

Name: _____

Read Section 6.1, on cosets.

Reading Questions

1. Make sure you know the definitions of left and right cosets, a representative of a coset, and the index of a subgroup as well as the basic properties of cosets given in Lemma 6.3.
2. Reread Example 6.1. What are the cosets of the subgroup $H = \{0, 3, 6\}$ in \mathbb{Z}_9 ? What is the index of H in \mathbb{Z}_9 ?

3. Reread Example 6.2. Consider the subgroup $H = \{(1), (13)\}$ in S_3 .

(a) What are the left cosets of H in S_3 ?

(b) What are the right cosets of H in S_3 ?

(c) What is the index of H in S_3 ?

4. True or False. (With citations or examples.)

(a) Let G be a group, H a subgroup of G , and $g_1, g_2 \in G$. If $g_1H = g_2H$, then $g_1 = g_2$.

(b) Let G be a group and H a subgroup of G . Then $[G : H]$ is the order of H .

(c) If G is an abelian group and H a subgroup of G , then $gH = Hg$ for all $g \in G$.

5. What struck you in this reading? What is still unclear? What remaining questions do you have?