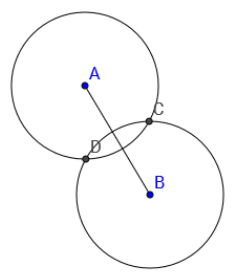
**Geometry U 1-5: Investigation of Distance and Bisection Put all responses on another paper. \*The verbs “construct” and “reconstruct” mean to use a compass and a straightedge.**



1] Circles A and B have the same radius.

[a] With your compass and straightedge,

reconstruct the diagram of circles A and B.

MAKE SURE both circles have the same radius.

Label C and D where the circles intersect.

[b] Next, connect C and D.

[c] Is C equidistant from A and B? Explain how you know.

[D] Is D equidistant from A and B? Explain how you know.

[e] Choose three random points on . Measure the distance each point is from C AND from D. Record each distance.

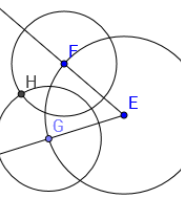
[f] Is each point closer to C or to D?

[g] Label E the point of intersection for and . \*Measure / AEC and / BEC. Record your results.

[h] Explain how is related to : is the \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ of because \_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2] / FEG is shown. F and G are both on circle E.

 Circles F and G have the same radius. H is on

circles F and G.

[a] With your compass and straightedge,

reconstruct / FEG with circles E, F and G.

MAKE SURE circles F and G are congruent.

[b] Is E equidistant from F and G? Explain.

[c] Is H equidistant from F and G? Explain.

[d] Connect E and H and extend past H to

create .

2] [e] Choose three random points on and measure how far each point is from F AND from G. Record your results.

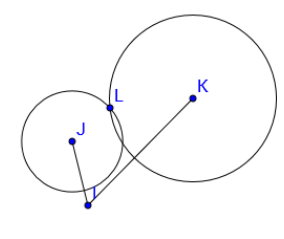
[f] Is each point on closer to F or to G?

[g] Explain how is related to / FEG: is the \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ of / FEG because \_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3] Examine the construction to the right. Use it to answer the questions below.

IJ < IK and JL < KL.



[a] Does I appear to be equidistant from J and K? If not, I is closer to which point? Explain how you know.

[b] Does L appear to be equidistant from J and K?

If not, L is closer to which point? Explain how you know.

[c] If you connect I and L, will points on be equidistant from J and K? Explain.

[d] If you draw , will it be the angle bisector of

/ JIK? Explain your response.

4] Suppose intersects . \*What conditions must be met, so that is the perpendicular bisector of ?

5] Suppose is a ray between and . All three rays have endpoint Y. \*What conditions must be met, so that is the angle bisector of / XYZ?

6] \*Challenge: /\ QRS has the following side lengths: QR = 2 ¾ “, RS = 4 “, QS = 5 “. Can you draw the triangle and find the point equidistant from Q, R and S?