III. GROUPS, RINGS, VECTOR SPACES

ALGEBRAIC STRUCTURES —

SET → SEMIGROUP → MONOID → GROUP

SEMIGROUP: SET, ASSOCIATIVE OPERATION +

MONOID: SET, +, NEUTRAL ELT 0

GROUP: SET, +, 0, $\overline{}$ ↑ INVERSES

ABELIAN GROUP: GROUP WITH COMMUTATIVE OPERATION +

RING: ABELIAN GROUP WITH ANOTHER OPERATION • COMPATIBLE WITH +

FIELD: RING WITH COMMUTATIVE •, IDENTITY ELT 1, ÷

VECTOR SPACE OVER A FIELD: ABELIAN GROUP WITH ANOTHER OPERATION ∗ COMPATIBLE WITH +