Problem 53. Construct the Cayley table for $(D_4, \circ)$. (Recall that $D_4$ is the set of the symmetries of the square that we talked about at the end of class.)

Problem 54. Define $*: \mathbb{R} \times \mathbb{R} \to \mathbb{R}$ by $(a, b) \mapsto \frac{1}{2}(a + b)$. Show that $*$ is a commutative, but not an associative, binary operation on $\mathbb{R}$. 