Let $A = \{2, 3, 5\}$ and $B = \{0, 1, 2, 3\}$. Let $X$ be the twelve ordered pairs $(a, b)$ with $a \in A$ and $b \in B$.

Define a relation $R$ on $X$ by saying that $(a_1, b_1)R(a_2, b_2)$ iff $a_1 + b_2 = a_2 + b_1$.

1. Verify that $R$ is an equivalence relation.

Note that the definition can be rewritten to say that pair is related iff $a_1 - b_1 = a_2 - b_2$.
Then argue that the three conditions are satisfied.

2. Find the equivalence classes of $X$ under $R$.

The pairs are grouped based on the difference $a - b$.
The difference can be any integer from $-1$ to $5$ inclusive.
There are seven equivalence classes.