1. We assign values to items, that being colors to houses.

a) There are $n = 3$ items and $k = 4$ values. Thus there are $k^n = 4^3 = 64$ assignments or ways to paint the houses.

b) There are $5^5 = 3125$ ways to paint the houses.

c) There are $10^2 = 100$ ways to paint the houses.

2. There are 26 lower-case letter values, 26 upper-case letter values, and 10 number values that can be assigned to the positions in the password, the items. If the password is 8 characters long, then there are $(26+26+10)^8 = 62^8$ possible passwords. If the password is 9 long, then there are 62^9, and if the password is 10 long then there are 62^{10} possible passwords. For passwords consisting of eight to ten of the allowed characters there are $62^8 + 62^9 + 62^{10}$ possible passwords.

3. There are eight statements and these are the items. However, each statement is also a value. For one statement, which we assume to be true, there are at most seven other statements that can be true under the same call to `f`. A statement is either true or false so these are the two possible values.

For one statement, which is either true or false, there are 7^2 assignments of the rest of the statements. Thus for the nth statement, there are $(n-1)^2$ assignments of the rest of the statements. But there are n statements, and $n = 8$ here. Therefore we have 8×7^2 assignments, and this is how many different values `f` can return.