

ES.S20: Group Theory

Worksheet #4

Problem #1

- (i) Write down an example of a group of order m , where $m \in \{9, 10, 11, 12, 13, 14, 15\}$.
- (ii) Write down all that you know about groups of order $m \in \{9, 10, 11, 12, 13, 14, 15\}$.

Problem #2

- (i) Using the cube given to you, count the number of faces, vertices, and edges.
- (ii) Convince yourself that a rotation of the cube must be about an axis through the center of the cube. These axes are listed below.
 - axis through the center of opposite faces
 - axis through diagonally-opposite vertices
 - axis through mid-points of opposite edgesCount the number of rotations about each of the axes given above. Convince yourself that you ought to get 24 such rotations.
- (iii) Can you guess which group of order 24 this is?