Compass Activities

For the Math A Examination:
The basic constructions required for the Math A Examination include:
* copy a line segment
* copy an angle
* bisect a line segment
* bisect an angle
* construct perpendicular lines
* construct parallel lines.

* In the space below, show all valid constructions on the following:

1. Copy a line segment.

2. Copy an angle.


4. Construct a perpendicular line through a point not on a line.

5. Construct a perpendicular line through a point on a line.

6. Construct a line parallel to the given line.
**Create an Equilateral Triangle**

1. Given line BC, create an equilateral triangle, with Line BC as the base.  
2. Create an arc the same length as line BC. The center of the arc is at point B,  
   and the start of the arc is at point C.  
3. Create a second arc the same length as line BC. The center of the arc is at point C,  
   and the start of the arc is at point B. These two arcs intersect at point A.  
4. Create a line from point B to point A.  
5. Create a line from point C to point A.  
   * Line BC, BA and CA form an equilateral triangle.

**Construct the center point of a given circle**

1. Begin with a circle, but no center point.  
2. Draw chord AB.  
3. Construct the perpendicular bisector of chord AB. Let C and D be the points where it  
   intersects the circle. (Refer to the construction of a perpendicular bisector.)  
4. Chord CD is a diameter of the circle. Construct point P, the midpoint of diameter CD. Point P  
   is the center point of the circle. (Refer to the construction of a the midpoint of a line segment.)

**Inscribe a Circle Inside a Given Triangle**

1. Given triangle ABC, create a circle that will be inside the triangle and  
   tangent to each of the sides.  
2. Bisect angle ABC and angle BCA and angle CAB. (See Bisecting an Angle)  
   Extending each of the bisecting lines until they intersect with each other to create point E.  
3. Point E will now become the center of the circle with the radius being  
   the distance from lines AB and BC and AC. Thus inscribing a circle inside a give plane.

**Given a triangle, inscribe a circle**

1. Begin with triangle KLM.  
   Construct the bisectors of \(< K \) and \(< L \). (Refer to the angle bisector construction.)  
2. Let point Q be the intersection of the two angle bisectors.  
   Construct a line through point Q, perpendicular to line segment KL. Let point R be the point of  
   intersection. (Refer to the construction of a perpendicular line through a given point.)  
3. Center the compass on point Q, and draw a circle through point R. The circle will be tangent  
   to all three sides of a triangle.
(Show all valid constructions)

1. Create an Equilateral Triangle.

2. Construct the center point of a given circle.

3. Inscribe a Circle Inside a Given Triangle.

4. Given a triangle, inscribe a circle.