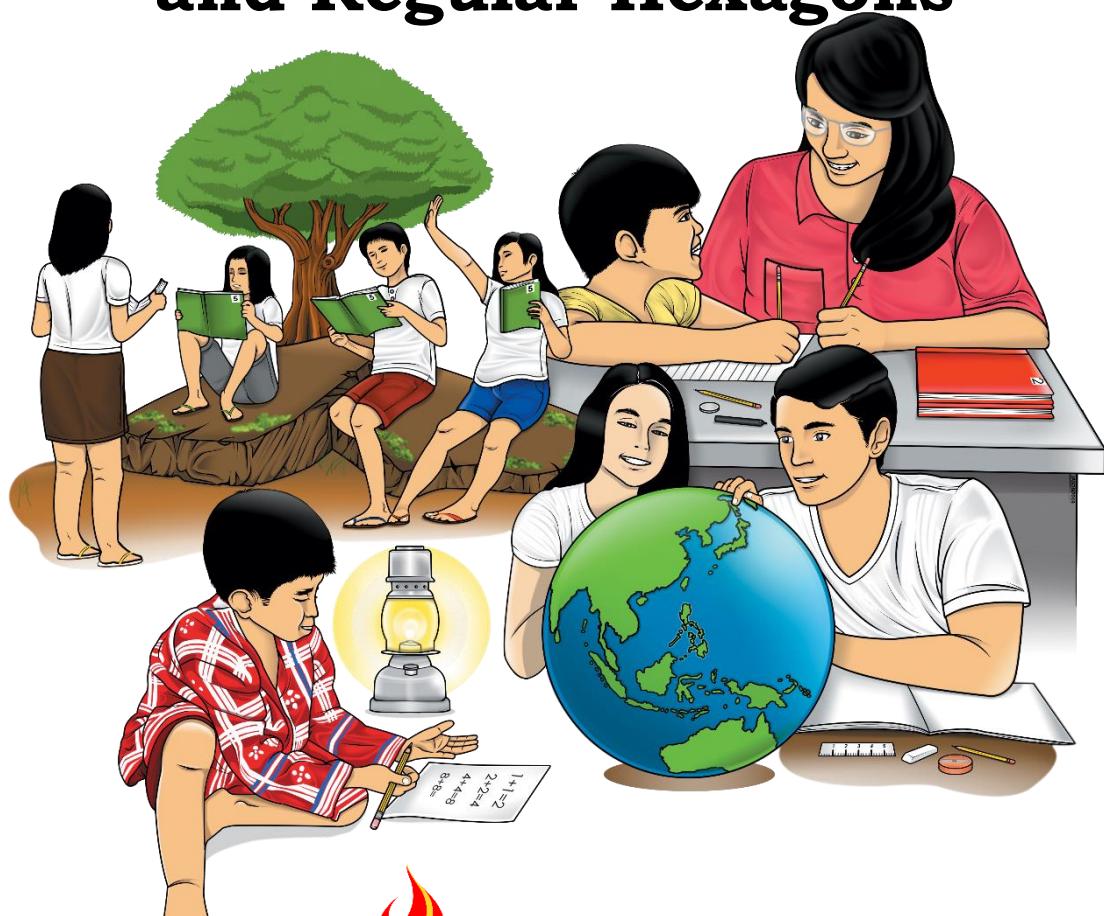


# Mathematics

## Quarter 3 – Module 7:

### Construct Triangles, Squares, Rectangles, Regular Pentagons, and Regular Hexagons



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**Mathematics – Grade 7**

**Alternative Delivery Mode**

**Quarter 3 – Module 7: Construct triangles, squares, rectangles, regular pentagons, and regular hexagons.**

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7

# **Mathematics**

## **Quarter 3 – Module 7:**

### **Construct Triangles, Squares, Rectangles, Regular Pentagons, and Regular Hexagons**

## **Introductory Message**

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.



## **What I Need to Know**

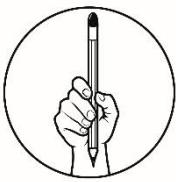
This module was designed and written with you in mind. It is here to help you learn triangles, squares, rectangles, regular pentagons, and regular hexagons. The scope of this module can be used in many different learning situations. The language used recognizes your vocabulary level. The lessons were arranged to follow the standard sequence in the curriculum guide. But the order in which you read them can be adjusted to correspond with the textbook you are now using.

The module is comprised of only one lesson:

- Constructing Triangles, Squares, Rectangles, Regular Pentagons, and Regular Hexagons

After going through this module, you are expected to:

1. Perform polygon constructions such as triangles, squares, rectangles, regular pentagons, and regular hexagons using straightedge and drawing compass.
2. Draw an object that shows the shape of a triangle, square, rectangle, regular pentagon, and regular hexagon.



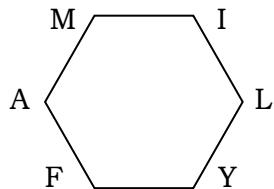
## What I Know

Choose the letter with the best answer. Write your answer on a separate sheet of paper.

1. What do you call a drawing tool that can be used to draw circles?
  - A. Compass
  - B. Pencil
  - C. Protractor
  - D. Straightedge
  
2. It is a step-by-step process used to draw accurate geometric figures.
  - A. Construction
  - B. Drawing
  - C. Outline
  - D. Sketch
  
3. Anything that allows you to produce a straight line but not able to measure distances.
  - A. Compass
  - B. Pencil
  - C. Protractor
  - D. Straightedge
  
4. How to start constructing a square?
  - A. Draw perpendicular lines.
  - B. It starts by connecting the four points.
  - C. It starts with the given line side.
  - D. Measure the diagonal lines.
  
5. How do you know if you construct a rectangle accurately?
  - A. If it has four right angles and two equal diagonals.
  - B. If the sides are equal.
  - C. If it has four sides.
  - D. If it has two perpendicular lines.
  
6. In constructing  $\triangle ABC$  with  $AB = 4\text{cm}$ ,  $BC = 5\text{cm}$  and  $AC = 6\text{cm}$ , which of the following is a correct order of steps in constructing a triangle?
  - A. Step 1: Draw a line  $AB$ , 4cm long.
  - Step 2: Draw an arc of radius 5cm with  $B$  as the center.
  - Step 3: Draw an arc of radius 6cm with  $A$  as the center to cut the arc drawn in Step 2 at  $C$ .
  - Step 4: Join  $C$ , the point of intersection of the two arcs to the point  $A$  and

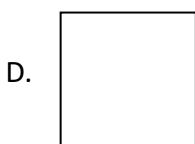
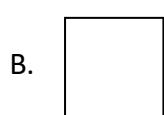
- B. Step 1: Draw a line  $AB$ , 4cm long.  
 Step 2: Join  $C$ , the point of intersection of the two arcs to the point  $A$  and  $B$ .  
 Step 3: Draw an arc of radius 6cm with  $A$  as the center to cut the arc drawn in Step 2 at  $C$ .  
 Step 4: Draw an arc of radius 5cm with  $B$  as the center.
- C. Step 1: Draw an arc of radius 5cm with  $B$  as the center.  
 Step 2: Join  $C$ , the point of intersection of the two arcs to the point  $A$  and  $B$ .  
 Step 3: Draw an arc of radius 6cm with  $A$  as the center to cut the arc drawn in Step 2 at  $C$ .  
 Step 4: Draw a line  $AB$ , 4cm long.
- D. Step 1: Draw an arc of radius 5cm with  $B$  as the center.  
 Step 2: Join  $C$ , the point of intersection of the two arcs to the point  $A$  and  $B$ .  
 Step 3: Draw a line  $AB$ , 4cm long.  
 Step 4: Draw an arc of radius 6cm with  $A$  as the center to cut the arc drawn in Step 2 at  $C$ .

1. What are the sides of hexagon FAMILY?



- A. FA, AM, MI, IL, LY, YF
- B. FA, YL, LA, AM, MI, IL
- C. FY, MI, AL, YL, AF, AM
- D. MI, AL, FY, YF, LA, IM

2. Which of the following figure of square with side equal to 1.5cm?



3. Construct Pentagon LOVED.

Which of the following is a correct order of steps in constructing a pentagon?

A. Step 1: Draw diameter  $\overline{LM}$  on a circle G.

Step 2: Construct a perpendicular to  $\overline{LM}$  at G and intersecting the circle at N.

Step 3: Draw the perpendicular bisector of  $\overline{NG}$  creating its midpoint P.

Step 4: Circle P with radius  $\overline{NP}$ .

Step 5: Draw  $\overline{MP}$  intersecting circle P at Q and R.

Step 6: With the compass on M and radius  $\overline{MR}$ , draw an arc intersecting the larger circle at E and V.

Step 7: With compass on M, and radius  $\overline{MQ}$ , draw an arc intersecting the larger circle at D and O.

Step 8: Connect L and D, L and O, O and V, V and E, and, E and D to form the sides of LD, LO, OV, VE, ED of the regular pentagon LOVED.

B. Step 1: Draw diameter  $\overline{LM}$  on a circle G.

Step 2: Draw the perpendicular bisector of  $\overline{NG}$  creating its midpoint P.

Step 3: Construct a perpendicular to  $\overline{LM}$  at G and intersecting the circle at N.

Step 4: Circle P with radius  $\overline{NP}$ .

Step 5: Draw  $\overline{MP}$  intersecting circle P at Q and R.

Step 6: With compass on M, and radius  $\overline{MQ}$ , draw an arc intersecting the larger circle at D and O.

Step 7: With the compass on M and radius  $\overline{MR}$ , draw an arc intersecting the larger circle at E and V.

Step 8: Connect L and D, L and O, O and V, V and E, and, E and D to form the sides of LD, LO, OV, VE, ED of the regular pentagon LOVED.

C. Step 1: Circle P with radius  $\overline{NP}$ .

Step 2: Construct a perpendicular to  $\overline{LM}$  at G and intersecting the circle at N.

Step 3: Draw the perpendicular bisector of  $\overline{NG}$  creating its midpoint P.

Step 4: Draw diameter  $\overline{LM}$  on a Circle G.

Step 5: Draw  $\overline{MP}$  intersecting circle P at Q and R.

Step 6: With the compass on M and radius  $\overline{MR}$ , draw an arc intersecting the larger circle at E and V.

Step 7: With compass on M, and radius  $\overline{MQ}$ , draw an arc intersecting the larger circle at D and O.

Step 8: Connect L and D, L and O, O and V, V and E, and, E and D to form the sides of LD, LO, OV, VE, ED of the regular pentagon LOVED.

D. Step 1: Circle P with radius  $\overline{NP}$ .

Step 2: Draw the perpendicular bisector of  $\overline{NG}$  creating its midpoint P.

Step 3: Construct a perpendicular to  $\overline{LM}$  at G and intersecting the circle at N.

Step 4: Draw diameter  $\overline{LM}$  on a Circle G.

Step 5: Draw  $MP$  intersecting circle  $P$  at  $Q$  and  $R$ .

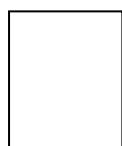
Step 6: With the compass on  $M$  and radius  $\overline{MR}$ , draw an arc intersecting the larger circle at  $E$  and  $V$ .

Step 7: With compass on  $M$ , and radius  $\overline{MQ}$ , draw an arc intersecting the larger circle at  $D$  and  $O$ .

Step 8: Connect  $L$  and  $D$ ,  $L$  and  $O$ ,  $O$  and  $V$ ,  $V$  and  $E$ , and,  $E$  and  $D$  to form the sides of LD, LO, OV, VE, ED of the regular pentagon LOVED.

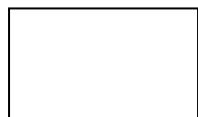
4. Which of the following rectangles measures 1.5cm and by 2.5cm?

A.



D

B.



C.



For item 11-15, using a ruler and a compass construct the following:

11. Rectangular door whose length measures 5cm and width measures 3cm.
12. A picture of square Sponge Bob whose side measures 2.7cm.
13. Triangular ruler whose side measures 2.5cm
14. A pentagon serving tray whose side measures 1.2cm
15. Hexagonal clock whose side measures 3cm.

**Lesson  
1**

# **Construct Triangles, Squares, Rectangles, Regular Pentagons, and Regular Hexagons**

In the previous lesson, you have learned the convexity, angles and sides of polygons. Do you know that fashion designers, builders, architects, engineers and carpenters use drawings to communicate their ideas to others?



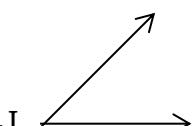
## **What's In**

Let's review!

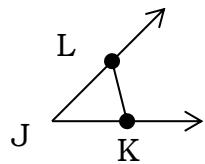
### **Construct Me!**

At the end of the activity you will be able to construct basic construction in geometry.

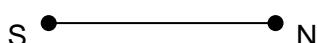
1. Construct line segment  $CJ$  congruent to a given segment  $RS$ .



2. Construct angle  $C$  congruent to a given angle  $J$ .



3. Construct Ray  $\overrightarrow{JA}$  such that  $A$  is in the interior of  $\angle KJL$  and  $\angle KJA = \angle AJL$  with the given angle  $J$ .



4. Locate the midpoint  $U$  of  $SN$  and construct the perpendicular bisector of  $SN$ .

5. Construct a line through C perpendicular to  $\ell$ .

Given: Line  $\ell$  and point C on  $\ell$

6. Construct a line through C perpendicular to  $\ell$ .

Given: Line  $\ell$  and point C which is not on  $\ell$ .

7. Construct a line through C parallel to  $\ell$ .

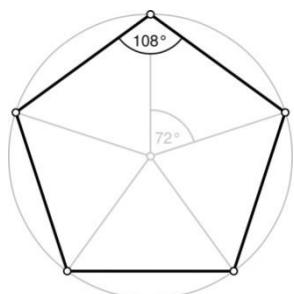
Given: Line  $\ell$  and point C not on  $\ell$ .



## What's New

Polygons such as triangles, squares, rectangles, pentagons and hexagons are all around us. If you look around your room, you see these shapes in most of the objects. In mathematics, we try to understand and create these shapes. We can create these shapes by constructing them outside or inside of another object.

Observe the figures below.



2

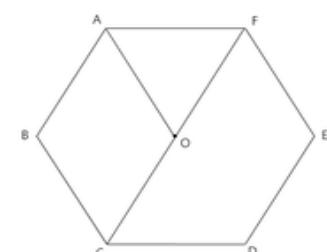
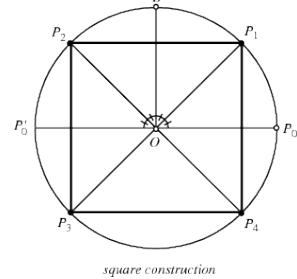


Figure 3

Figure 1



Figure

*square construction*

- In the figures above, name all the polygons.
- How many triangles formed in pentagon?
- In figure 3, how many squares are there?

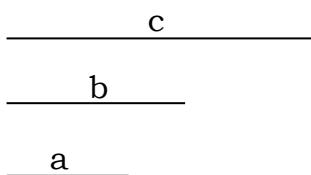


## What is It

Using a compass and straightedge, we can construct polygons. We use a straightedge to construct a line, ray, or segment when two points are given. The marks indicated in the ruler may not be used for measurement. We use a compass to construct an arc (part of a circle) or a circle, and a radius length.

**Construct a triangle with sides measures  $a$ ,  $b$ ,  $c$ .**

- Given segments whose lengths are  $\mathbf{a}$ ,  $\mathbf{b}$ , and  $\mathbf{c}$

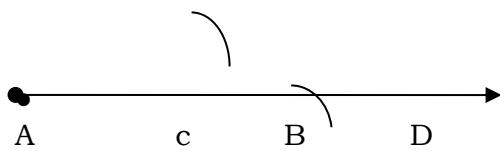


- Draw  $\overrightarrow{AD}$ . Place the point of the compass on A and make its opening equal to  $\mathbf{c}$  intersecting  $\overrightarrow{AD}$  at B.

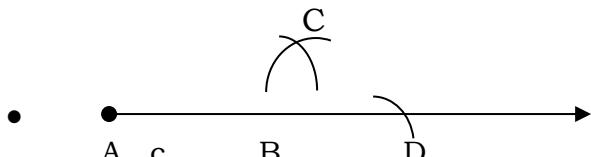
$$AB = \mathbf{c}$$



- With the point of the compass still on A, make its opening equal to  $b$  and draw an arc.

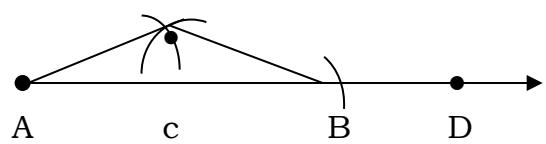


- Place the point of the compass on B and make its opening equal to  $a$ . Draw an arc intersecting the arc in step 3 at point C.



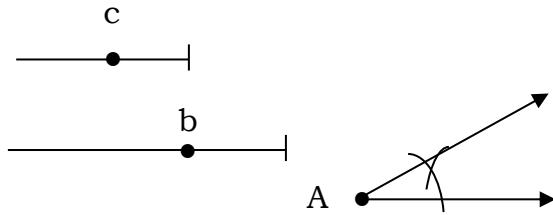
- Connect the points A and C and points B and C.

$$\begin{aligned}\triangle ABC &\text{ with } AB = c \\ AC &= b \\ BC &= a\end{aligned}$$

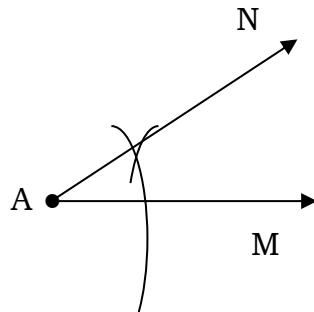


**Construct a triangle whose sides measure  $a$ ,  $b$ ,  $c$  and the included angle,  $\angle A$ .**

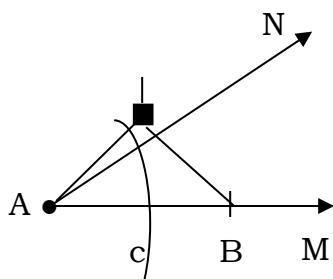
1. Given: 2 segments whose lengths area,  $b$ , and the included angle,  $\angle A$ .



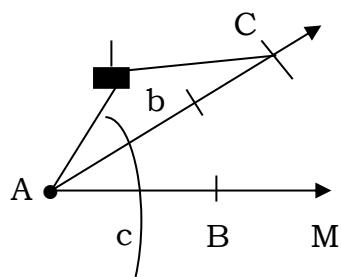
2. Copy  $\angle A$ . Let the sides of the angle be  $AM$  and  $AN$ .



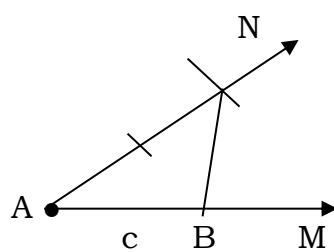
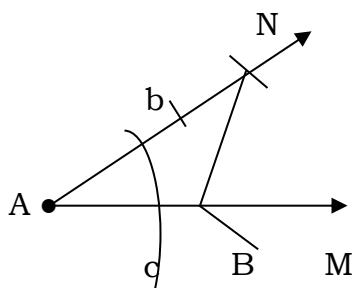
3. With the compass point on  $A$ , make the width of the compass equal to  $c$  and make an arc on  $AM$ . Mark the point  $B$ .



4. With the compass point still on  $A$ , make the width of the compass equal to  $b$  and make an arc on  $AN$ . Mark the point  $C$ .

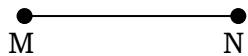


5. Connect  $B$  and  $C$  to form  $\triangle ABC$

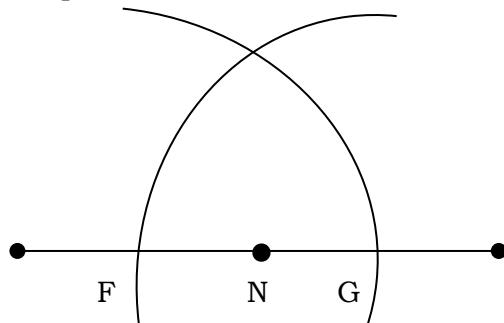


## Constructing of a Square

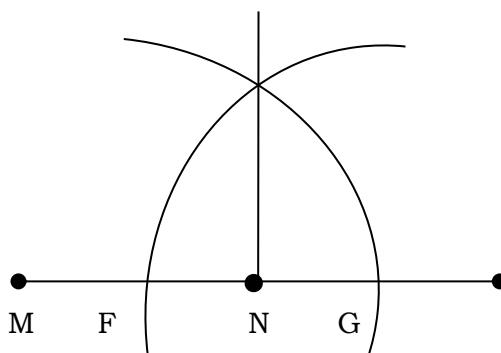
1. Draw a line segment  $MN$ . Let this be aside of the square.



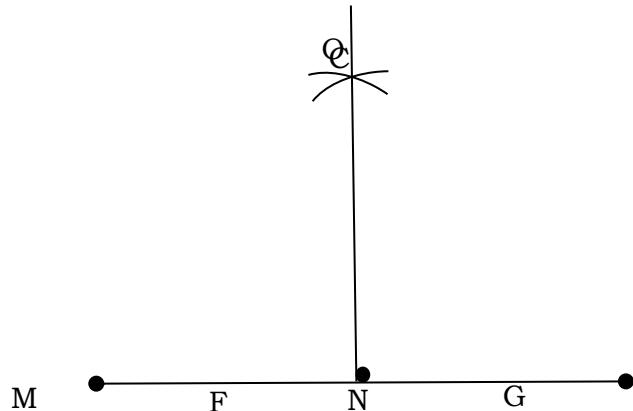
2. Extend segment  $MN$ . Using a compass, mark two arcs from N on the line. Mark the points as F and G.



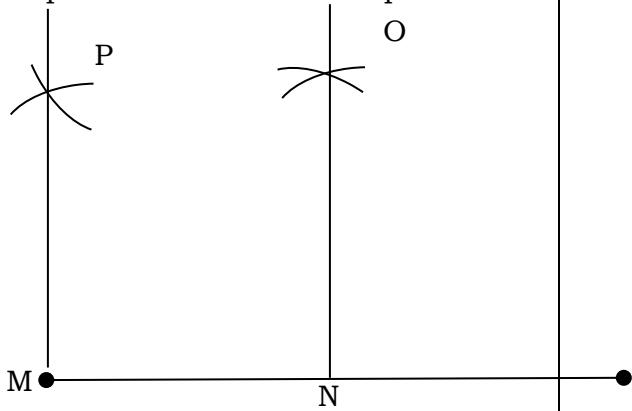
3. Name the point where the arcs meet as point C. Then points N and C



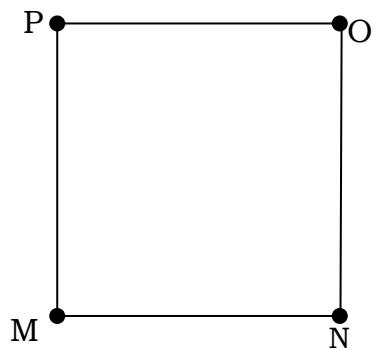
4. Set the length of the compass to 4 cm and mark arc from point M and N. The point where the arc intersects  $NC$  is the vertex O of the square.



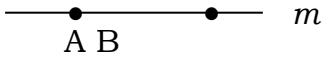
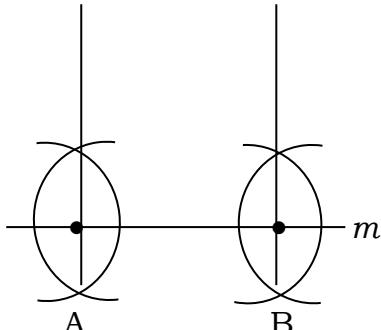
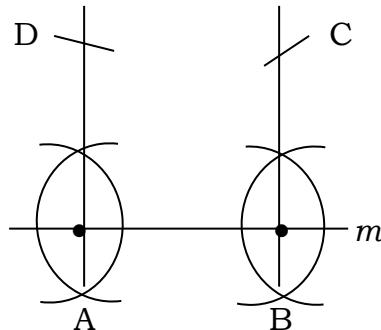
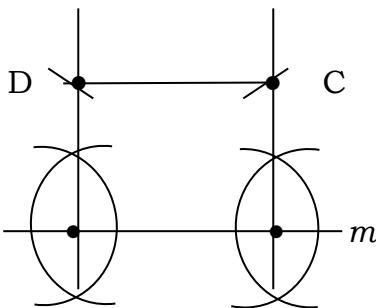
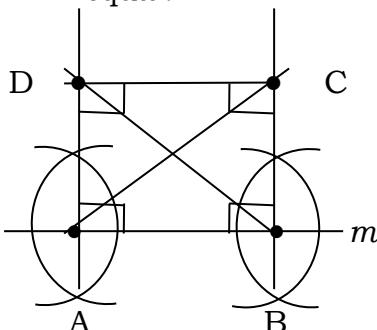
5. With length of 4 cm on the compass, mark an arc from the point O and point M. Mark their point of intersection as point P.



6. Connect points O and P as well as M and P to have  $MNO\Box$

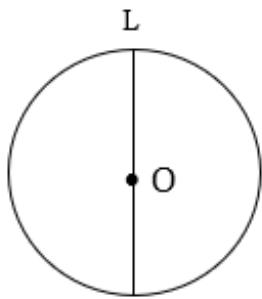


## Constructing of a Rectangle

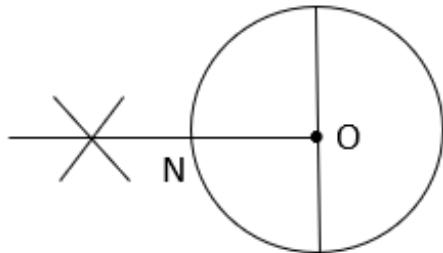
<p>1. Draw line segment <math>m</math>.</p> 	<p>2. Put two points A and B to make a segment AB on line segment <math>m</math>.</p> 
<p>3. Construct two perpendicular segments. Using a compass, mark two arcs on the line A and another two arcs on line B.</p> 	<p>4. Mark off congruent sides and label the vertices as point C and D.</p> 
<p>5. Connect point C and D to form ABCD.</p> 	<p>6. The four interior angles should be right angles and the diagonals should be equal.</p> 

## Constructing of a Pentagon

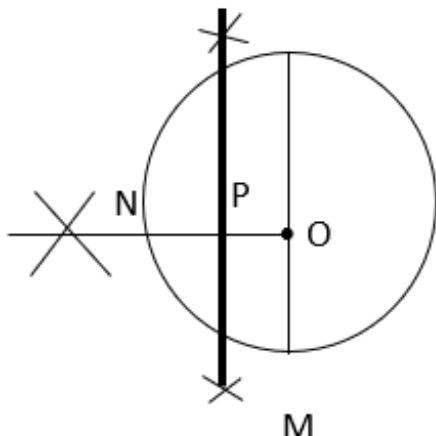
1. Draw diameter  $\overline{LM}$  on  $\odot O$ .



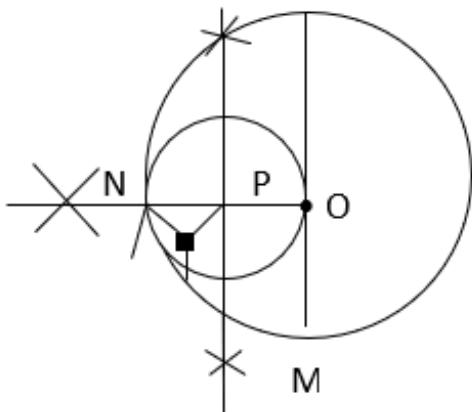
2. Construct a perpendicular to  $\overline{LM}$  at O and intersecting the circle at N.



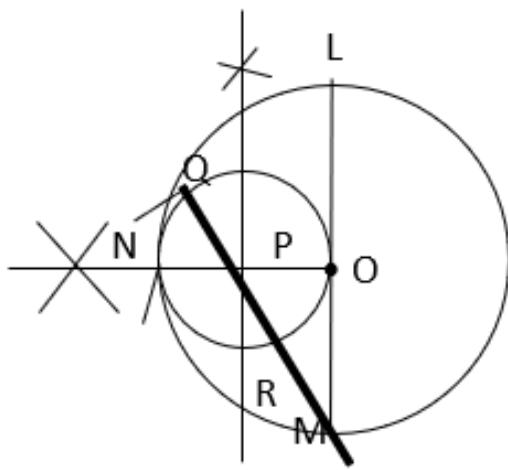
3. Draw the perpendicular bisector of NO creating its midpoint P.



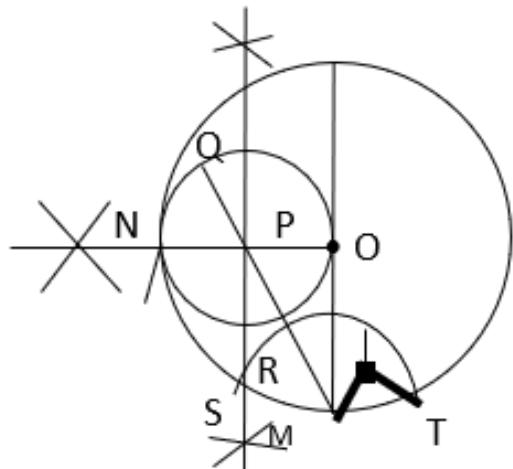
4.  $\odot P$  with radius NP.



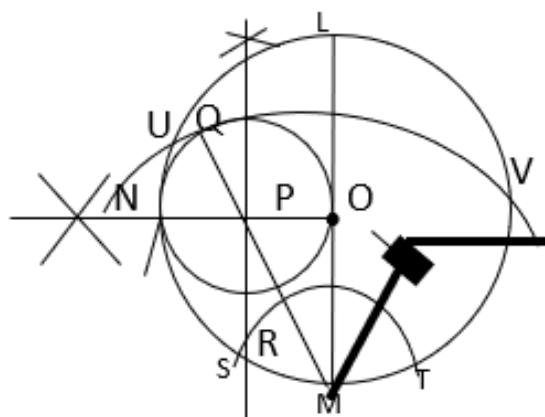
5. Draw  $\overline{NP}$  intersecting  $\odot P$  at Q and R.



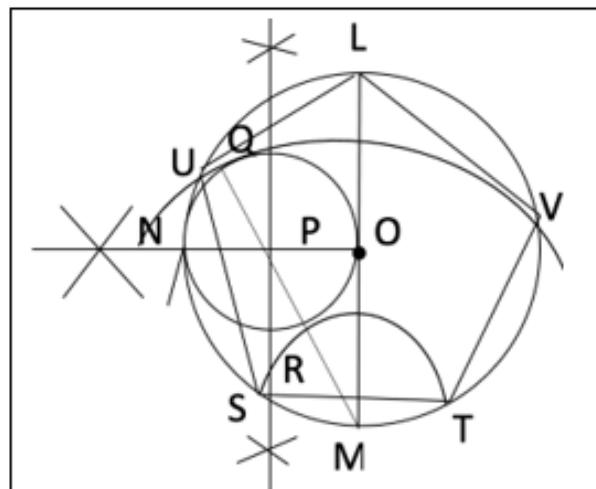
6. With the compass on M and radius MR draw an arc intersecting the larger circle at S and T.



7. With the compass on M and radius MQ, draw an arc intersecting the larger circle at U and V.

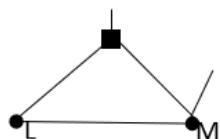


8. Connect L and U, L and V, V and T, T and S, and S and U, to form the sides of LU, LV, VT, TS, SU of the regular pentagon LVTSU.

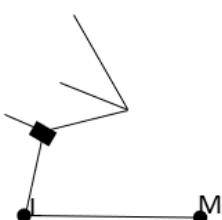


### Construction of a Hexagon

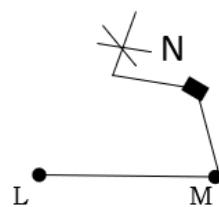
1. Let LM be a side of the hexagon. Set the width of the compass equate to LM.



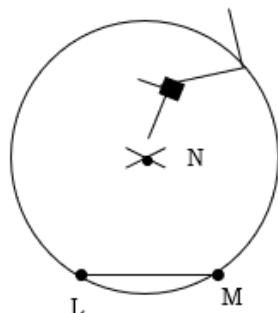
2. With  $\overline{LM}$  as the width of the compass and the compass point at L, draw an arc above LM.



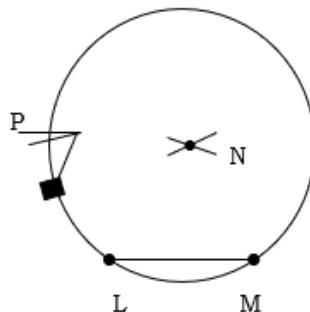
3. With the same width of the compass and the compass point at M, draw an arc above LM intersecting the arc in step 2 at N.



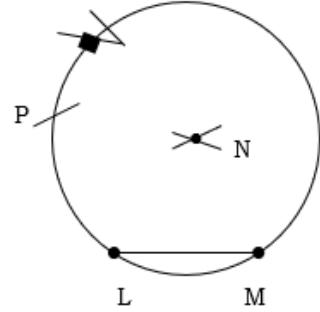
4. With the same width of the compass and the compass point at N, draw  $\odot$  N.



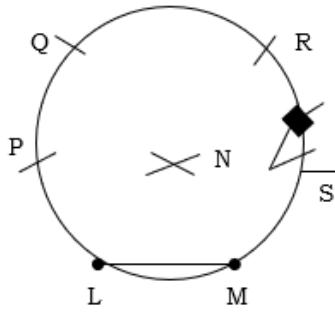
5. With LM as the width and the compass point at A, draw an arc intersecting the circle at P. This is the third vertex of the regular hexagon.



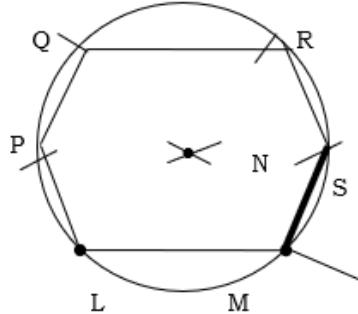
6. With LM as the width and the compass point at P, draw an arc intersecting the circle O. This is the fourth vertex of the regular hexagon.



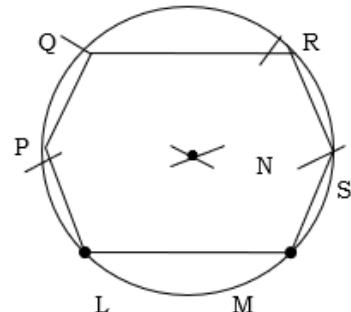
6. Configure in this manner until you have vertices Q and R.

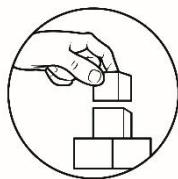


7. Connect the vertices.



8. Done. The result is a regular hexagon LPQRSM.



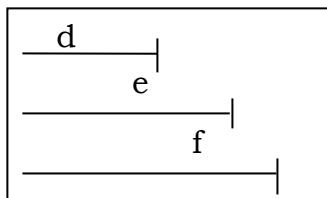


## What's More

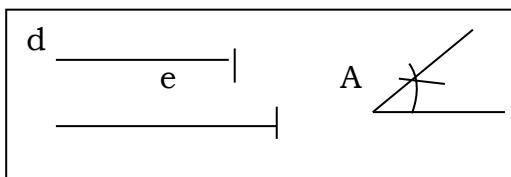
Try it!

Construct the following polygons in a separate sheet of paper.

1. Construct the triangle given the following:
  - a. three segments whose length are d, e, and f.



- b. sides d and e and the included angle, <A.



2-4. Construct a square, regular pentagon, and a regular hexagon with side equal to 1.5 inch.

4. Construct a rectangle with length 1.5inch and width 1inch.



## What I Have Learned

Here is another activity that will let you apply what you have learned about constructing triangle, square, regular pentagon and hexagon. Choose the word/expressions from the box to fill in each blank to make a statement true. Write your answer on a separate sheet of paper.

arc	line segment
circle	perpendicular bisector
connect	perpendicular line
diameter	rectangle
intersecting	vertices

1. In constructing a triangle, draw  $\overrightarrow{AD}$ . Place the compass on A and make its opening equal to c \_\_\_\_\_  $\overrightarrow{AD}$  at B.
2. For the last step in constructing a triangle, \_\_\_\_\_ the points A and C, and points B and C.
3. In constructing a square, you draw a \_\_\_\_\_ as the side of the square.
4. In step 3 in constructing a square, draw an \_\_\_\_\_ intersecting the perpendicular line.
5. Draw a \_\_\_\_\_ on a circle as the first step in n constructing a regular pentagon.
6. In step 3 constructing a regular pentagon, draw the \_\_\_\_\_ to create a midpoint.
7. In making a regular hexagon, with the same width of the compass and the compass point at C, draw a \_\_\_\_\_.
8. Connect the \_\_\_\_\_ to form a regular hexagon.
9. In constructing a rectangle, you need to draw two \_\_\_\_\_.
10. What do you call a polygon with four right angles and two diagonals?

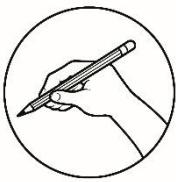


## ***What I Can Do***

Apply what you have learned about constructing triangle, square, rectangle, regular pentagon and hexagon.

Construct the following in a separate sheet of paper.

1. A triangle whose sides have lengths 1.5cm, 2cm, and 2.5cm.
2. A triangle whose sides have lengths 2.5cm and 3cm with an included angle of  $30^\circ$ .
3. A square whose sides equal to 2.3cm+.
4. A rectangle whose length is equal to 3cm and width equal to 2.5cm.
5. A regular pentagon whose side equal to 2.7cm.
6. A regular hexagon whose sides equal to 3.5cm.

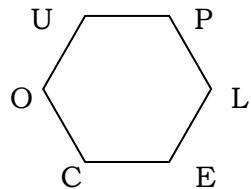


## Assessment

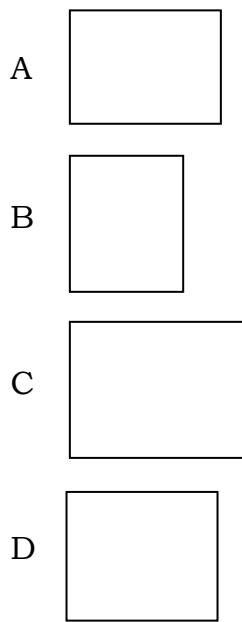
Choose the letter of the best answer. Write the chosen letter on a separate sheet of paper.

1. What do you call a step-by-step process used to create accurate geometric figures?
  - A. Construction
  - B. Drawing
  - C. Outline
  - D. Sketch
  
2. How to begin in constructing a square?
  - A. Draw perpendicular lines.
  - B. It starts by connecting the four points.
  - C. It starts with given side.
  - D. Measure the diagonal lines.
  
3. Construct  $\triangle ABC$  with  $AB = 3\text{cm}$ ,  $BC = 4\text{cm}$  and  $AC = 5\text{cm}$ .  
Which of the following is a correct order of steps in constructing a triangle?
  - A. Step 1: Draw a line  $AB$ , 3cm long.  
Step 2: Draw an arc of radius 4cm with  $B$  as the center.  
Step 3: Draw an arc of radius 5cm with  $A$  as the center to cut the arc drawn in Step 2 at  $C$ .  
Step 4: Join  $C$ , the point of intersection of the two arcs to the point  $A$  and  $B$ .
  
  - B. Step 1: Draw a line  $AB$ , 3cm long.  
Step 2: Join  $C$ , the point of intersection of the two arcs to the point  $A$  and  $B$ .  
Step 3: Draw an arc of radius 5cm with  $A$  as the center to cut the arc drawn in Step 2 at  $C$ .  
Step 4: Draw an arc of radius 4cm with  $B$  as the center.
  
  - C. Step 1: Draw an arc of radius 4cm with  $B$  as the center.  
Step 2: Join  $C$ , the point of intersection of the two arcs to the point  $A$  and  $B$ .  
Step 3: Draw an arc of radius 5cm with  $A$  as the center to cut the arc drawn in Step 2 at  $C$ .  
Step 4: Draw a line  $AB$ , 3cm long.

- D. Step 1: Draw an arc of radius 4cm with  $B$  as the center.  
 Step 2: Join  $C$ , the point of intersection of the two arcs to the point  $A$  and  $B$ .  
 Step 3: Draw a line  $AB$ , 3cm long.  
 Step 4: Draw an arc of radius 6cm with  $A$  as the center to cut the arc drawn in Step 2 at  $C$ .
4. It is a drawing tool that can be used to draw circle and its parts, and duplicate lengths?  
 A. Compass  
 B. Pencil  
 C. Protractor  
 D. Straightedge
5. What do you call that allows you to produce a straight line but not able to measure distances?  
 A. Compass  
 B. Pencil  
 C. Protractor  
 D. Straightedge
6. How do you know if you construct a square accurately?  
 A. If it has two right angles and two equal diagonals.  
 B. If all sides are equal and parallel.  
 C. If it has four sides.  
 D. If it has two perpendicular lines.
7. What are the sides of hexagon COUPLE?
- A.  $\overline{CE}$ ,  $\overline{CO}$ ,  $\overline{OL}$ ,  $\overline{OU}$ ,  $\overline{UP}$ ,  $\overline{PL}$   
 B.  $\overline{CO}$ ,  $\overline{OU}$ ,  $\overline{UP}$ ,  $\overline{PL}$ ,  $\overline{LE}$ ,  $\overline{EC}$   
 C.  $\overline{UP}$ ,  $\overline{OL}$ ,  $\overline{CE}$ ,  $\overline{EL}$ ,  $\overline{LP}$ ,  $\overline{CO}$   
 D.  $\overline{UC}$ ,  $\overline{PE}$ ,  $\overline{LO}$ ,  $\overline{CE}$ ,  $\overline{UP}$ ,  $\overline{OL}$



8. Which of the following construction of rectangle with sides equal to 1.8cm and 2.3cm?



9. Construct Pentagon BRAVE.

Which of the following is a correct order of steps in constructing a pentagon?

A. Step 1: Draw diameter  $\overline{CJ}$  on a Circle D.

Step 2: Draw the perpendicular bisector of  $\overline{FD}$  creating its midpoint

G.

Step 3: Draw  $\overline{JG}$  intersecting circle G at Hand I.

Step 4: Construct a perpendicular to  $\overline{CJ}$  at D and intersecting the circle at F.

Step 5: Circle G with radius  $\overline{FG}$ .

Step 6: With compass on J, and radius  $\overline{JH}$ , draw an arc intersecting the larger circle at E and R.

Step 7: With the compass on J and radius  $\overline{JI}$ , draw an arc intersecting the larger circle at V and A.

Step 8: Connect Band E, B and R, R and A, A and V, and, V and E to form the sides of BE, BR, RA, AV, VE of the regular pentagon BRAVE.

B. Step 1: Draw diameter  $\overline{CJ}$  on a Circle D.

Step 2: Construct a perpendicular to  $\overline{CJ}$  at D and intersecting the circle at F.

Step 3: Draw the perpendicular bisector of  $\overline{FD}$  creating its midpoint G.

Step 4: Circle G with radius FG.

Step 5: Draw  $\overline{JG}$  intersecting circle G at Hand I.

Step 6: With the compass on J and radius  $\overline{JI}$ , draw an arc intersecting the larger circle at V and A.

Step 7: With compass on J, and radius  $\overline{JH}$ , draw an arc intersecting the larger circle at E and R.

Step 8: Connect *B* and *E*, *B* and *R*, *R* and *A*, *A* and *V*, and, *V* and *E* to form the sides of  $\overline{BE}$ ,  $\overline{BR}$ ,  $\overline{RA}$ ,  $\overline{AV}$ ,  $\overline{VE}$  of the regular pentagon BRAVE.

C. Step 3: Draw the perpendicular bisector of  $\overline{FD}$  creating its midpoint *G*.

Step 1: Draw diameter  $\overline{CJ}$  on a Circle *D*.

Step 5: Draw  $\overline{JG}$  intersecting circle *G* at *H* and *I*.

Step 2: Construct a perpendicular to  $\overline{CJ}$  at *D* and intersecting the circle at *F*.

Step 4: Circle *G* with radius  $\overline{FG}$ .

Step 6: With the compass on *J* and radius  $\overline{JI}$ , draw an arc intersecting the larger circle at *V* and *A*.

Step 7: With compass on *J*, and radius  $\overline{JH}$ , draw an arc intersecting the larger circle at *E* and *R*.

Step 8: Connect *B* and *E*, *B* and *R*, *R* and *A*, *A* and *V*, and, *V* and *E* to form the sides of  $\overline{BE}$ ,  $\overline{BR}$ ,  $\overline{RA}$ ,  $\overline{AV}$ ,  $\overline{VE}$  of the regular pentagon BRAVE.

D. Step 1: Circle *G* with radius  $\overline{FG}$ .

Step 2: Draw diameter  $\overline{CJ}$  on a Circle *D*.

Step 3: Construct a perpendicular to  $\overline{CJ}$  at *D* and intersecting the circle at *F*.

Step 4: Draw the perpendicular bisector of  $\overline{FD}$  creating its midpoint *G*.

Step 5: Draw  $\overline{JG}$  intersecting circle *G* at *H* and *I*.

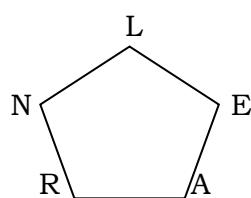
Step 6: With compass on *J*, and radius  $\overline{JI}$ , draw an arc intersecting the larger circle at *E* and *R*.

Step 7: With the compass on *J* and radius  $\overline{JI}$ , draw an arc intersecting the larger circle at *V* and *A*.

Step 9: Connect *B* and *E*, *B* and *R*, *R* and *A*, *A* and *V*, and, *V* and *E* to form the sides of  $\overline{BE}$ ,  $\overline{BR}$ ,  $\overline{RA}$ ,  $\overline{AV}$ ,  $\overline{VE}$  of the regular pentagon BRAVE.

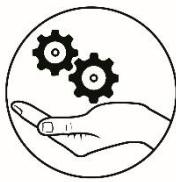
10. What are the sides of pentagon LEARN?

- A.  $\overline{LN}$ ,  $\overline{LE}$ ,  $\overline{LR}$ ,  $\overline{LA}$ ,  $\overline{RA}$
- B.  $\overline{LR}$ ,  $\overline{LA}$ ,  $\overline{NA}$ ,  $\overline{NE}$ ,  $\overline{RE}$
- C.  $\overline{LN}$ ,  $\overline{LE}$ ,  $\overline{EA}$ ,  $\overline{AR}$ ,  $\overline{RN}$
- D.  $\overline{LN}$ ,  $\overline{NE}$ ,  $\overline{EA}$ ,  $\overline{AR}$ ,  $\overline{RN}$



For item 11-15, construct the following:

11. A curtain whose length measures 6cm and width measures 8cm.
12. A flat screen TV whose side measures 7cm.
13. Triangular frame whose side measures 2.5cm
14. A pentagon ashtray whose side measures 1.2cm
15. Hexagonal mirror whose side measures 3cm.



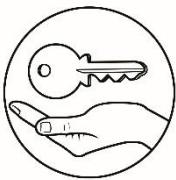
## ***Additional Activities***

This segment includes supplementary activities related to construction of a polygon.

Look at your surroundings and observe everything. In a long bond paper, draw an object that shows the shape of:

1. Triangle
2. Square
3. Rectangle
4. Regular pentagon
5. Regular hexagon.

Make it attractive and creative.



## Answer Key

**What I Know**

11-15. Students' answers may vary depending on how the students construct/draw the object. But the measurement must be in accordance with the given.

10. B  
9. A  
8. C  
7. A  
6. A  
5. A  
4. C  
3. D  
2. A  
1. A

11-15. Students' answers may vary depending on how the students construct/draw the object. But the measurement must be in accordance with the given.

**What I Have Learned**

1. Intersecting  
2. Connect  
3. Line segment  
4. arc  
5. diameter  
6. perpendicular bisector  
7. circle  
8. vertices  
9. perpendicular line  
10. rectangle

**What's New**

1. 3 Squares  
2. 4 Triangles  
Hexagon  
Pentagon,  
Rectangle,  
Square,

3. Triangle,  
4. vertices  
5. diameter  
6. perpendicular bisector  
7. circle  
8. vertices  
9. perpendicular line  
10. rectangle

**What I Can Do**

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

**What's In**

1.

2.

3.

4.

5.

6.

7.

**Assessment**

- 11-15. Students' answer may vary depending on how the students construct/draw the object. But the measurement must be in accordance with the given.
- 1-5. Students' answer may vary depending on how the students construct/draw the object. But the measurement must be in accordance with the given.
- Additional Activities**
1. A  
2. C  
3. A  
4. A  
5. D  
6. A  
7. B  
8. C  
9. B  
10. C

## **References**

Mathematics –Grade 7 Learner’s Material First Edition, 2013 ISBN: 978-971-9990-60-4

Oronce, Orlando A., et.al, *E-Math I Elementary Algebra Revised Edition 2010*. Rex Book Store, Inc.

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