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Homework 2

1.) $(\mathbb{Z}_5, \times_7, +_7)$

$\overset{0}{\overset{-4}{1}}\ \overset{-3}{2}\ \overset{-2}{3}\ \overset{-1}{4}$

$\mathbb{Z} = \{0, 1, 2, 3, 4\}$

additive inverse

$1 \to 4$
$2 \to 3$
$3 \to 2$
$4 \to 1$

Multiplicative Inverse

	0	1	2	3	4
0	0	0	0	0	0
1	0	1	2	3	4
2	0	2	4	6	1
3	0	3	6	2	5
4	0	4	1	5	2

2.)

	0	1	2	3
0	0	0	0	0
1	0	1	2	3
2	0	2	4	6
3	6	3	6	2

does not have multiplicity for all non-zero elements hence not a field