Homework #5

1) In your own words, explain what a set is. Give 3 examples of sets (and feel free to be creative!)

2) Match the equivalent sets (with lines)

$\{2,4,6,8,10\}$	$\{x \mid x \text{ is prime}, x \leq 13\}$
$\{2,3,5,7,11,13\}$	$\{x \mid 20 \leq x \leq 25\}$
$\{1,3,5,7,9,11\}$	$\{x \mid x \text{ is even}, x \leq 10\}$
$\{20,21,22,23,24,25\}$	$\{x \mid x \text{ is odd}, x \leq 13\}$

3) Let A = {“math”, “SchoolNova”, “homework”},
B = {5, 8, 42, 73, “math”, “homework”, “is”, “fun”}, and
C = {2, 3, 5, 8, 101, 262, 7711}

a) What is $A \cup B$? $B \cup C$? $A \cup C$?

b) What is $A \cap B$? $B \cap C$? $A \cap C$?

c) Answer True/False to the following statements:

“math” $\in$ A

“math $\in$ C

3 $\in$ A

5 $\in$ B

“student” $\notin$ A

262 $\notin$ C

4. There are 20 students in a Math class. 10 students like apples and 15 students like pears. Every student likes either apples or pears or both.

a) Draw a Venn Diagram of the class.

b) Label the following parts of the Venn Diagram:

Those who like apples, but not pears,

Those who like pears, but not apples,

Those who like both.

c) How many students like apples, but not pears? How many students like pears, but not apples? How many students like both?

5) The same Math class (with 20 students) forms a soccer team and a basketball team. Every student signs up for at least one team:

• 12 students play only soccer;

• 2 students play both soccer and basketball;

How many students play basketball only? (Use a similar strategy as the previous problem, labeling a Venn Diagram)

6) (Challenge Problem) Students who participated in math competition had to solve 2 problems, one in algebra and another one in geometry. Among 100 students, 65 solved an algebra problem, 45 solved a geometry problem, 20 students solved both problems. How many students didn't solve any problem at all?