From Artin
Chapter 2 (pp. 69–71): 2.1, 2.4, 4.1, 4.3, 4.4, 4.7, 6.1, 6.3.

Others:
1. Prove that if $G$ is a group and $|G| < 6$ then $G$ is abelian.
2. How many elements of order 2 in $S_5$, and in $S_6$. Any guesses for how many in $S_n$ for arbitrary $n$?
3. If $G$ is a finite group prove that there exists a positive integer $N$ such that $a^N = 1$ for all $a \in G$.
4. Prove that a finite group of even order contains an element of order 2.
5. Show that any group $G$ in which every non-trivial element has order 2 is abelian.
6. Let $G$ be a group and $H < G$. Define a relation $\sim$ on $G$ by $a \sim b$ if $ab^{-1} \in H$. Prove that $\sim$ is an equivalence relation on $G$.
7. Let $(G_1, \cdot_1)$ and $(G_2, \cdot_2)$ be groups. Prove that $G_1 \times G_2$ is a group under the following operation:
$$ (a_1, a_2) \cdot (b_1, b_2) = (a_1 \cdot_1 b_1, a_2 \cdot_2 b_2) $$
\forall a_1, b_1 \in G_1 \text{ and } a_2, b_2 \in G_2.
8. Prove that if $G$ is a group and $H, K < G$ then $H \cap K$ is a subgroup of $G$.
9. If $G$ is a group define the center of $G$ to be:
$$ \{ x \in G : xg = gx \text{ for all } g \in G \}.$$
(i) Prove that the center of $G$ is a subgroup of $G$ (typically denoted $Z(G)$).
(ii) What is the center of an abelian group?
(iii) What is the center of $S_4$?

Additional Question (tricky) If $G$ is a group in which $(ab)^i = a^i b^i$ for 3 consecutive integers $i$ and for all $a, b \in G$, show that $G$ is abelian.