

1a. Whichever of $|X|$ and $|Y|$ is larger.

1b. Size of $|X|$ plus $|Y|$.

1c. Size of $|X|$ plus $|X|$ n times

1d. Infinite

2a. Bool

2b. function that takes a bool and returns a bool.

2c. Tuple of type $\text{bool} * \text{bool}$.

4a. Yes. Any number that is divisible by 12 will also be divisible by 3.

4b. Yes. Any number that is divisible by 3 is also divisible by 3

4c. No. $12 + 1 = 13$, and 13 is not divisible by 12. Therefore there is at least one value that could be unsafe.

4d. Yes. All integers that are divisible by three are integers

4e. No. there are values that are integers that are not divisible by three, like the value 2.

4f. Yes. Any number divisible by three will also be divisible by that number plus three.

4g. Yes. Any number divisible by 12 is also divisible by 3, therefore any number divisible by 12 added to any number divisible by 3 will also be divisible by 3.