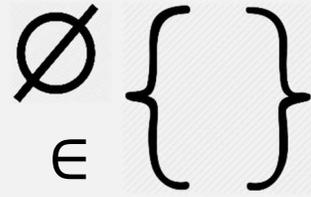


A **set** is a collection of items, usually of the same kind that have something in common. Each item in a set is called an **element or member**. In a **finite set** it is possible to count and name all the elements in the set. In an **infinite set** it is impossible to count or name all the elements in the set. Two sets are **equal** if they both have the same elements. Two sets are **equivalent** if they both have the same number of elements. **Disjoint sets** have no intersection.



1. List the members in each of the following sets:

- a) $E = \{\text{even numbers between 41 and 46}\} = \underline{\hspace{2cm}}$
- b) $F = \{\text{factors of 51 greater than 10}\} = \underline{\hspace{2cm}}$
- c) $C = \{\text{prime numbers between 40 and 50}\} = \underline{\hspace{2cm}}$
- d) $H = \{\text{multiples of 18 between 20 and 50}\} = \underline{\hspace{2cm}}$
- e) $M = \{\text{integers between } -2 \text{ and } 1\} = \underline{\hspace{2cm}}$
- f) $Z = \{\text{odd numbers that are factors of 12}\} = \underline{\hspace{2cm}}$
- g) $G = \{\text{triangular numbers between 11 and 25}\} = \underline{\hspace{2cm}}$
- h) $L = \{\text{composite numbers less than 10}\} = \underline{\hspace{2cm}}$

2. Tell whether the sets below are finite or infinite or null:

- a) $E = \{\text{prime numbers between 1001 and 4910}\} = \underline{\hspace{2cm}}$
- b) $G = \{\text{odd prime #'s less than 2}\} = \underline{\hspace{2cm}}$
- c) $J = \{\text{real numbers}\} = \underline{\hspace{2cm}}$
- d) $K = \{\text{integers}\} = \underline{\hspace{2cm}}$
- e) $M = \{\text{factors of 1 million}\} = \underline{\hspace{2cm}}$
- f) $W = \{\text{registered voters}\} = \underline{\hspace{2cm}}$
- g) $K = \{\text{odd numbers greater than 3}\} = \underline{\hspace{2cm}}$
- h) $C = \{\text{living humans older than 300yrs old}\} = \underline{\hspace{2cm}}$
- i) $K = \{\text{months of the year}\} = \underline{\hspace{2cm}}$

3. Tell how many SUBSETS are possible in the given sets and then list them:

- a) $E = \{2, 4, 6\} = \underline{\hspace{2cm}}$ $\underline{\hspace{2cm}}$
- b) $P = \{0, 1, 2, 3\} = \underline{\hspace{2cm}}$ $\underline{\hspace{2cm}}$
- c) $T = \{\text{cat, dog}\} = \underline{\hspace{2cm}}$ $\underline{\hspace{2cm}}$
- d) $S = \{\text{fish}\} = \underline{\hspace{2cm}}$ $\underline{\hspace{2cm}}$

4. Tell whether the sets below are EQUAL or EQUIVALENT:

- a) $E = \{10, 12, 14\}$ b) $N = \{\text{factors of 4}\}$ c) $C = \{1, 2, 5, 10, 15\}$ d) $R = \{4, 5\}$ e) $R = \{\text{factors of 6}\}$
 - $F = \{14, 10, 12\}$ $M = \{\text{factors of 9}\}$ $D = \{a, b, c, d, e\}$ $S = \{\text{factors of 11}\}$ $S = \{2, 1, 3, 6\}$
- $\underline{\hspace{2cm}}$ $\underline{\hspace{2cm}}$ $\underline{\hspace{2cm}}$ $\underline{\hspace{2cm}}$ $\underline{\hspace{2cm}}$

5. $W = \{\text{factors of 6}\}$ and $X = \{1, 6, 12\}$

a)	X'	
b)	$W \cup X$	
c)	$X \cap W$	
d)	$n(W')$	
e)	W	

6. $G = \{5, 10, 15\}$ and $H = \{\text{factors of 15}\}$

a)	H	
b)	$H \cup G$	
c)	$G \cap H$	
d)	$n(H)$	
e)	H'	

7. Circle True or False

- $\xi = \{1, 2, 3, \dots, 12\}$
 $A = \{\text{factors of 4}\}$ and $B = \{1, 3, 9\}$
- a) True False $A \cap B = B$
 - b) True False $1 \in A$
 - c) True False $\{10\} \subset \xi$
 - d) True False $n(A \cup B) = 6$

8. Circle True or False

- $\xi = \{\text{prime numbers} < 20\}$
 $E = \{2, 5, 11\}$ and $F = \{2, 3, 5, 19\}$
- a) True False $n(F) = 4$
 - b) True False $F \cap E = \{2, 5\}$
 - c) True False $n(E') = 4$
 - d) True False $\{ \} \subset F$

9. Circle True or False

- $\xi = \{\text{factors of 24}\}$
 $X = \{6, 12, 24\}$ and $Y = \{\text{factors of 6}\}$
- a) True False $Y \subset \xi$
 - b) True False $n(X') = 5$
 - c) True False $X \cap Y = \{6, 12\}$
 - d) True False $n(\xi) = 6$