



What Is This Module About?

In our daily lives, we do not notice that we are dealing with geometric shapes. How do you describe the shape of your notebook? Is it similar to the shape of this module? What is the shape of the house? How many sides does it have? These are only some of the questions that this module will answer?



What Will You Learn From This Module?

After studying this module, you should be able to:

- ◆ identify the different kinds of lines;
- ◆ explain the concept of congruence;
- ◆ define what rays, angles, plane figures and space figures are; and
- ◆ identify the different kinds of angles, plane figures and space figures are.



Let's See What You Already Know

Before you start studying this module, take this simple test first to find out how much you already know about the topics to be discussed.

A. Write **T** in the blank if the statement is true and **F** if it is false.

- _____ 1. A sphere has no base.
- _____ 2. Two line segments are congruent if they have the same measurement.
- _____ 3. A polygon with four equal sides is called a rectangle.
- _____ 4. All prisms are cubes.
- _____ 5. A line has no beginning and no end.

B. Encircle the letter of the correct answer to each of the following.

1. A _____ has two circular bases.
 - a. cone
 - b. circle
 - c. cylinder
 - d. sphere

2. A _____ has three sides and three corners.
 - a. triangle
 - b. square
 - c. rectangle
 - d. trapezoid

3. A _____ has four equal sides and four corners.
 - a. rectangle
 - b. square
 - c. trapezoid
 - d. rhombus

4. Three-dimensional shapes are called _____.
 - a. triangles
 - b. cones
 - c. space figures
 - d. planes

5. Two line segments are _____ if their measurements are the same.
 - a. equivalent
 - b. congruent
 - c. similar
 - d. adjacent

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 study 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.

Lines and Angles

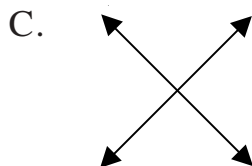
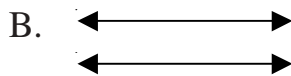
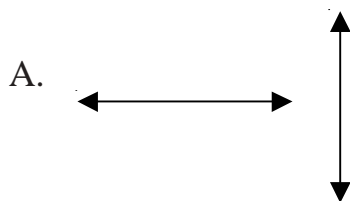
After studying this lesson, you should be able to:

- ◆ define what a line is;
- ◆ explain the concept of congruence;
- ◆ define what rays and angles are; and
- ◆ identify the different kinds of angles.

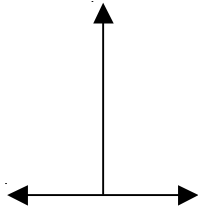


Let's Try This

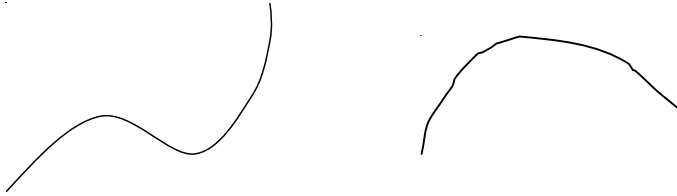
Look at the drawing below. Then look for the following kinds of lines in it. List down the things in the drawing that show the different kinds of lines mentioned below.



D.



E.

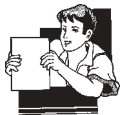


1. straight lines
 - a. parallel lines
 - b. intersecting lines
 - c. perpendicular lines
2. curved lines

Compare your answers with mine below.

1. The lines in letters A to D are all straight lines. The lines in B are parallel, those in C are intersecting and those in C are perpendicular.
2. The lines in letter E are curved lines.

How well did you do? Were your answers similar to mine? If they were, that's very good. You already know how to identify the different kinds of lines. If they were not, just pay attention to this lesson and you will know a whole lot about lines.

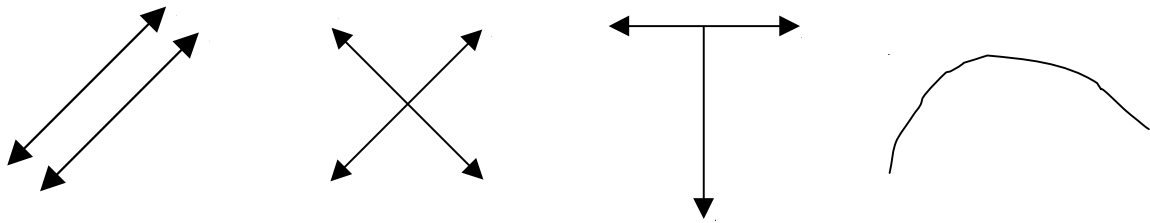


Let's Learn

Are you now familiar with the lines and their kinds? Were you able to identify the lines in the drawing as to their kinds?

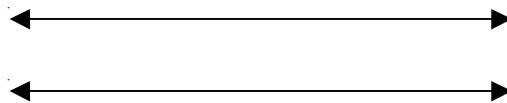
A line has no definite beginning and end. It can only be measured when two points called **endpoints** are given on either side of it. These points represent the beginning and end of the given line, which is then more properly called a **line segment**.

From the previous activity, you can see that there are basically two kinds of lines—straight and curved lines.

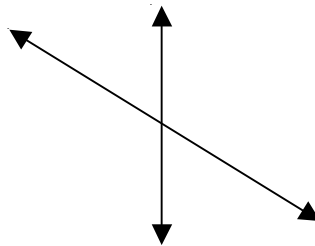


Straight lines are further subdivided into the following kinds of lines.

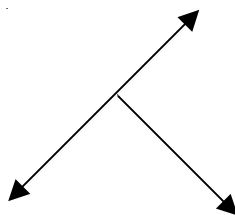
1. **Parallel lines** are lines in the same plane which run beside each other without meeting at any point no matter how far they are extended.



2. **Intersecting lines**, on the other hand, are lines in the same plane that intersect with each other at least at one point.



3. **Perpendicular lines** are lines in the same plane that intersect each other at one point and form 90° -angles.

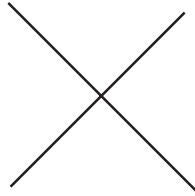




Let's Review

Determine whether each of the sets of lines are parallel, intersecting or perpendicular. Write **Pa** for parallel, **I** for intersecting and **Pe** for perpendicular in the spaces provided before the numbers.

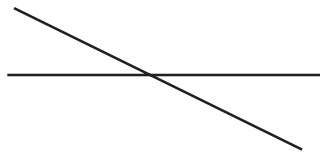
_____ 1.



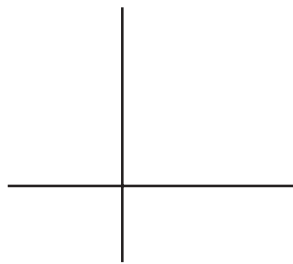
_____ 2.



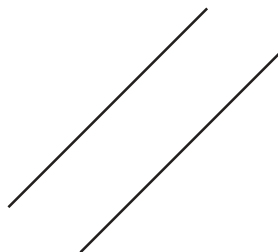
_____ 3.



_____ 4.



_____ 5.



Compare your answers with those in the *Answer Key* on page 27. Did you get all the answers right?



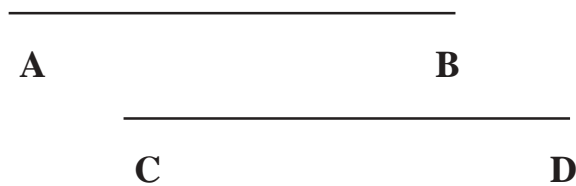
Let's Think About This

Do you know what the word **congruence** means? It refers to the state of agreeing or coinciding. What does this mean? Read on to find out.



Let's Study and Analyze

Look at the line segments in the drawing below. Try measuring them with a ruler. Are they equal in length?

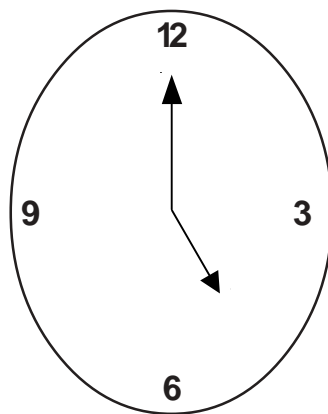


Yes, they are! We can therefore say that Line Segment AB or AB (read as “Line Segment AB) is congruent to CD.



Let's Think About This

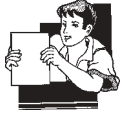
Look at a clock. Do you know where its hands are? What do they remind you of?



The hands of a clock are examples of **rays**, lines that have a beginning but no definite end. They can go on and on in one direction. They form angles when they meet at a certain point as in the hands on the face of a clock.

Do you know what kind of angle the hands of the clock above show?

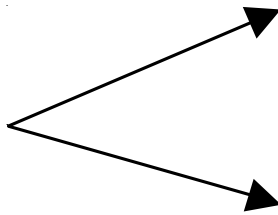
If you answered that they form an obtuse angle, then you are right. If you were not able to answer correctly, read on to find out more about angles and their different kinds.



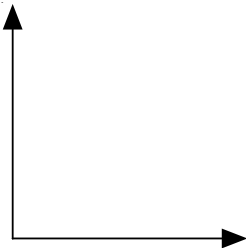
Let's Learn

What is an angle anyway? An **angle** is the figure formed when two rays or lines intersect at one point. Its kinds include:

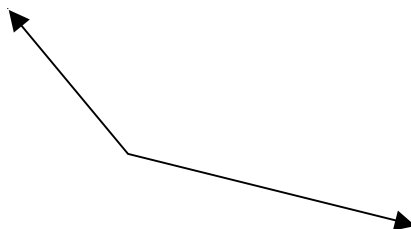
1. **Acute angle**—This is an angle that measures less than 90° .



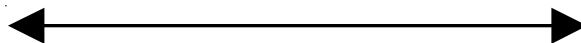
2. **Right angle**—This is an angle that measures exactly 90° .



3. **Obtuse angle**—This is an angle that measures more than 90° but less than 180° .



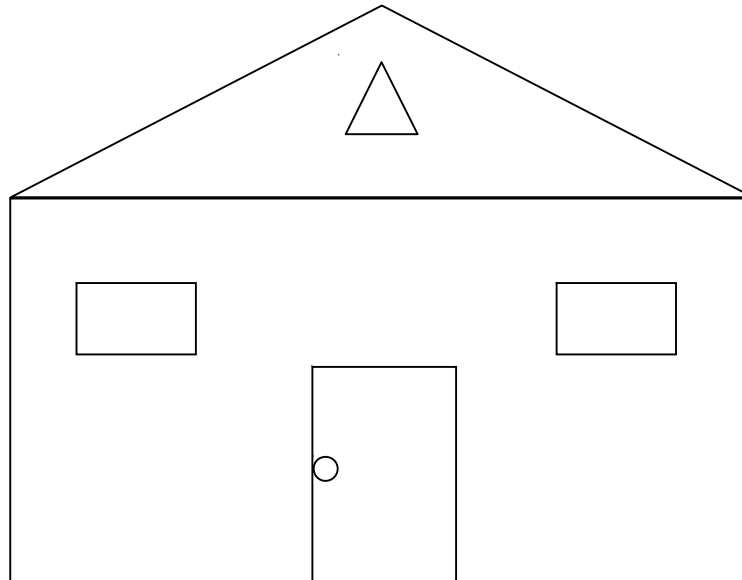
4. **Straight angle**—This is an angle that measures exactly 180° .





Let's Try This

Look at the drawing below. Identify what kinds of angles those mentioned are.



- _____ 1. $\angle CAB$
- _____ 2. $\angle GHI$
- _____ 3. $\angle NPQ$
- _____ 4. $\angle BFC$
- _____ 5. $\angle RTU$

Compare your answers with those in the *Answer Key* on page 27. Did you get all the answers right?



Let's See What You Have Learned

Match the items in Column A with those in Column B.

Column A	Column B
_____ 1. A figure that has no definite beginning and end.	a. Perpendicular
_____ 2. Two lines that do not and will not intersect no matter how far they are extended.	b. Ray
_____ 3. Two lines that form 90° -angles with each other.	c. Obtuse
_____ 4. Two lines that cross each other at any one point.	d. Parallel
_____ 5. Refers to the state of agreeing or coinciding.	e. Congruence
_____ 6. A figure that has a beginning but no definite end.	f. Right
_____ 7. An angle which measures less than 90° .	g. Intersecting
_____ 8. An angle which measures exactly 90° .	h. Acute
_____ 9. An angle which measures more than 90° but less than 180° .	i. Straight
_____ 10. An angle which measures exactly 180° .	j. Line

Compare your answers with those in the *Answer Key* on page 28. Did you get all the answers right? If you did, that's very good! You may then proceed to the next lesson. If you did not, that's okay. Just review the parts of the lesson you didn't understand very well before going to Lesson 2.



Let's Remember

- ◆ A line has no definite beginning and end.
- ◆ The two basic types of lines are straight lines and curved lines.
- ◆ There are three kinds of straight lines—parallel lines, intersecting lines and perpendicular lines.
- ◆ The term **congruence** refers to the state of agreeing or coinciding.
- ◆ The four basic kinds of angles are: acute, right, obtuse and straight.

Plane Figures

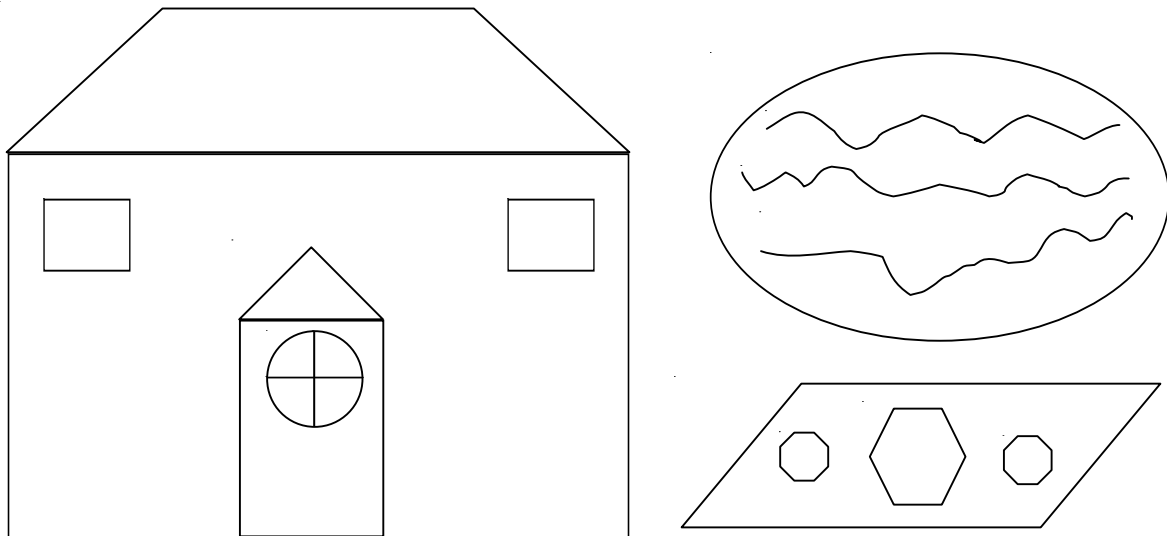
After studying this lesson, you should be able to:

- ◆ identify the different kinds of plane figures;
- ◆ differentiate one kind of plane figure from another; and
- ◆ determine whether two given plane figures are congruent or not.



Let's Think About This

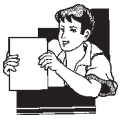
Look at the drawing below. Are you familiar with the different kinds of plane figures? What plane figures do you see in the drawing below? List their names down in the spaces provided.



1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

- 7. _____
- 8. _____
- 9. _____
- 10. _____

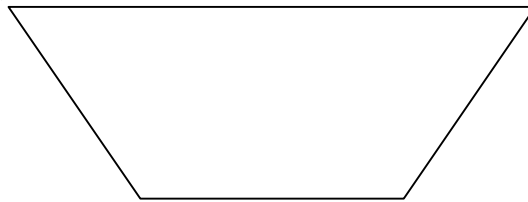
Compare your answers with those in the *Answer Key* on page 28. Did you get all the answers right?



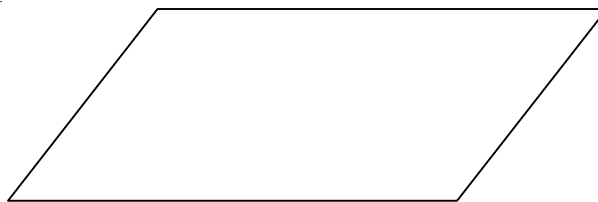
Let's Learn

There are many kinds of plane figures but we will only focus on the following in our discussion.

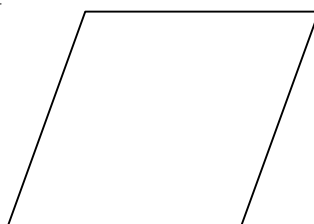
1. **Trapezoid**—A quadrilateral having only two sides parallel.



2. **Parallelogram**—A quadrilateral with opposite sides parallel and equal.



3. **Rhombus**—A parallelogram with four equal sides and sometimes one with no right angles.



4. **Rectangle**—A parallelogram all of whose angles are right angles.

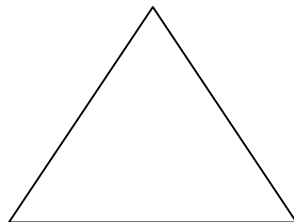


5. **Square**—A rectangle with all four sides equal.

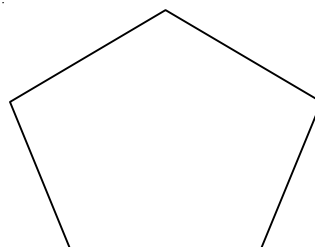


6. **Polygons**—Closed plane figures bounded by straight lines.

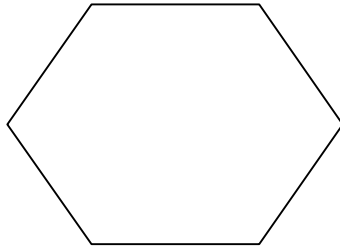
- a. **Triangle**—A polygon having three sides.



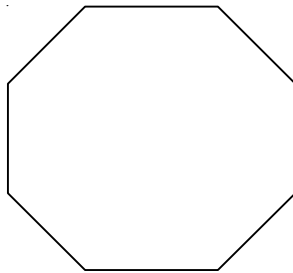
- b. **Pentagon**—A polygon having five sides.



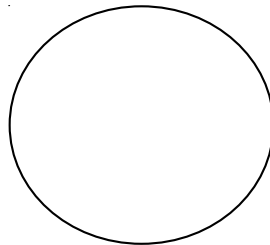
c. **Hexagon**—A polygon having six sides.



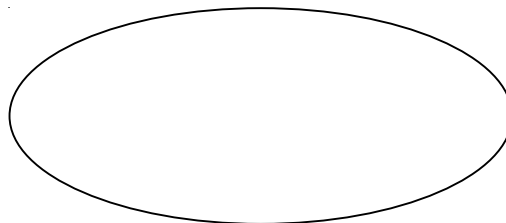
d. **Octagon**—A polygon having eight sides.



7. **Circle**—A closed plane curve every point of which is of the same distance from a fixed point within the curve.



8. **Oblong**—A plane deviating from a square, circular or spherical form by elongation in one dimension.





Let's Try This

Make your own drawing similar to the one on page 12 using all the shapes you just learned about. Use the space provided below for your drawing.

Have your Instructional Manager check your drawing. Ask him/her for some feedback before going to the next part of the lesson.



Let's See What You Have Learned

Find the names of the following plane figures in the word hunt puzzle on the right.

1. Trapezoid
2. Parallelogram
3. Rhombus
4. Rectangle
5. Square
6. Triangle
7. Pentagon
8. Hexagon
9. Circle
10. Oblong



Compare your answers with those in the *Answer Key* on page 29. Did you get all the answers right? If you did, that's very good! You may then go to the next lesson. If you didn't, just review the parts of the lesson you didn't understand very well before going to Lesson 3.



Let's Remember

- ◆ The most common plane figures include the following:
 1. trapezoid;
 2. parallelogram;
 3. rhombus;
 4. rectangle;
 5. square;
 6. triangle;
 7. pentagon;
 8. hexagon;
 9. octagon;
 10. circle; and
 11. oblong.

Space Figures

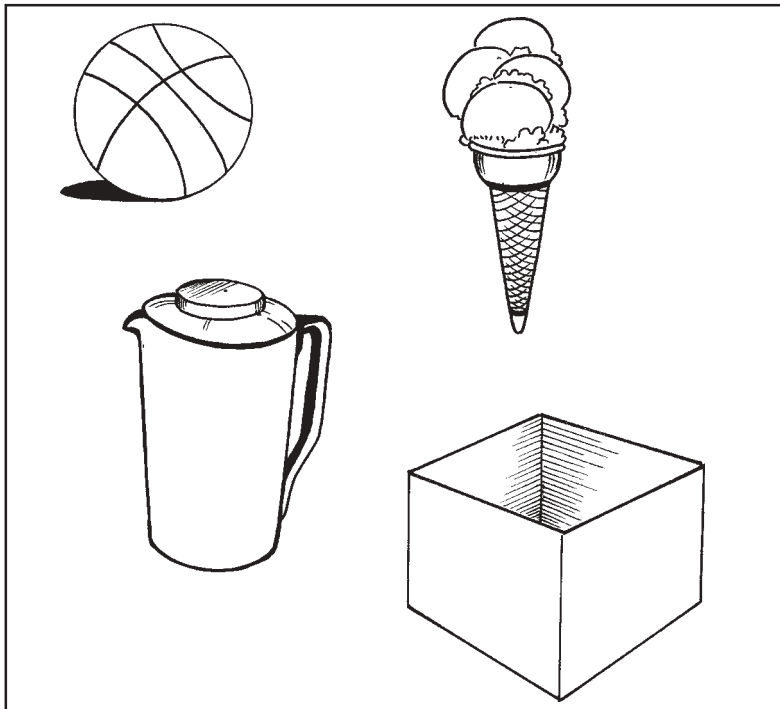
After studying this lesson, you should be able to:

- ◆ define what space figures are; and
- ◆ identify the different kinds of space figures.



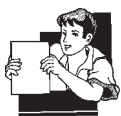
Let's Think About This

Look at the following common household items. What space figures do they remind you of?



First, let us identify what the items in the picture above are. In the picture can be seen a pitcher, a box, an ice cream cone and a basketball. The pitcher is an example of a cylinder. The box is an example of a cube. The ice cream cone is an example of a cone. Finally, the basketball is an example of a sphere.

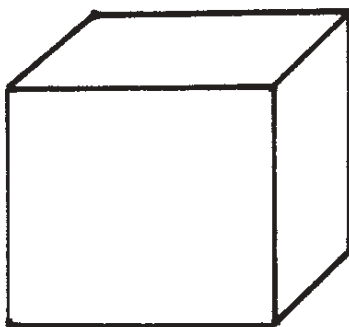
Did you get all the answers right? Why don't you read on to find out more about space figures?



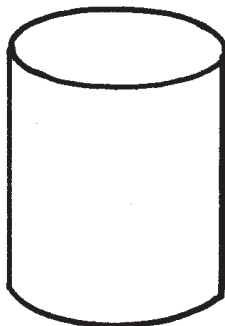
Let's Learn

Space figures or three-dimensional figures are figures that have depth in addition to width and height. Some common simple space figures include cubes, spheres, cylinders, prisms, cones and pyramids. Let us discuss each of them in more detail below.

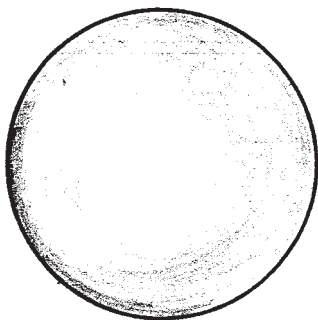
1. **Cube**—This is a three-dimensional figure having six matching square sides. An example of this is a box.



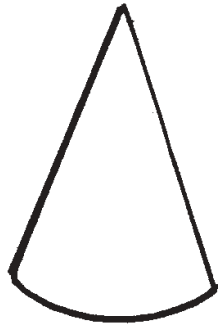
2. **Cylinder**—This is a space figure having two congruent circular bases that are parallel. An example of this is a pitcher or a drinking glass.



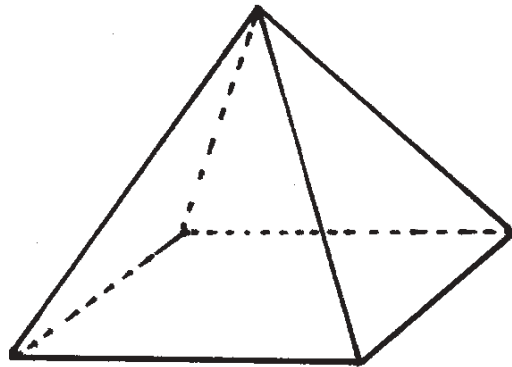
3. **Sphere**—This is a space figure having all of its points the same distance from its center. An example of this is a basketball.



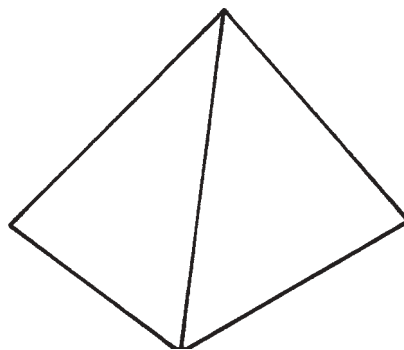
4. **Cone**—This is a space figure having a circular base and a single vertex. An example of this is an ice cream cone.



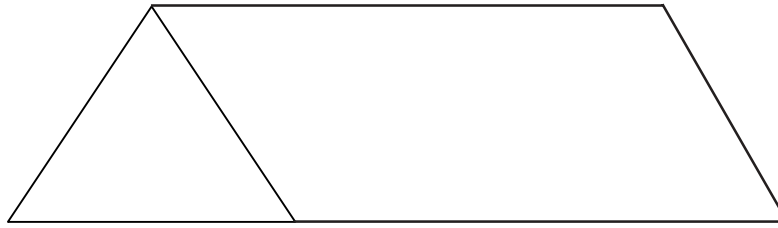
5. **Pyramid**—This is a space figure with a square base and four triangular-shaped sides. Examples of this are the pyramids you can see in Egypt.



6. **Tetrahedron**—This is a four-sided space figure. Each of its faces is a triangle. An example of this is the Tetra Pak some commercial fruit juices like Zip use.



7. **Prism**—This is a space figure with two congruent parallel bases that are polygons. The most common kind of this figure is the triangular prism. An example of this is the box that Toblerone is kept in.



Let's Try This

Think of other common things that are shaped like the space figures you just learned about. List five of them down in the spaces provided below indicating their corresponding shapes.

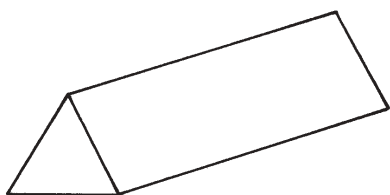
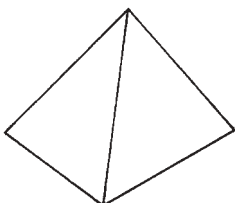
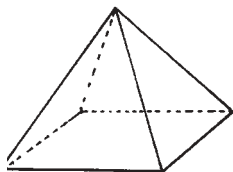
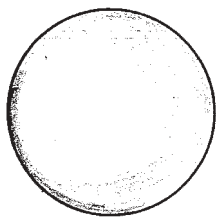
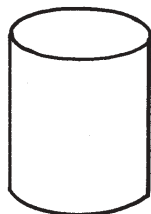
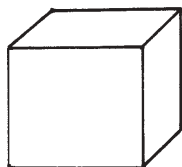
1. _____
2. _____
3. _____
4. _____
5. _____

Have your Instructional Manager check your answers. Ask him/her to give you some feedback before going to the next part of the lesson.

Let's See What You Have Learned

Match the pictures in Column A with their names in Column B by drawing connecting lines.

Column A



Column B

Sphere

Tetrahedron

Cylinder

Triangular prism

Pyramid

Cube

Cone

Compare your answers with those in the *Answer Key* on pages 29–30. Did you get all the answers right? If you did, that's very good! You may then proceed to the next part of the module. If you didn't, don't worry. Just review the parts of the lesson you made mistakes in before going to the next part of the module.



Let's Remember

- ◆ The most common space figures include the following:
 1. cube;
 2. cylinder;
 3. sphere;
 4. cone;
 5. pyramid;
 6. tetrahedron; and
 7. prism.

Well, this is the end of the module! Congratulations for finishing it. Did you like it? Did you learn anything useful from it? A summary of its main points is given below to help you remember them better.



Let's Sum Up

This module tells us that:

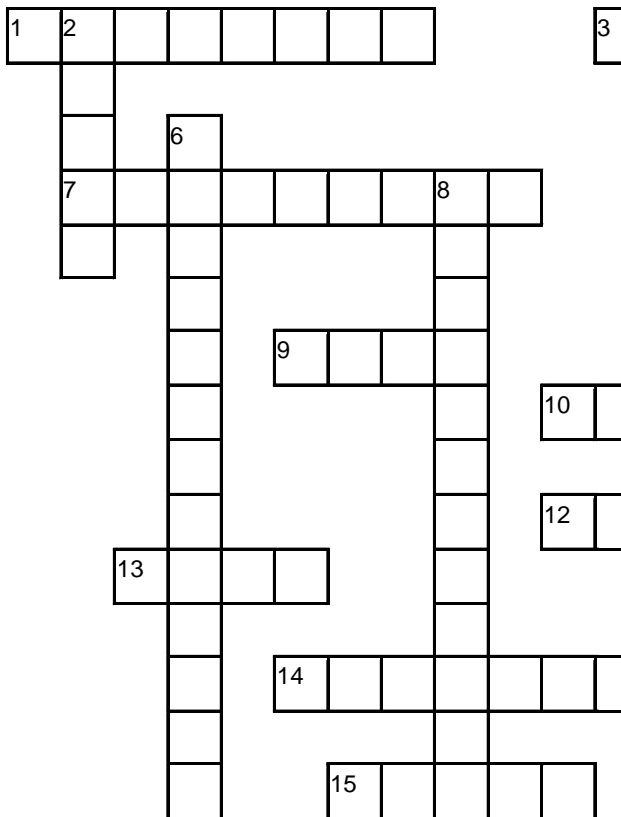
- ◆ A line has no definite beginning and end.
- ◆ The two basic types of lines are straight lines and curved lines.
- ◆ There are three kinds of straight lines—parallel lines, intersecting lines and perpendicular lines.
- ◆ The term **congruence** refers to the state of agreeing or coinciding.

- ◆ The four basic kinds of angles are: acute, right, obtuse and straight.
- ◆ The most common plane figures include the following:
 1. trapezoid;
 2. parallelogram;
 3. rhombus;
 4. rectangle;
 5. square;
 6. triangle;
 7. pentagon;
 8. hexagon;
 9. octagon;
 10. circle; and
 11. oblong.
- ◆ The most common space figures include the following:
 1. cube;
 2. cylinder;
 3. sphere;
 4. cone;
 5. pyramid;
 6. tetrahedron; and
 7. prism.



What Have You Learned?

Complete the following crossword puzzle using the given clues.



Across

1. Lines that do not and will not than ever intersect
3. A space figure having all of its points the same distance from its center
7. A quadrilateral having only two sides parallel
9. A three-dimensional figure having six matching square sides
10. A space figure with two congruent, parallel bases that are polygons

Down

2. An angle which measures less 90°
4. Lines that form a 90° -angle when they intersect
5. A parallelogram with four equal sides and sometimes one with no right angles
6. A quadrilateral with opposite sides parallel and equal
8. Lines that cross each other at a certain point
11. A polygon having six sides

12. A rectangle with all four sides equal
13. A space figure having all of its points the same distance from its center
14. A space figure having two
15. An angle which measures exactly 90°



Answer Key

A. Let's See What You Already Know *(pages 1–2)*

- A. 1. T
- 2. T
- 3. F
- 4. F
- 5. T

- B. 1. c
- 2. a
- 3. b
- 4. c
- 5. b

B. Lesson 1

Let's Review (page 6)

- 1. Pe
- 2. Pa
- 3. I
- 4. Pe
- 5. Pa

Let's Try This (page 9)

- 1. obtuse
- 2. acute
- 3. right
- 4. straight
- 5. right

Let's See What You Have Learned (page 10)

1. j
2. d
3. a
4. g
5. e
6. b
7. h
8. f
9. c
10. i

C. Lesson 2

Let's Think About This (pages 12–13)

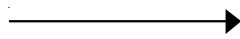
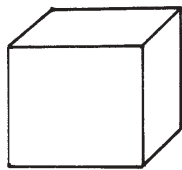
1. trapezoid
2. pentagon
3. square
4. triangle
5. rectangle
6. circle
7. oblong
8. hexagon
9. rhombus
10. octagon

Let's See What You Have Learned (page 16)

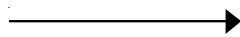
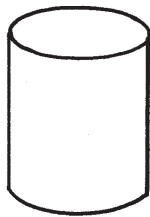


D. Lesson 3

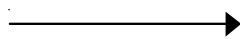
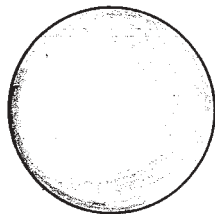
Let's See What You Have Learned (page 22)



Cube



Cylinder



Sphere



Cone



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