Name___________________________________

Locus Construction (II)

You'll need the following materials for this activity:

1 piece of wax paper
Compass
Pen/Pencil

1) On your piece of wax paper, use your compass to construct a fairly large circle. (Be sure to make the radius small enough so that the entire circle is contained on the wax paper.

2) Plot and label the center point of your circle. Label this point *A*.

3) Plot and label another point in the interior of this circle. Label this point *D*.

4) Plot approximately 20-25 points *on the circle*. (Just draw dots to represent these points). Label *any one* of these 20-25 points as *B*.

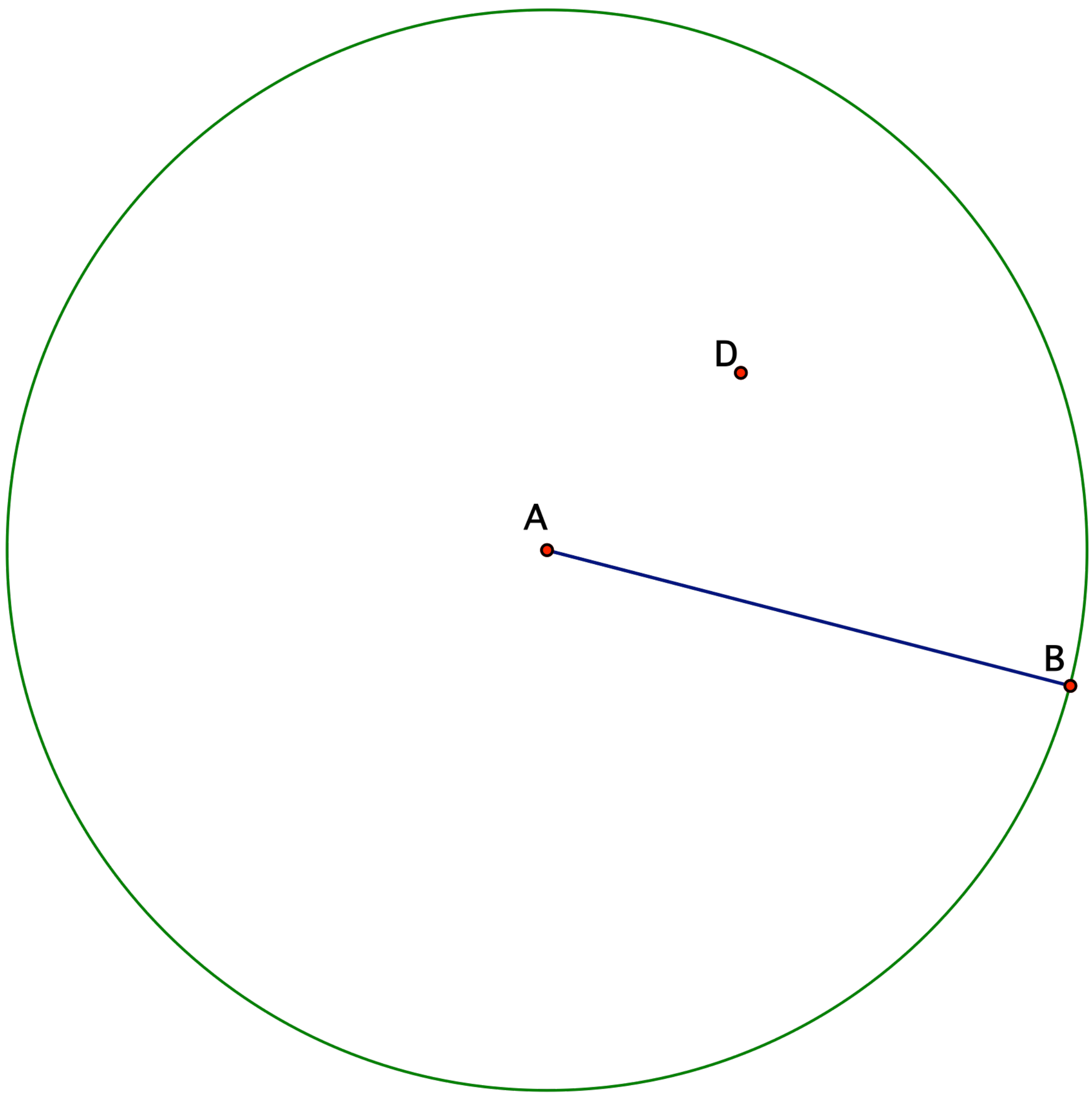
5) Take the wax paper and fold it so that point *B* lies on top of point *D*. Crease sharply.

6) Repeat step (5) above for all the other points you plotted on the circle (back in step 4). That is, treat each point on the circle as another "point *B*." Simply fold each "point *B*" on the circle to point *D*. *Be sure to crease sharply each time!*

7) Take a look at the wax paper. What do you see? *Describe as best you can.*

Name___________________________________

8) Let's analyze this again. Consider the following diagram below. Fold point B onto point D just one more time. '



9) This fold line is called the ____________________________ ________________________ of $\overline{BD}$.

10) Every point on this ____________________________ ________________________ of $\overline{BD}$

is _______________________ from points ________ and ________.

11) Label the point where this fold line crosses radius $\overline{AB}$ as $\boldsymbol{E}$.

Name___________________________________

Did you know that Point E is actually a point that lies on the curve that you generated by the paper folding activity on the previous page? It does. So what's so special about all those point E's that lie on the curve you generated on the wax paper? Let's find out:

12) Since the radius of a circle **never changes**, it is said to be ____________________.

Since the radius of a circle is always __________________ *we can conclude that radius*

$\overline{AB}$ *(which has a length denoted as AB*) is __________________________. But wait!

AB = ________ + __________ (made obvious from the diagram).

Since point E lies on the ______________________ _________________ of ___, we

can conclude that __________ = __________ due to what was expressed in (10) above.

Since AB = _________ + __________ *is always a* _____________________ *value, we can*

conclude, upon simple substitution, that ***the value*** ________+ __________ ***must always***

remain____________________***as well!***

The bold phrase in the sentence above applies for every point E that can be generated through this paper folding process described above!