Set Theory
Quiz 7

Name:_____

You have 10 minutes to complete this quiz. If you have a question raise your hand and remain seated. In order to receive full credit your answer must be **complete**, **legible** and **correct**. Show your work, and give adequate explanations.

1. Let A be the set of all functions of the form $f\colon \omega \to \{0,1\}$. Let B be the set of all functions of the form $g\colon \{0,1\} \to \omega$. Do any of the relations $|A| < |B|$, $|A| = |B|$, or $|A| > |B|$ hold?

$A = 2^\omega$ and $B = \omega^2$.

$|\omega^2| = |\omega \times \omega|$, since $g \mapsto (g(0), g(1))$ is a bijection from ω^2 to $\omega \times \omega$.

Hence $|B| = |\omega^2| = |\omega \times \omega| = |\omega| < |2^\omega| = |A|$.

Since $|B| < |A|$ holds, the relations $|A| = |B|$ and $|A| < |B|$ cannot hold.