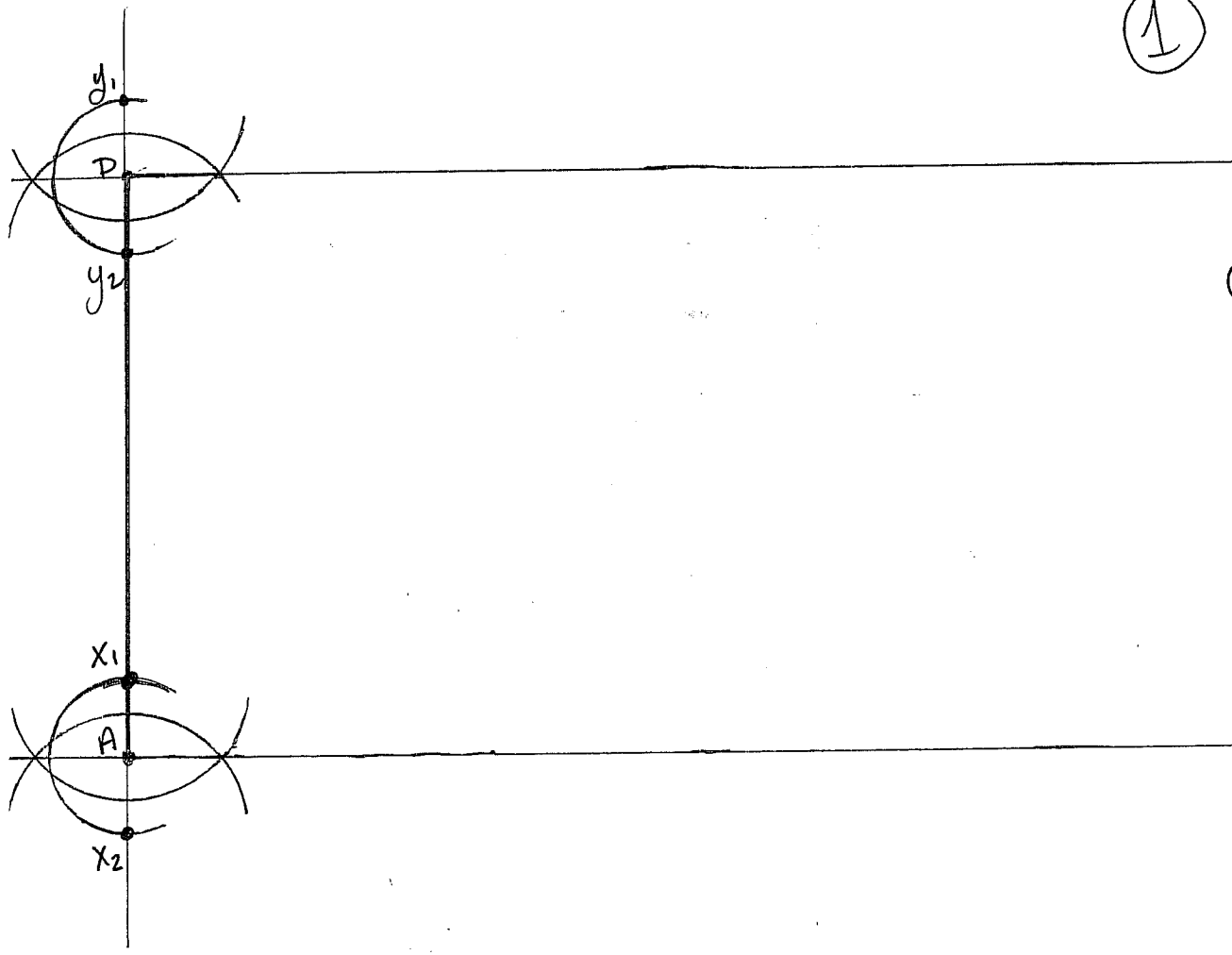
Construction 2: Golden Rectangle given shorter side

We wish to construct a Golden rectangle where the given side AD is the short side.

So we need to construct the long side of a long/short pair that are in golden proportions.

Construction 2: Golden Rectangle given shorter side

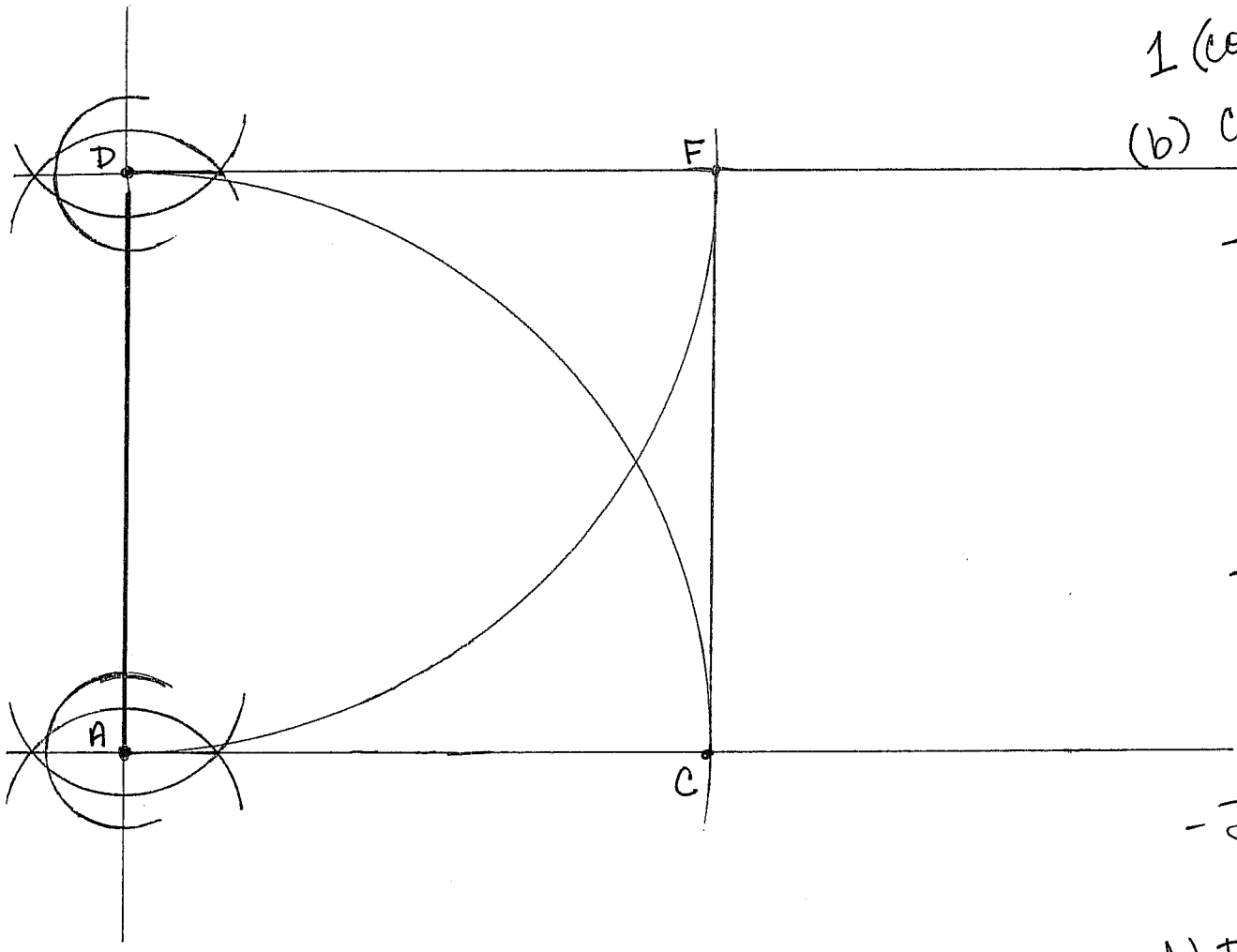


(1) construct a square whose sides include the given side AD.

(a) Construct lines perpendicular to AD at A and at D.

- extend line AD on both sides
- draw a circle around A that intersects the line in two places X_1 & X_2
- Bisect the line segment X_1X_2.
- draw circle about D, intersects at y_1 & y_2
- Bisect y_1y_2.

Construction 2: Golden Rectangle given shorter side



1 (continued)

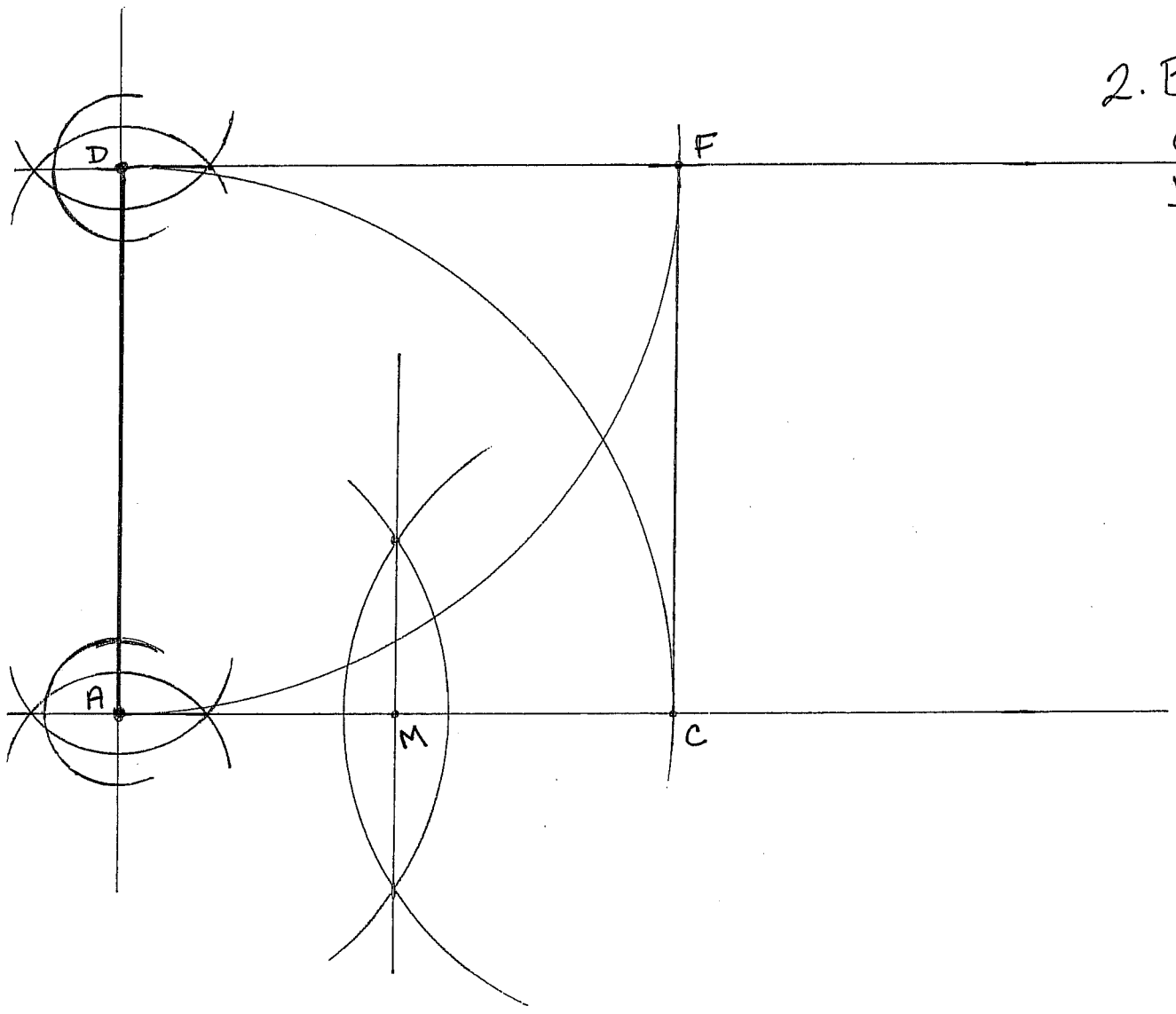
(b) Complete the square

- center compass at A, open to D, draw an arc till it meets the perpendicular at point C
- center compass at D, open to A, draw arc to find point F

- Join points C and F.

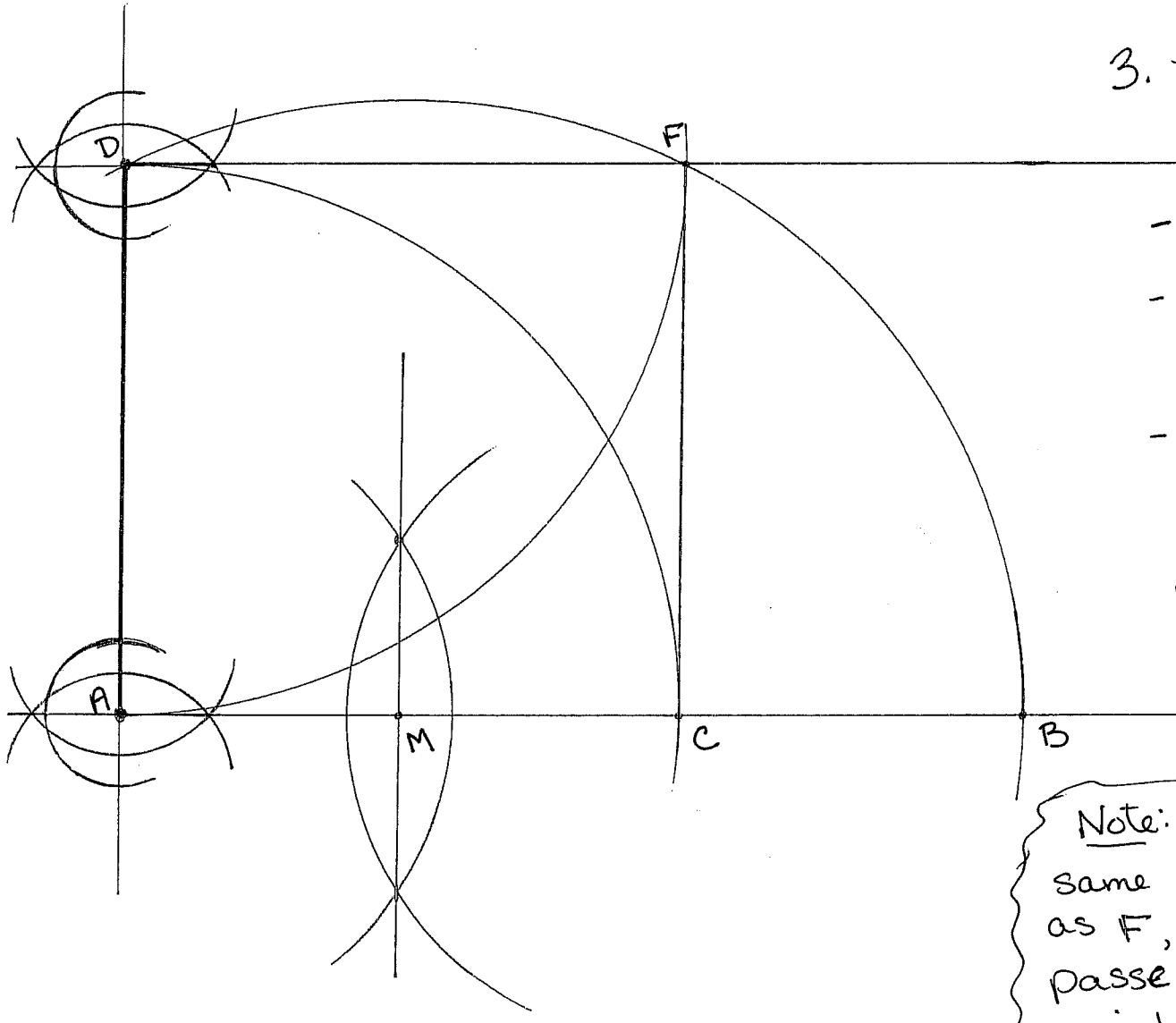
Note ACFD is a square, with one of its sides being AD.

Construction 2: Golden Rectangle given shorter side



2. Bisect the side of the square (AC), to find the point M.

Construction 2: Golden Rectangle given shorter side



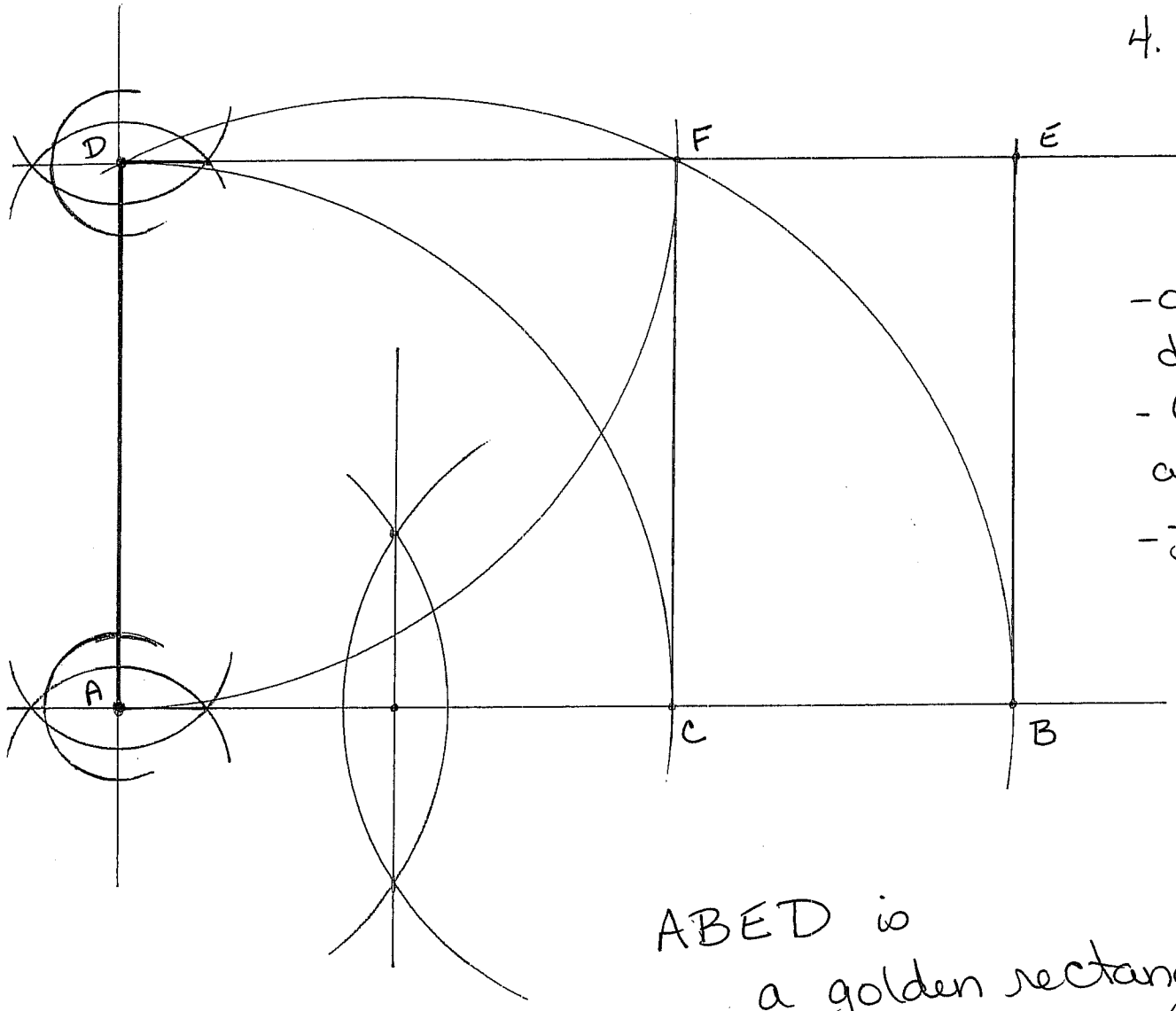
3. find the point B.

- Center compass at M.
- Open compass to point F
- Arc down to meet AC at B

Now length AB is the desired long length

Note: Since M is the same distance from D as F, this circle also passes through the point D.

Construction 2: Golden Rectangle given shorter side



4. Completing the Rectangle.

- open compass to distance CB
- Center compass at F, arc to find E
- Join E to B.

Note: There are alternate ways of finding E:
- Arc distance AB from D
or
- Construct perp. at B.

ABED is a golden rectangle.