Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Applied Discrete- The Nature of Sets Practice 1

1) Write each using roster notation. Do not include repeats.

 a) A is the set of letters in the word *Alabama.*

 b) R is the set of even natural numbers between 10 and 40.

 c) M is the set of even natural numbers less than 8.

2) Write each set using the descriptive method.

 a) $\left\{2, 4, 6, 8, …\right\}$

 b) $\{9, 18, 27, 36\}$

c) $\{m, a, r, y\}$

3) Write each set using set-builder notation.

 a) $\left\{10, 20, 30,40, …\right\}$

 b) X is the set of natural numbers greater than 20

 c) $\{1, 3, 5, 7, 9\}$

4) List the elements in each set.

 a) $\left\{x is an even natural number between 100 and 120\right\}$

 b) $\left\{x \right| x\in N and 70<x<80\}$

5) State whether each is true or false.

Let $A=\left\{Saturday, Sunday\right\}$

$$B=\{1, 2, 3, 4, 5\}$$

$$C=\left\{p, q, r, s, t\right\}$$

a) $3\in B$ b) $Wednesday \notin A$

c) $r\in C$

6) State whether each set is infinite or finite.

 a) $\left\{x\right| x\in N and x is even\}$

b) $\left\{1, 2, 3, …, 999, 1,000\right\}$

c) K is the set of letters in the English Alphabet

d) $∅$

7) State whether each pair of sets is equal, equivalent, or neither.

 a) $\left\{6, 12, 18, 20\right\}$ and $\{20, 12, 6, 18\}$

b) $\left\{1, 2, 3, …, 99\right\}$ and $\left\{1,001, 1,002, 1,003,…, 1,100\right\}$

c) $\{January, June,and July\}$ and $\left\{x \right|s is a month that begins with J\}$

8) Find the cardinal number for each set.

 a) $A=\{18, 24, 32, 63, 48\}$

b) $B=\left\{1, 3, 5, 7, …, 37\right\}$

c) $C=\left\{x \right|x is a month of the year\}$

d) $D=\{three\}$

9) The table below shows the top 10 states in number of immigrants in 2006.

|  |  |  |
| --- | --- | --- |
| **State** | **Number of Immigrants** | **% of Total Immigrants to U.S.** |
| California | 264,677 | 20.9 |
| New York | 180,165 | 14.2 |
| Florida | 155,996 | 12.3 |
| Texas | 89,037 | 7.0 |
| New Jersey | 65,934 | 5.2 |
| Illinois | 52,459 | 4.1 |
| Virginia | 38,488 | 3.0 |
| Massachusetts | 35,560 | 2.8 |
| Georgia | 32,202 | 2.5 |
| Maryland | 30,204 | 2.4 |

 a) List the set of states with more than 100,000 immigrants.

 b) List the set of states in the top 10 with fewer than 50,000 immigrants.

 c) List $\left\{x \right|x is a state with at least 5\% of the immigrant total\}$

d) List$\left\{x \right| x is a state between 3\% and 9\% of the immigrant total\}$