## Worksheet 1

Let $A, B, C, D$ be the sets

$$
\begin{array}{ll}
A=\{a, b, c, d, e, f, g\} & B=\{a, e, i, o, u\} \\
C=A-B & D=\{u, v, w, x, y, z\}
\end{array}
$$

In the above, the notation $A-B$ means the complement of $B$ in $A$ or in other words, the elements of $B$ that are not in $A$. This operation is sometimes called set difference.

1. Find $A \cup B$. How many elements are there in $A \cup B$. Do this by hand by listing the elements of $A \cup B$ as well as by referring to the inclusion-exclusion principle

$$
|A \cup B|=|A|+|B|-|A \cap B| .
$$

2. Find $B \cap C$. How many elements does this set have? What is a good name for this set?
3. List all the subsets of $A \cap B$. How many subsets are there? In general, do you think you can find a formula for the number of subsets of a set $S$ if it is known only that there are $n$ elements in the set $S$ ? Try to guess such a formula by trying a few examples.
