

Alphabitia

You are an archaeologist who's just found a new civilization! Since your hobby is mathematics, you decide to translate their number system first.

First you find a tablet with the following “numbers” on them:

ABAOC

ABD

CABB

DBBO

BDEA

From some of the surrounding materials, you can see that this number system can express large numbers pretty easily. However, you realize that you cannot translate those with no information. Luckily, you find another tablet with the following translation on it:

O	A	B	C	D
	●	● ●	● ● ●	● ● ● ●

Reconstruct this ancient number system, and use your reconstruction to translate the numbers you found. What base is this number system?