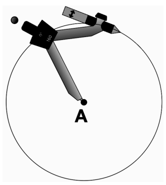
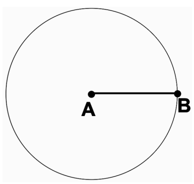
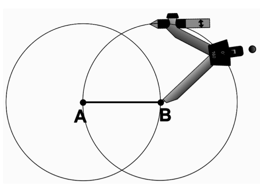
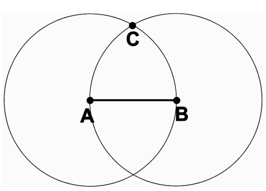
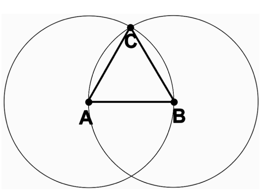
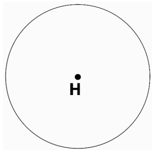
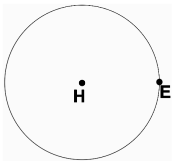
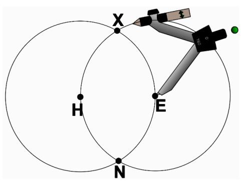
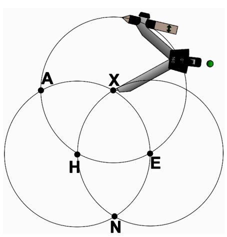
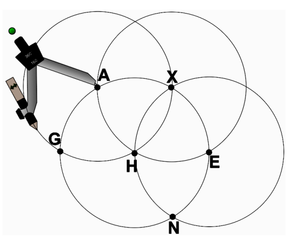
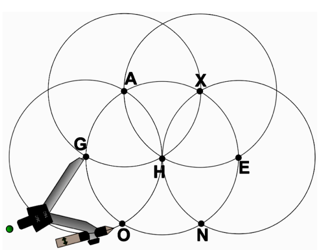
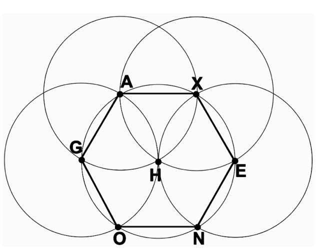
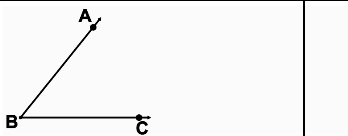
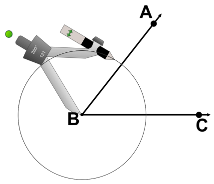
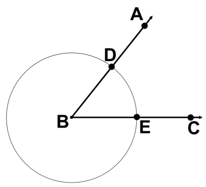
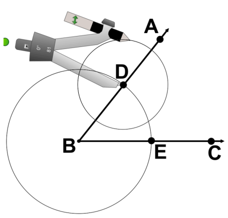
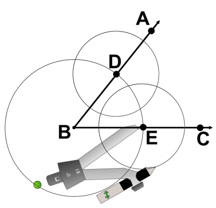
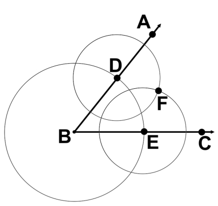
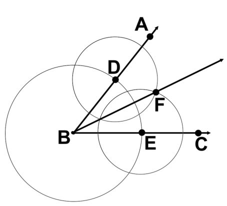
______________________________ C1

DIAGRAMS	STEPS	WHAT THIS DOES (justification)
	**1.** Start with a segment length for the sides of the triangle.	**Gives us a length to use for the sides of the triangle**
	**2.** Construct circle *A* with the given radius.	**Shows all the points a fixed distance from point A**
	**3.** Choose point *B* on circle *A* and connect *A* and *B* to make the first side of equilateral triangle *ABC.*	**Starts the triangle with side AB**
	**4.** Construct circle *B* with the same radius as circle *A*.	**Shows all the points a fixed distance from point B**
	**5.** Label point *C* where circles *A* and *B* intersect.	**The third vertex (point) of the equilateral triangle because C is on both circles A and B. AB = AC = BC because circles A and B are constructed with the same radius, and AC, BC, and AB are all radii of circle A and/or circle B**
	**6.** Connect *A* to *C* and *B* to *C* to complete the second and third sides of equilateral triangle *ABC*.	**The other two sides of the triangle**

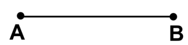
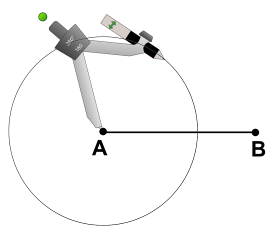
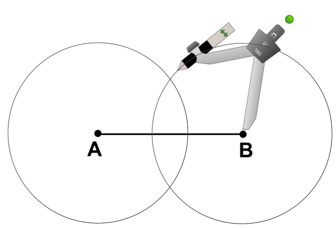
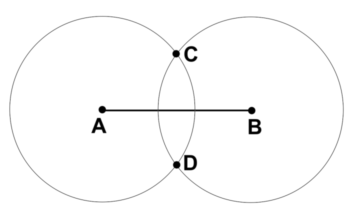
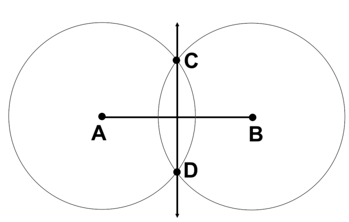
C2 1.2 REGULAR HEXAGON Name_______________________________________ **C2**

DIAGRAMS	STEPS	WHAT THIS DOES (justification)
	**1.** Use the same radius for all circles in this construction. Start with circle *H*. All vertices of the hexagon will be on circle *H*.	**All points that are a fixed distance from point *H*.**
	**2.** Choose a point on circle *H* and label it *E*.	**The first vertex (corner) of the hexagon.**
	**3.** Construct circle *E* (same radius as circle *H*). Label points *X* and *N* where circles *H* and *E* intersect.	**Two more vertices (corners) of the hexagon both the distance EH from points E and H**
	**4.** Construct circle *X* and label point *A* where circles *H* and *X* intersect.	**One more vertex (corner) of the hexagon which is the distance EH from points X and H**
	**5.** Construct circle *A* and label point *G* where circles *H* and *A* intersect.	**One more vertex (corner) of the hexagon which is the distance EH from points A and H**
	**6.** Construct circle *G* and label point *O* where circles *H* and *G* intersect.	**One more vertex (corner) of the hexagon which is the distance EH from points G and H**
	**7.** Connect points *E, X, A, G, O, and N* to complete the regular hexagon.	**The sides of the hexagon all equal based on the work in steps 1 through 6 – a series of circles with the same radius**

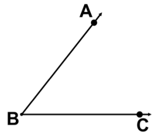
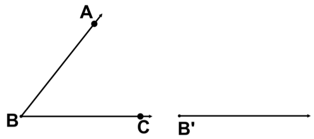
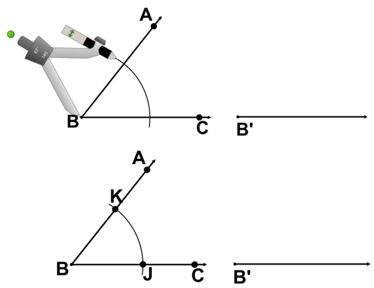
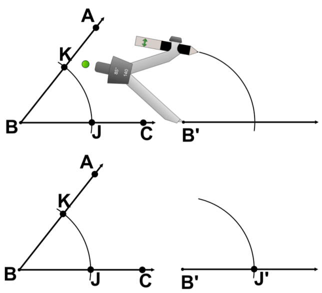
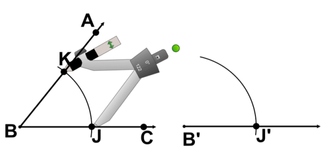
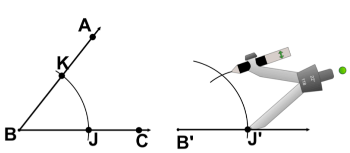
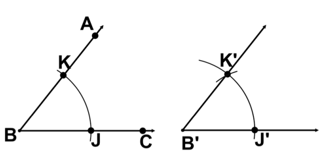
C3 1.3 BISECT AN ANGLE Name________________________________ **C3**

DIAGRAMS	STEPS	WHAT THIS DOES (justification)
	**1.** Start with $\angle ABC$.	**Gives us angle to bisect**
	**2.** Construct circle *B* that intersects both sides of $\angle ABC$.	**Shows all the points a fixed distance from vertex B**
	**3.** Label points *D* and *E* where circle *B* intersects the sides of $\angle ABC$	**Gives us BE = BD because they are both radii of circle B**
	**4.** Construct circle *D* with any radius.	**Gives us all points a fixed distance from D**
	**5.** Construct circle *E* with the same radius you used to construct circle *D*.	**Gives us all points a fixed distance from E so that the points of intersection of circle E and circle D are equal.**
	**6.** Mark the intersection of circle *D* and circle *E* that is inside $\angle ABC$. Label the intersection point *F*.	**Gives us F, a point equidistant from the sides of angle ABC because F is equidistant from points D and E**
	**7.** Draw $\overrightarrow{BF}$ which is the bisector of $\angle ABC$	**Ray BF shows the set of points equidistant from the sides of angle ABC (BA and BC) which means RF bisects the angle**

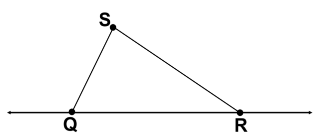
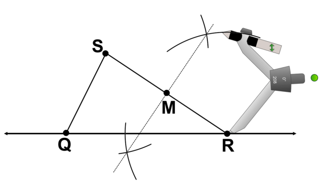
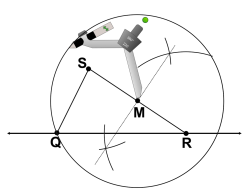
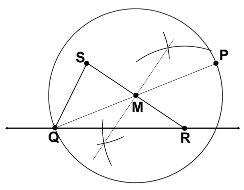
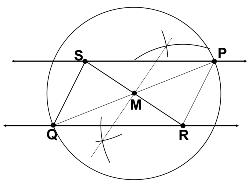
C4 1.5 CONSTRUCT A PERPENDICULAR BISECTOR Name______________________________ **C4**

DIAGRAMS	STEPS	WHAT THIS DOES (justification)
	**1.** Start with $\overline{AB}$.	**Gives me a segment to bisect.**
	**2.** Construct circle *A* with a radius that is greater than half the length of $\overline{AB}$.	**Gives me all points a fixed distance from point A.**
	**3.** Construct circle *B* with the same radius as circle *A*.	**Gives me all points a fixed distance from point B.**
	**4.** Label points *C* and *D* where circles *A* and *B* intersect.	**Gives me two points, C and D that are equidistant from points A and B.**
	**5.** Construct $\overleftrightarrow{CD}$, the perpendicular bisector of $\overline{AB}$ and label the point where $\overleftrightarrow{CD}$ and $\overline{AB}$ intersect with an *M*.	**Gives all points equidistant from points A and B, so the intersection of CD and AB, point M, must be equidistant from points A and B making it the bisector of AB. Since the 180° angle AMB is also bisected, AMC must be 90° resulting in perpendicular lines.**

C5 **1.5 COPY AN ANGLE** **Name**____ **C5**

DIAGRAMS	STEPS	WHAT THIS DOES (justification)
	**1.** Start with ∠ABC.	**An angle to copy**
	**2.** From a new endpoint *B′*, draw a ray. This will become one side of the new angle.	**Gives us one side of the new angle. Any ray will do because length of the side of an angle does not matter when we copy an angle**
	**3.** Place the compass pivot point on *B*. Set the radius to a length so that an arc will intersect both sides. Draw an arc across both sides of the angle, creating the points *J* and *K* as shown.	**Marks 2 points (J and K), one on each side of the angle, that are equidistant from the vertex B This means that** $\overline{JK} \cong \overline{J'K'}$
	**4.** Without changing the radius, place the compass pivot point on *B′* and draw an arc, creating point *J′* as shown.	**Marks J' on the first side of the angle such that the distance between J' and B' is the same as the distance between J and B. It also shows all possible locations for K' with respect to the vertex B'**
	**5.** Set the compass on *J* and adjust the radius length so the pencil is on point *K*.	**Measures the distance between K and J**
	**6.** Without changing the compass radius, move the compass pivot point to *J′* and draw a new arc across the first arc, creating point *L* where they cross.	**Marks locations that are the distance JK away from point J'**
	**7.** Draw a ray from *B′* through *K′*.	**The intersection of the arcs shows the location for K' so that** $\overline{BK} \cong \overline{B'K'}$ **and** $\overline{BJ} \cong \overline{B'J'}$ **since we already have** $\overline{JK} \cong \overline{J'K'}$**, we get us 2 identical triangles and therefore identical angles B and B'**

C6 **PARALLEL LINES** Name______________________________________ **C6**

DIAGRAMS	STEPS	WHAT THIS DOES (justification)
	**1.** Start with any line and a point not on the line.	**A line and a point through which to construct a line parallel to the first line**
	**2.** Mark and label any two points on the line	**Two points on the line to be vertices of a triangle.**
	**3.** Connect the three points to make a triangle. (triangle QRS in this example)	**A triangle to rotate 180°.**
	**4.** Construct the perpendicular bisector of one of the two sides that are not on the original line, in this example, $\overline{SR}$ and mark point M	**A midpoint to rotate the triangle around so that alternate interior angles will be congruent.**
	**5.** Set the compass on point *M* with radius $\overline{MQ}$ and construct circle M.	**All possible points for P, the image of Q, when Q is rotated.**
	**6.** Draw the diameter of circle M from point Q and label the other endpoint of the diameter P so that you have diameter $\overline{QP}$.	**P at the other end of the diameter is a 180° rotation about point M of point Q so when connected with S and R, alternate interior angles will be congruent (rotation preserves angle measure).**
	**7.** Draw $\overleftrightarrow{SP}$. This line is parallel to the original line $\overline{QR}$	**A line parallel to QR because the triangle has been rotated making alternate interior angles congruent**