
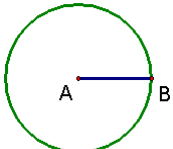
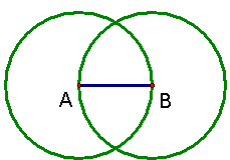
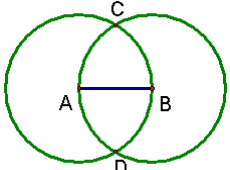
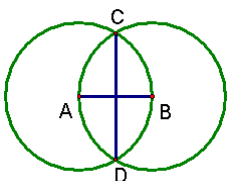


Construct the Square Root of 3

How to construct the square root of 3

	1. Let the line segment AB be unity (A line segment of length 1).
	2. Construct a circle with center A and radius AB
	3. Construct a circle with center B and radius AB
	4. Mark the intersections of the two circles C and D.
	5. Draw line segment CD. The length of line segment CD is $\sqrt{3}$.

Proof of Construction

1. The length of AB is taken to be 1 by definition.
2. Because both circles are constructed with a radius of AB, they are congruent.
3. Since the segments CA and CB are both radii of congruent circles, they are congruent.
4. Since AB is perpendicular to CD (see Euclid's Proposition ??), angle CMB is a right angle.
5. By the Pythagorean Theorem (see Euclid's Proposition 47), $BM^2 + CM^2 = BC^2$.
6. But, since CD is unity, $CM = 1/2$.
7. Since $CB =$ unity by construction, $CB = 1$, which gives $CM^2 + (1/2)^2 = 1^2$.
8. Since $CM = 1/2 CD$, $(1/2 CD)^2 + (1/2)^2 = 1^2$.
9. Simplifying give us $(1/2 CD)^2 + 1/4 = 1$, $1/4 CD^2 = 3/4$, $CD^2 = 3$, $CD = \sqrt{3}$, QED.

Source: http://McAdamsMath.tripod.com/numbers/cons_sqrt_3.pdf