In Lesson 2, you learned how to compute the perimeter of a polygon. This lesson is similar to the previous lesson, but this time you are going to find the circumference of a circle. While you call the boundary line of a polygon **perimeter**, the boundary line of a circle is called **circumference**.



### Let's Learn

In this lesson, you will encounter new words such as **diameter** and **radius**. Look at the diagram below.



Do you see the straight line passing through the center of the circle? This is called the **diameter**. One-half of the diameter is the **radius**.

Can you identify five objects with circular surfaces in your home?

With a ruler or measuring tape, measure the diameter and radius of the circular surfaces you found in your home. Use metric units in getting measurements.

Use this table for the exercise.

Name of Object	Diameter	Radius
1.		
2.		
3.		
4.		
5.		

Which of the circular surfaces you have identified and measured is the biggest? the smallest?

You will be able to determine differences in the sizes of circular surfaces if you know how to compute for the circumference.

How do you compute for the circumference of a circle? First of all, you will need to use a constant mathematical quantity called **pi** ( $\pi$ ). **Pi**, which is approximately 3.14, expresses the ratio of the circumference of a circle to its diameter. Hence, in order to find the circumference you need to get the product of the diameter and pi.

In computing for the circumference of the circle, you multiply 3.14 ( $\pi$ ) by the diameter. The formula then for the circumference of a circle is  $C = \pi \times d$ .

The circumference of a circle is

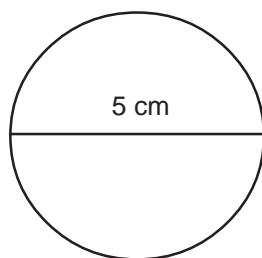
$$C = \pi \times d$$

where  $C$  = the circumference

$$\pi = \text{pi (3.14)}$$

$d$  = diameter of the circle

Below is a circle with a diameter of 5 cm.



Using the formula and substituting the given value, you get:

$$\begin{aligned} C &= 3.14 \times 5 \text{ cm} \\ &= 15.70 \text{ cm} \end{aligned}$$

The circumference of the circle is 15.70 cm.

Suppose you only know the measurement of the radius of a circle. You are asked to compute for circumference. How are you going to do it?

Recall that the radius is one-half the diameter. This means that to get the measurement of the diameter, you simply multiply the radius ( $r$ ) by 2. So,  $d = 2 \times r$ . In the formula for the circumference, we can substitute the value of  $d$  with  $2 \times r$ . Thus, the formula for the circumference of a circle can also be written as:

$$\begin{aligned} C &= \pi (2 \times r) \\ C &= 2\pi r \end{aligned}$$

**EXAMPLE 1:** A circle has a radius measuring 3 cm. What is the circumference?

Given the radius, you can solve for the circumference using:

$$\begin{aligned}C &= 2\pi r \\ &= 2(3.14)(3 \text{ cm}) \\ &= 18.84 \text{ cm}\end{aligned}$$

**EXAMPLE 2:** A circular plate has a radius of 6 inches. What is the circumference of the plate?

**Your solution:**  $C =$  \_\_\_\_\_  
= \_\_\_\_\_  
= \_\_\_\_\_

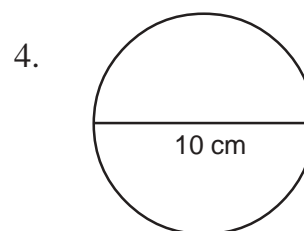
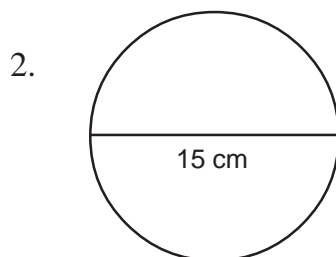
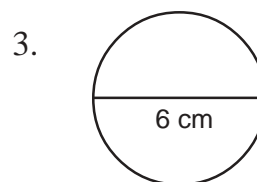
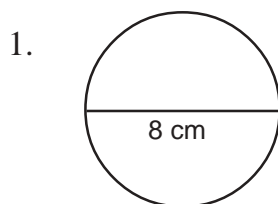
Is your answer the same as this?

$$\begin{aligned}C &= 2\pi r \\ &= 2(3.14)(6 \text{ inches}) \\ &= 37.68 \text{ inches}\end{aligned}$$



## Let's Review

A. Find the circumference of each of the following circles. Round off your answer to the nearest whole number.



B. Compute for the circumference of each the following circles.

1. A round table with a diameter of 90 cm
2. A mirror with a diameter of 18 cm
3. A picture frame with a diameter of 15 cm
4. A circular garden with a radius of 5 m
5. A fountain with a radius of 3 m

Compare your answers with those in the *Answer Key* on pages 29 and 30.



## Let's See What You Have Learned

A. Fill up the following table by computing for the diameter and circumference.

Radius	Diameter	Circumference
1. 16 m		
2. 15 m		
3. 8 cm		
4. 12 cm		
5. 35 cm		

B. Solve the following problems. Write your answers on a separate sheet of paper.

1. Mr. Cruz bought a circular lot with a diameter of 90 m. What is its circumference?
2. A farmer would like to fence his circular garden that has a radius of 40 m. How many meters of wire will he need?

Compare your answers with those in the *Answer Key* on page 30.



## Let's Remember

- ◆ The **circumference** of a circle is the length of its boundary line.
- ◆ In finding the circumference of a circle, the following formula is used:

$$\begin{aligned}C &= \pi \times d \\ &= \pi (2 \times r) \\ &= 2 \pi r\end{aligned}$$

Where  $C$  = circumference  
 $d$  = diameter  
 $\pi$  = pi, equal to 3.14  
 $r$  = radius

You have now reached the end of the module. Congratulations! Your persistence and eagerness to learn are truly admirable. Did you enjoy studying this module? Did you learn a lot from it? The following is a summary of its main points to help you remember them better.



## Let's Sum Up

- ◆ The metric system is used as the standard measurement system in our country.
- ◆ The metric base unit of length is the meter.
- ◆ The perimeter of a polygon is the sum of the measurements of its sides.
- ◆ The circumference is the length of the boundary line of a circle. It is equal to the product of pi and the diameter of the circle.





## What Have You Learned?

A. Fill in the blanks.

1. The perimeter of a \_\_\_\_\_ is equal to 4 times the length of one of its sides.
2. The \_\_\_\_\_ is a metric unit used for measuring distance.
3. The diameter of a circle is equal to twice its \_\_\_\_\_.
4. The approximate value of pi is \_\_\_\_\_.
5. An \_\_\_\_\_ is a polygon with 8 sides.

B. Solve the following problems.

1. How many meters of rope will be needed to fence a rectangular lot 150 meters long and 97 meters wide?
2. A bicycle tire has a radius of 20 cm. What is the circumference of the tire?
3. A building shaped like a pentagon has the following lengths of sides: 120 m, 50 m, 88 m, 125 m and 100 m. Find the perimeter of the building.
4. A circular garden in a park has a diameter of 13 meters. If John jogs around the garden 5 times, what is the total distance that he will cover?
5. Rosa's living room measures  $4\text{ m} \times \text{m}$ . Can she place a circular carpet with a diameter of 4 m on the living room?

Compare your answers with those in the *Answer Key* on pages 30 and 31. If you got a score of:

- 7 – 10    Congratulations! You learned a lot from this module.
- 4 – 6    Good! Just go back to the parts of the module that you did not understand well.
- 0 – 3    You should study the whole module again.



## Answer Key

### A. Let's See What You Already Know (pages 1–3)

- A.
1. square
  2. rectangle
  3. pentagon
  4. triangle
  5. hexagon
  6. octagon
- B.
1. shorter
  2. 100
  3. shorter
  4. Answers will vary.
  5. Refer your drawing to your Instructional Manager or Facilitator.
  6. Answers will vary.
  7. 40 m
  8. 104 m
  9. 56.52 cm
  10. 376.8 cm

### B. Lesson 1

*Let's Review (page 8)*

- A.
1.  $5 \cancel{\text{m}} \times \frac{100 \text{ cm}}{1 \cancel{\text{m}}} = 500 \text{ cm}$
  2.  $100 \cancel{\text{m}} \times \frac{100 \text{ cm}}{1 \cancel{\text{m}}} = 10000 \text{ cm}$
  3.  $200 \cancel{\text{cm}} \times \frac{1 \text{ m}}{100 \cancel{\text{cm}}} = \frac{200 \text{ m}}{100}$   
 $= 2 \text{ m}$

$$4. \quad 20 \text{ dm} \times \frac{1 \text{ m}}{10 \text{ dm}} = \frac{20 \text{ m}}{10} \\ = 2 \text{ m}$$

$$5. \quad 3000 \text{ m} \times \frac{1 \text{ km}}{1000 \text{ m}} = \frac{3000 \text{ km}}{1000} \\ = 3 \text{ km}$$

$$6. \quad 2 \text{ km} \times \frac{1000 \text{ m}}{1 \text{ km}} = 2000 \text{ m}$$

B. The answers will vary depending on the data you will gather. Ask your Instructional Manager or Facilitator to check your answers.

*Let's See What You Have Learned (page 9)*

A. 1. ✓

2. ✓

3. 8

4. 8

5. ✓

B. 1.  $90 \text{ cm} + 60 \text{ cm} = 150 \text{ cm}$

$$2. \quad 1500 \text{ m} \times \frac{1 \text{ km}}{1000 \text{ m}} = \frac{1500 \text{ km}}{1000} = 1.5 \text{ km}$$

3. 16 cm

$$4. \quad 500 \text{ m} \times \frac{1 \text{ km}}{1000 \text{ m}} = \frac{500 \text{ km}}{1000} = 0.5 \text{ km}$$

## C. Lesson 2

*Let's Review (page 14)*

1. 54 m

2. 34 m

3. 64 m

4. 154 m

*Let's Review (pages 17–18)*

- A. 1. 12 cm  
2. 10 cm  
3. 28 m  
4. 36 cm
- B. 1. 8 m  
2. 44 m  
3. 32 m  
4. 28 m  
5. Answers will vary.

*Let's See What You Have Learned (pages 18–19)*

- A. 1. triangle  
2. hexagon  
3. quadrilateral  
4. hexagon  
5. pentagon  
6. rectangle
- B. 1. Neither. Both lots have the same perimeter — 60 m.  
2. 44 m  
3. 32 m  
4. 40 m

**D. Lesson 3**

*Let's Review (pages 22–23)*

- A. 1. 25.12 cm or 25 cm  
2. 47.1 cm or 47 cm  
3. 18.84 cm or 19 cm  
4. 31.4 cm or 31 cm

- B.
1. 282.6 cm or 283 cm
  2. 56.52 cm or 57 cm
  3. 47.1 cm or 47 cm
  4. 31.4 m or 31 m
  5. 18.84 m or 19 m

*Let's See What You Have Learned (page 23)*

A.

	Diameter	Circumfe
1.	32 m	100.48 m
2.	30 m	94.2 m
3.	16 cm	50.24 c
4.	24 cm	75.36 c
5.	70 cm	219.8 cr

- B.
1.  $C = \pi \times d$   
 $= 3.14 \times 90 \text{ m}$   
 $= 282.6 \text{ m or } 283 \text{ m}$
  2.  $C = 2\pi r$   
 $= 2 (3.14) 40 \text{ m}$   
 $= (6.28) 40 \text{ m}$   
 $= 251.2 \text{ m or } 251 \text{ m}$

**E. What Have You Learned? (page 25)**

- A.
1. square
  2. kilometer
  3. radius
  4. 3.14
  5. octagon

- B.
1.  $l = 150\text{m}$   
 $w = 97 \text{ m}$   
 $P = 2(150\text{m}) + 2(97\text{m})$   
 $= 300 \text{ m} + 194 \text{ m}$   
 $= 494 \text{ m}$   
 494 meters of rope will be needed to fence the lot.

2.  $r = 20 \text{ cm}$   
 $C = 2\pi r$   
 $= 2(3.14)(20 \text{ cm})$
3.  $P = 120 \text{ m} + 50 \text{ m} + 88 \text{ m} + 125 \text{ m} + 100 \text{ m}$   
 $= 373 \text{ m}$
4.  $d = 13 \text{ m}$   
 $C = \pi d$   
 $= (3.14)(13\text{m})$   
 $= 40.82 \text{ m}$

Since John will jog 5 times around the garden, you'll need to multiply the circumference by 5.  $(40.82 \text{ m})(5) = 204.1 \text{ m}$   
 John covered a distance of 204.1 m.

5. First, get the perimeter of the living room.  
 Since it is square,

$$P = 4s = 4(4 \text{ m}) = 16 \text{ m}$$

Get the circumference of the carpet:

$$C = \pi d = (3.14)(4 \text{ m}) = 12.56 \text{ m}$$

Since the circumference of the carpet is smaller than the perimeter of the room, the carpet will fit into the room.



## References

Capitulo, F. M. *Algebra: A Simplified Approach*. Manila: National Bookstore, 1989.

Sia, Lucy O., et al. *21st Century Mathematics, Second Year*. Quezon City: Phoenix Publishing House, Inc., 2000.