

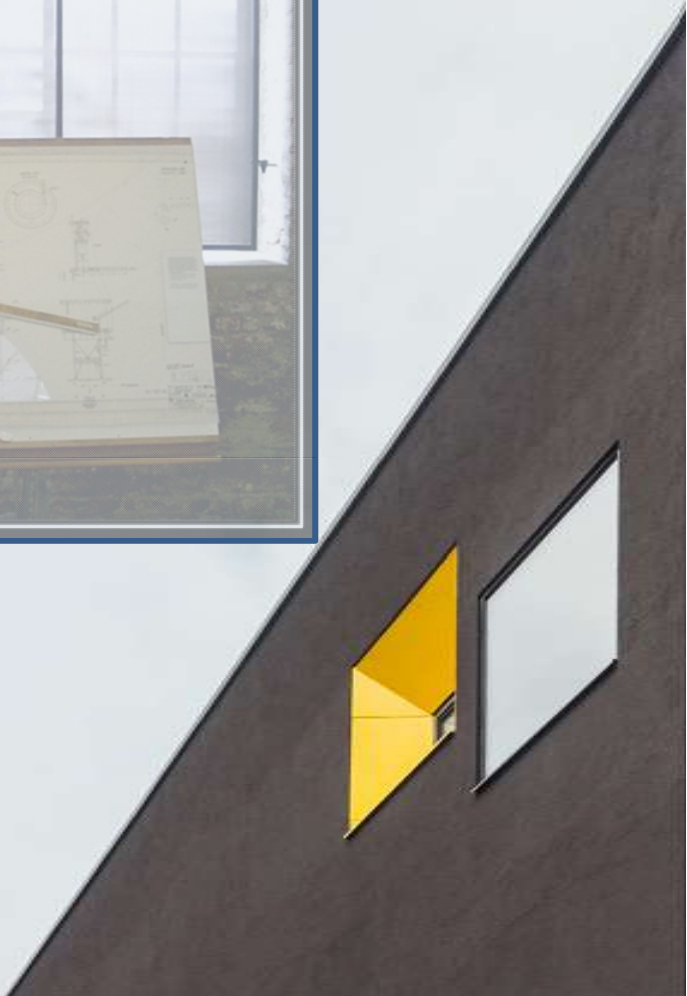
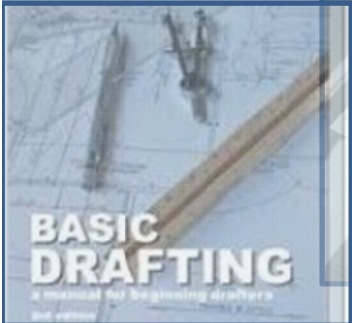
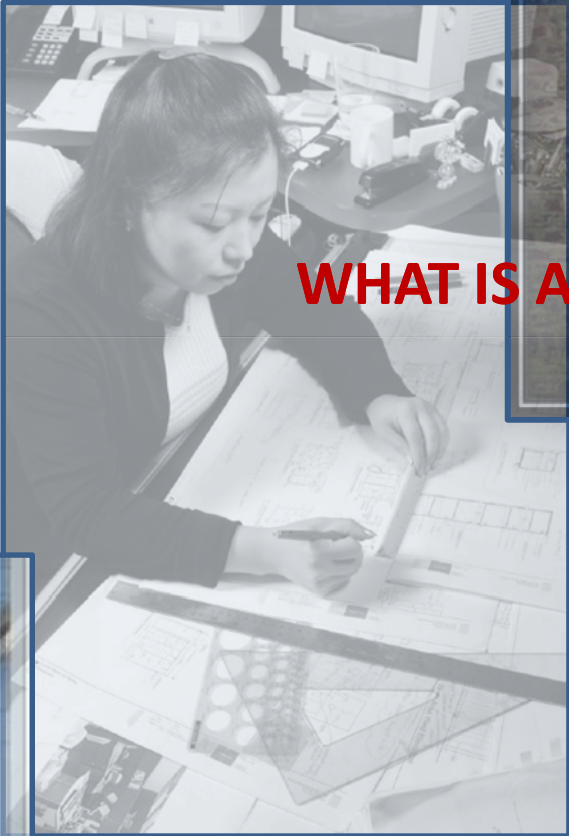
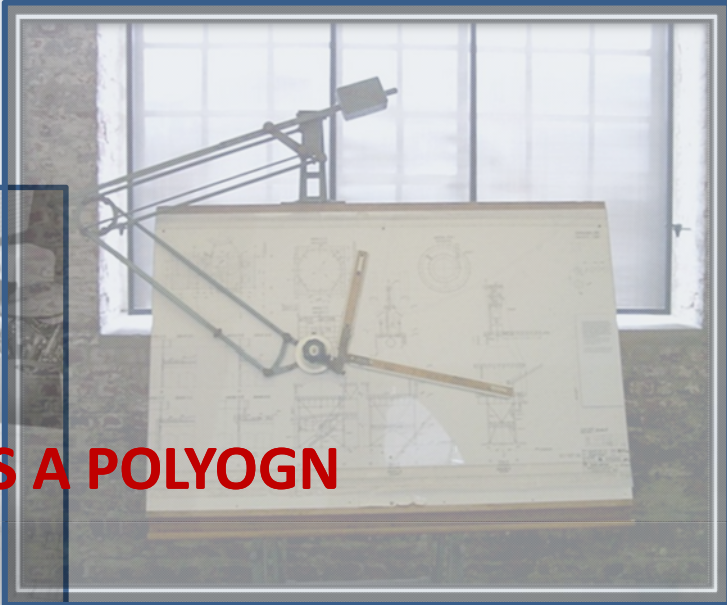


CONSTRUCTION OF REGULAR POLYGONS



LECTURE # 3
EDP CODE: 152007003
COURSE NAME: BASIC DRAFTING
ARCHITECT: NASEER ULLAH

WHAT IS A POLYGON



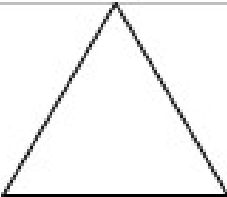
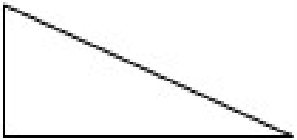
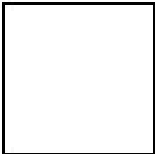

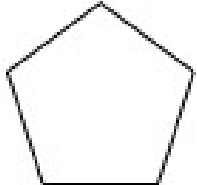
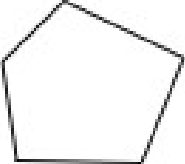

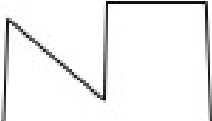
POLYGON

A polygon is any 2-dimensional shape formed with straight lines. Triangles, quadrilaterals, pentagons, and hexagons are all examples of polygons. The name tells you how many sides the shape has.

For example, a triangle has three sides, and a quadrilateral has four sides. So, any shape that can be drawn by connecting three straight lines is called a triangle, and any shape that can be drawn by connecting four straight lines is called a quadrilateral.

POLYGON

Regular and Irregular Polygons

Name	Regular	Irregular	Number of Sides
<i>Triangle</i>			3
<i>Quadrilateral</i>			4
<i>Pentagon</i>			5
<i>Hexagon</i>			6

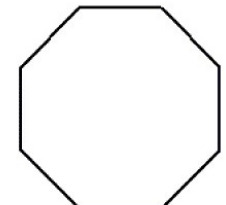
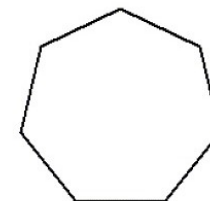
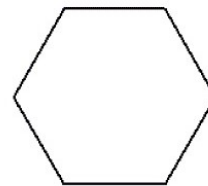
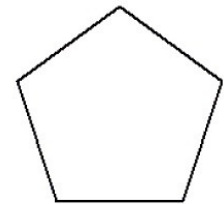
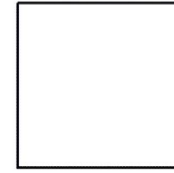
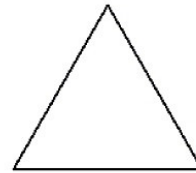
REGULAR POLYGON

Regular polygons are closed plane figures consisting of edges of equal length and vertices of equal size.

Three edges is the smallest number of edges to construct a polygon because two edges forms an angle and one edge is a segment.

Polygons are closed figures.

The regular polygon of four edges is the square.



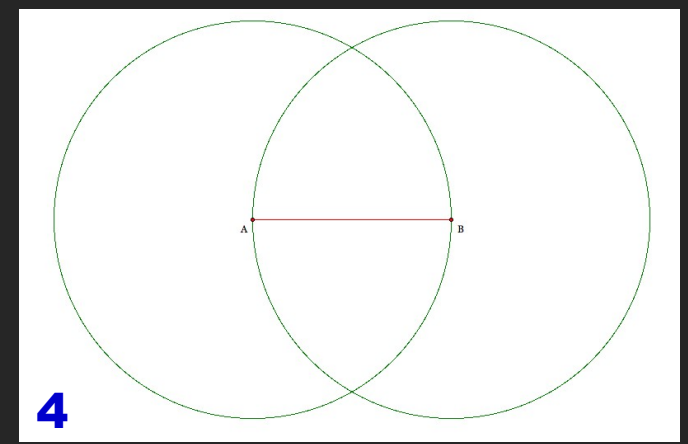
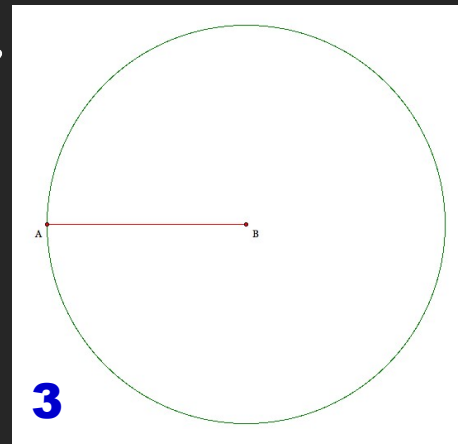
EXAMPLES OF POLYGONS IN REAL LIFE



EQUILATERAL TRIANGLE

We will investigate how to construct regular polygons using compass and architecture scale.

1. We begin by drawing an arbitrarily long segment. This will be one of the sides of our triangle.
2. We will label the points A for the left point and B for the right point.
3. We now construct a circle using point B as the center and point A as the edge.
4. Next, we make another circle using point A as the center and point B as the edge.

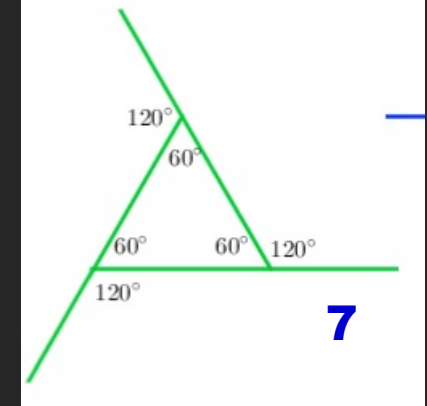
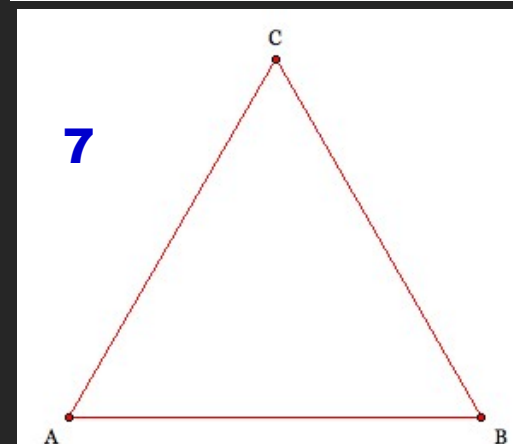
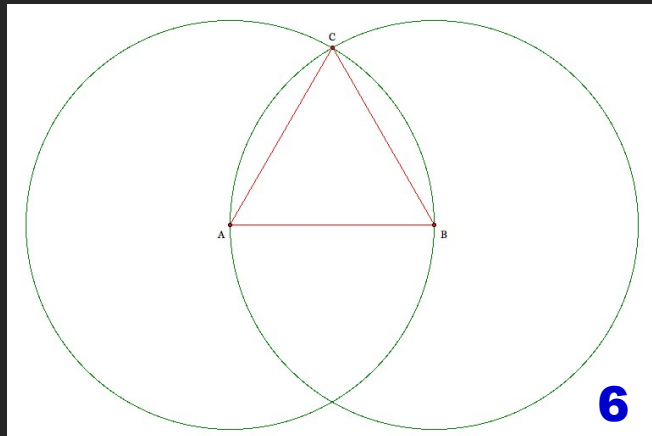
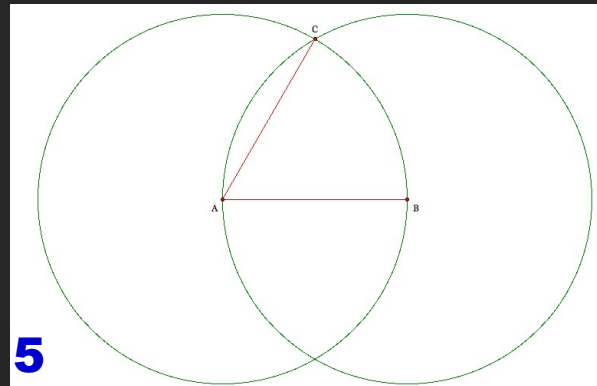


EQUILATERAL TRIANGLE

5. We construct their intersection and label it point C
6. We construct segment AC.
7. We construct segment BC.
8. We have our triangle! And also show the angles inside and outside. And don't erase the construction line, Highlight the triangle with bold line.

Second Method copy the link...

<https://www.youtube.com/watch?v=avJ81eKT91U>



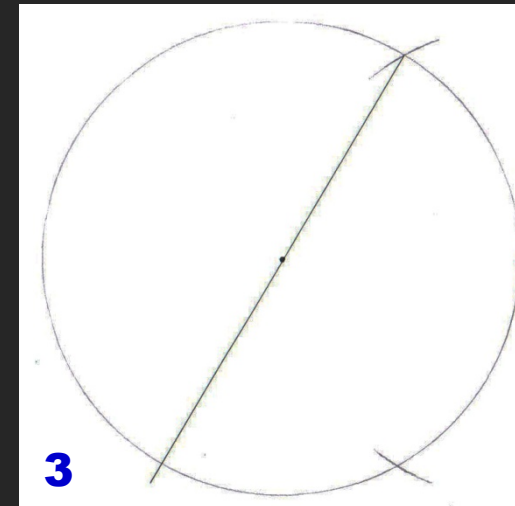
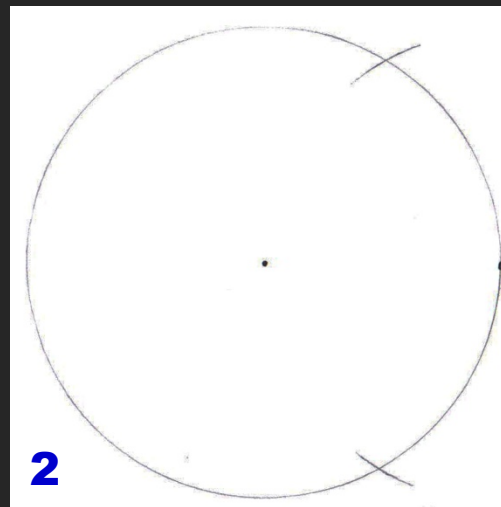
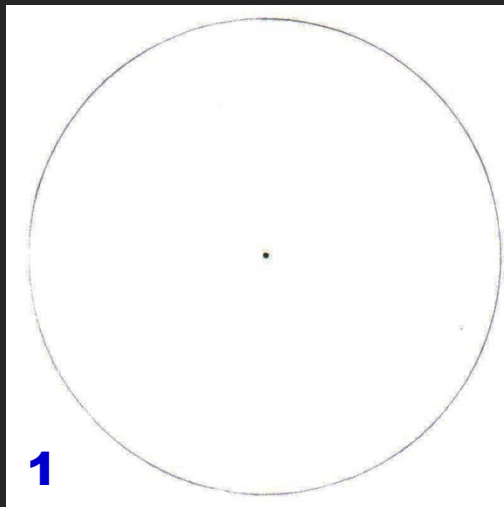
CONSTRUCTION OF HEXAGON

We now move into the section on constructing a hexagon with architect scale and compass

1. We begin by constructing a circle of arbitrary size.
2. We make a mark on the edge of the circle at the right side.

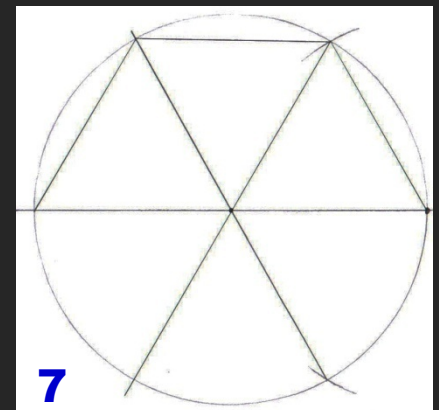
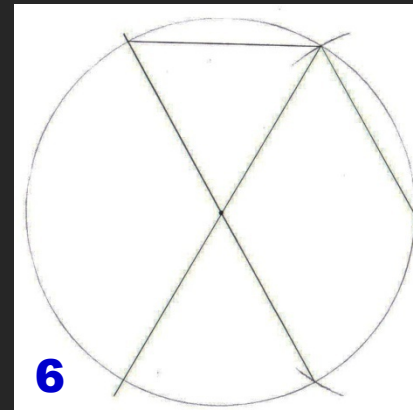
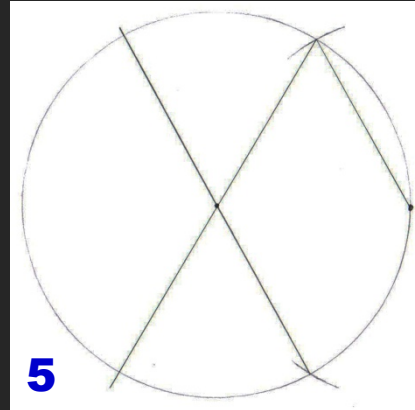
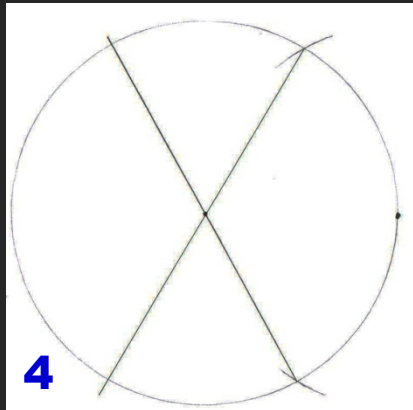
While maintaining the original arbitrary size of the compass, we place the point of the compass on that mark and mark the intersections of the circle on the top and bottom.

3. We now draw a diameter of the circle from the top intersection of the circles through the center and continuing through the opposite edge at the bottom with our straightedge.



CONSTRUCTION OF HEXAGON

4. We do the same for the opposite intersection.
5. We can now begin to construct the sides of the hexagon. Our first side is from the right point we marked to the top intersection of the circle.
6. Our second side connects the top intersections. But wait, where is our third side going to go?
7. We make our third side by constructing the line that connects the marks of the centers of our two circles. If we extend that line through the other side, we have the intersection on the left which marks the point where our third side will terminate. We can now construct this third side.

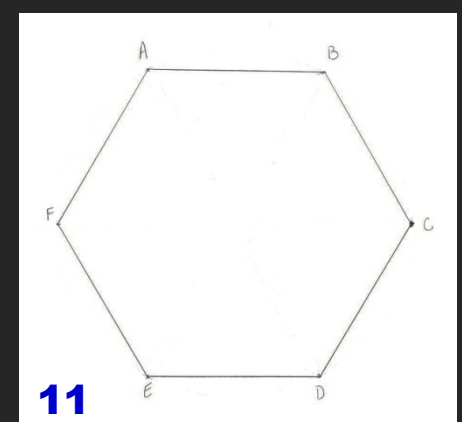
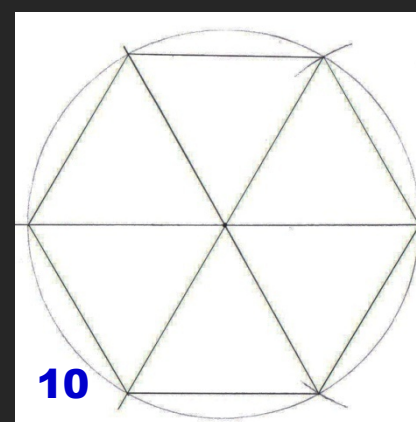
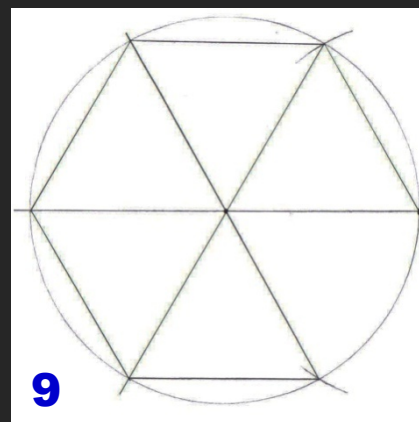
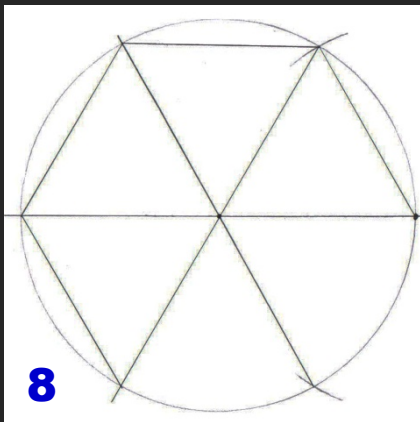


CONSTRUCTION OF HEXAGON

8. We draw the fourth side by starting at the intersection we just made and end at the bottom left intersection.
9. Our fifth side is constructed by connecting the bottom intersections.
10. We finished constructing the sides of the hexagon by connecting the intersections from the bottom right to the right-most mark
11. We have our hexagon! And also show the angles inside and outside. And don't erase the construction line, Highlight the Hexagon with bold line.

Also check the link for further guidance.

https://www.youtube.com/watch?v=Qbby_by8YAg

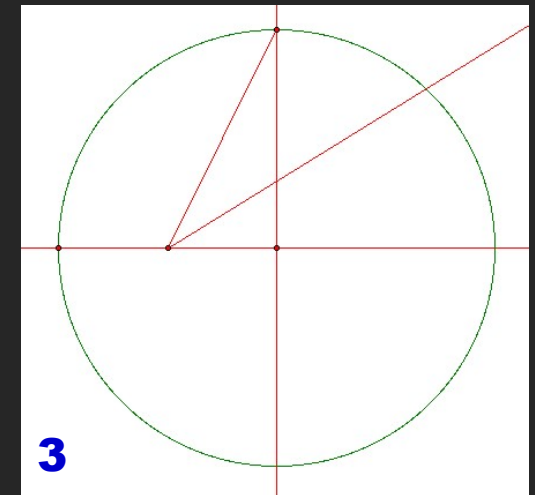
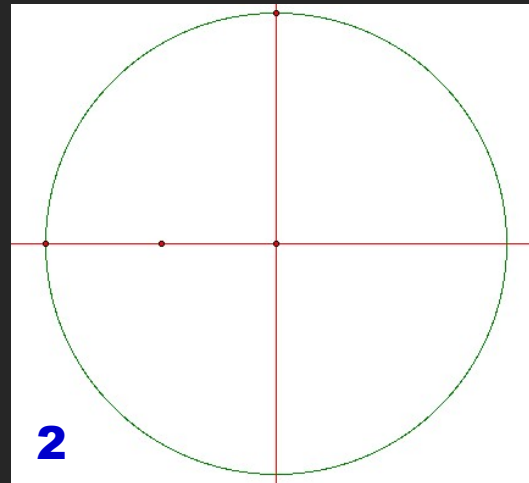
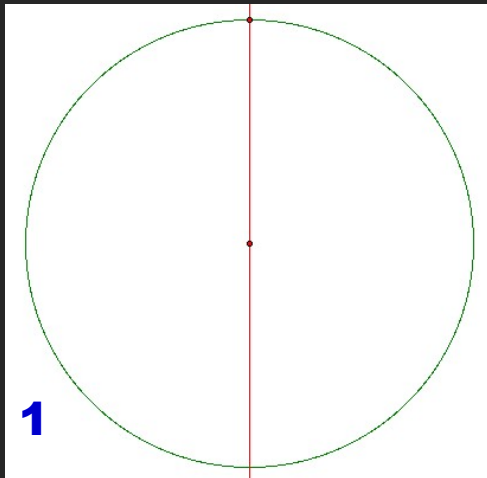


CONSTRUCTION OF PENTAGON

We now turn our attention to the construction of a pentagon using compass and Architecture Scale.

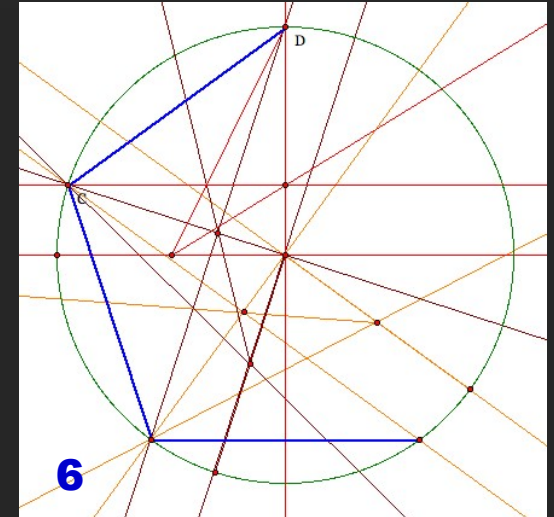
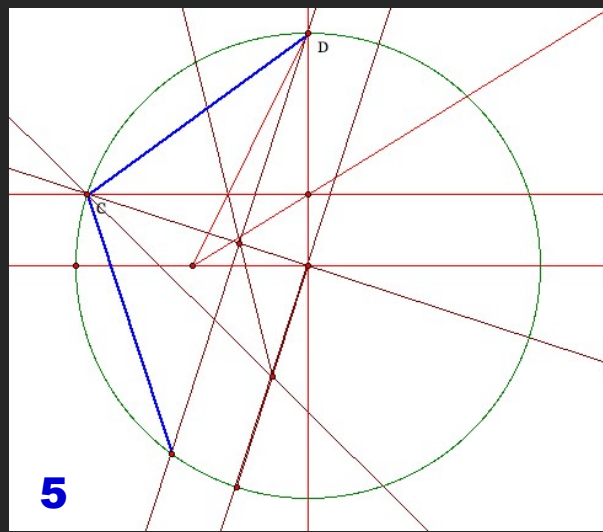
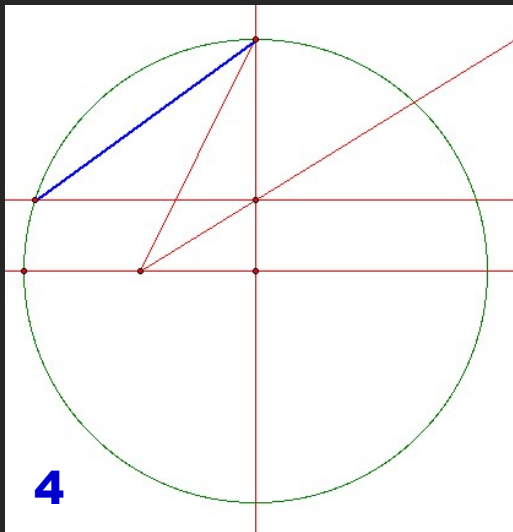
There are many different ways to construct a pentagon. Its little bit tricky but you concentrate on the process.

1. We construct a circle of arbitrary length. Then we construct a line down the center of the circle.
2. Next, we construct a perpendicular line to the vertical line through the center of the circle. We make a segment with the line we just created from the center to the left edge. Then we construct the midpoint of that segment.
3. From there we draw a line connecting the midpoint to the top of the circle. This creates an angle and next we construct the angle bisector.



CONSTRUCTION OF PENTAGON

4. We construct a parallel line to the previous horizontal line, and the intersection of the new line with the edge of the circle is the point for the creation of the first side of our pentagon. We now draw this side. This process will be repeated with different colors beginning with the side point we just constructed.
5. We now repeat this process for the second side with maroon.
6. We repeat this process again with orange.

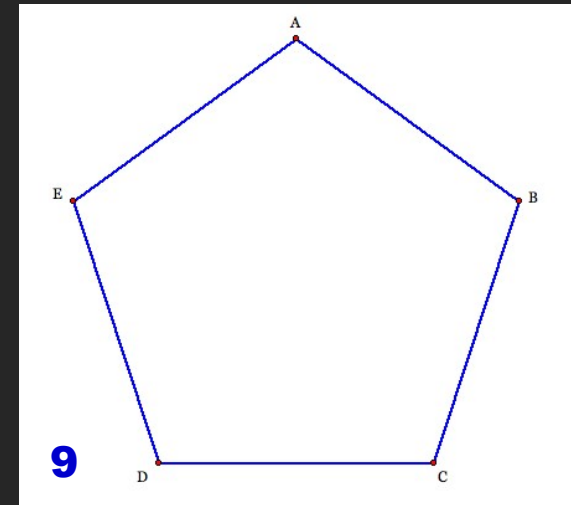
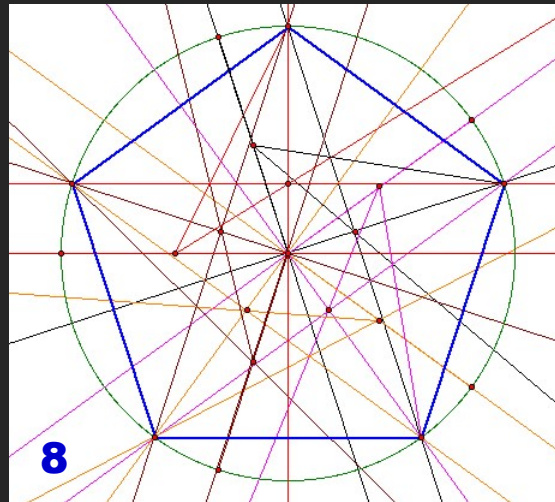
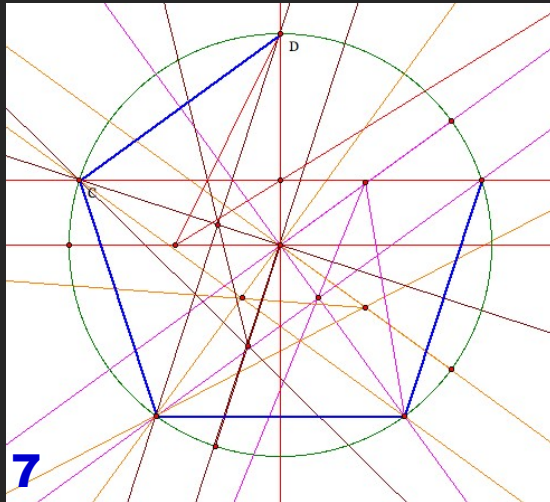


CONSTRUCTION OF PENTAGON

7. We repeat this process with pink or fuchsia, whatever that color is.
8. It seems that there are many things happening in the middle of this construction. However, the pentagon that I thought would be directly inside is not as perfectly situated as I thought. now repeat this process for the second side with maroon.
9. There is your Pentagon, also show the angle in pentagon and don't erase the construction line. Highlight the pentagon with bold line.

Below is the link for video demonstration

<https://www.youtube.com/watch?v=XpAhLgPp2Dc>





Department of Art and Design

IQRA national University, Peshawar.

Subject:Basic Drafting

Assignment # 3

- 1) Equilateral triangle (all sides must be 3")
- 2) Hexagon (all sides must be 3")
- 3) Pentagon (all sides must be 3")

Draw any of two regular polygon on A3 sheet.

Note: Draw light construction line (guidelines) for drawings and don't erase the line after completing the drawings also highlight the shape in bold line.

<https://www.youtube.com/watch?v=avJ81eKT91U> (triangle)

https://www.youtube.com/watch?v=Qbby_by8YAg (Hexagon)

<https://www.youtube.com/watch?v=XpAhLgPp2Dc> (Pentagon)



THANKS