

Name: _____
Geometry

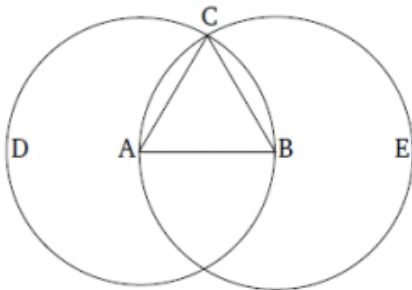
Date: _____
Band: _____

Constructions Homework

Constructing an Equilateral Triangle: Let's look at how Euclid approached this problem. Read his Proposition to help you construct an equilateral triangle using a compass and a straightedge.

Proposition 1

To construct an equilateral triangle on a given finite straight-line.



Let AB be the given finite straight-line.

So it is required to construct an equilateral triangle on the straight-line AB .

Let the circle BCD with center A and radius AB have been drawn [Post. 3], and again let the circle ACE with center B and radius BA have been drawn [Post. 3]. And let the straight-lines CA and CB have been joined from the point C , where the circles cut one another,[†] to the points A and B (respectively) [Post. 1].

And since the point A is the center of the circle CDB , AC is equal to AB [Def. 1.15]. Again, since the point B is the center of the circle CAE , BC is equal to BA [Def. 1.15]. But CA was also shown (to be) equal to AB . Thus, CA and CB are each equal to AB . But things equal to the same thing are also equal to one another [C.N. 1]. Thus, CA is also equal to CB . Thus, the three (straight-lines) CA , AB , and BC are equal to one another.

Thus, the triangle ABC is equilateral, and has been constructed on the given finite straight-line AB . (Which is) the very thing it was required to do.

Copying and Bisecting a Segment: Copy the segment. Bisect the segment into FOUR congruent parts.



Copy and Bisecting an Angle: Copy the angle. Bisect the angle into FOUR congruent parts.

