

Name: _____

1. (7) Write out the multiplication table for \mathbb{Z}_7 . How many elements have inverses?

	1	2	3	4	5	6
1	1	2	3	4	5	6
2	2	4	6	1	3	5
3	3	6	2	5	1	4
4	4	1	5	2	6	3
5	5	3	1	6	4	2
6	6	5	4	3	2	1

All the elements have inverses! (except 0) So 6 elements have inverses.

2. (3) How many of the elements of \mathbb{Z}_{29} have inverses?
(Hint: You shouldn't have to count them all!)

All of them except 0! 29 is a prime, and all numbers less than 29 have gcd of 1 with 29. So 28 elements have inverses.