MEDGAR EVERS COLLEGE
The City University of New York

Discrete Structures

CS 241 - 001

Department of Physical and Computer Sciences

Medgar Evers College

Workshop Lab 3: Sets

Name: _____

Name: _____

Name: _____

Name: _____

Directions: Write or type solutions on a separate paper(s) and attach this paper to the front of your work. For each set expression, list its elements and its count.

Given

$\mathbf{S} = \{x \in \mathbb{N} \mid x \leq 20\}$

$\mathbf{A} = \{x \in \mathbf{S} \mid (\exists y \in \mathbb{Z})(x = 4y)\}$

$\mathbf{B} = \{x \in \mathbf{S} \mid (\exists y \in \mathbb{Z})(\exists z \in \mathbb{Z})(4y + xz = 2)\}$

$\mathbf{C} = \{x \in \mathbf{S} \mid (\exists y \in \mathbf{A})(x = y + 5)\}$

$\mathbf{D} = \{x \in \mathbf{S} \mid (\exists y \in \mathbb{N})(x = 2y + 1)\}$

$\mathbf{E} = \{x \in \mathbf{S} \mid x < 10 \wedge (\forall y \in \mathbf{S})(\forall z \in \mathbf{S})(y \leq z < x \rightarrow x \neq yz)\}$

$\mathbf{F} = \{x \in \mathbf{S} \mid (\exists y \in \mathbb{N})(35 = xy)\}$

$\mathbf{G} = \{x \in \mathbf{S} \mid (\exists y \in \mathbb{Z})(\exists z \in \mathbb{Z})(10y + xz = 1)\}$

1. $\mathbf{A}'$

2. $\mathbf{B} \cap \mathbf{C}$

3. $(\mathbf{C} - \mathbf{G}) \cup (\mathbf{D} - \mathbf{A})$

4. $\mathbf{F} \times \mathbf{D}$

5. $\wp(\mathbf{E})$

Extra Credit $\wp(\mathbf{E} \times \mathbf{F} \times \mathbf{G})$