

Abstract Algebra

Cayley Tables

Nathan Bloomfield

September 9, 2016

$\mathbb{Z}/(5)$

| + | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | 0 | 1 | 2 | 3 | 4 |
| 1 | 1 | 2 | 3 | 4 | 0 |
| 2 | 2 | 3 | 4 | 0 | 1 |
| 3 | 3 | 4 | 0 | 1 | 2 |
| 4 | 4 | 0 | 1 | 2 | 3 |

| · | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 1 | 2 | 3 | 4 |
| 2 | 0 | 2 | 4 | 1 | 3 |
| 3 | 0 | 3 | 1 | 4 | 2 |
| 4 | 0 | 4 | 3 | 2 | 1 |

$\mathcal{P}(a, b, c)$

| + | - | a | b | c | ab | ac | bc | abc |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| - | - | a | b | c | ab | ac | bc | abc |
| a | a | - | ab | ac | b | c | abc | bc |
| b | b | ab | - | bc | a | abc | c | ac |
| c | c | ac | bc | - | abc | a | b | ab |
| ab | ab | b | a | abc | - | bc | ac | c |
| ac | ac | c | abc | a | bc | - | ab | b |
| bc | bc | abc | c | b | ac | ab | - | a |
| abc | abc | bc | ac | ab | c | b | a | - |

| . | - | a | b | c | ab | ac | bc | abc |
|-----|---|---|---|---|----|----|----|-----|
| - | - | - | - | - | - | - | - | - |
| a | - | a | - | - | a | a | - | a |
| b | - | - | b | - | b | - | b | b |
| c | - | - | - | c | - | c | c | c |
| ab | - | a | b | - | ab | a | b | ab |
| ac | - | a | - | c | a | ac | c | ac |
| bc | - | - | b | c | b | c | bc | bc |
| abc | - | a | b | c | ab | ac | bc | abc |