

# Important Sets Formulas PDF



## Formulas Examples with Units

### List of 19 Important Sets Formulas

#### 1) Number of Elements in Complement of Set A Formula

Formula

$$n(A') = n(U) - n(A)$$

Example

$$40 = 50 - 10$$

Evaluate Formula 

#### 2) Number of Elements in Difference of Two Sets A and B Formula

Formula

$$n(A-B) = n(A) - n(A \cap B)$$

Example

$$4 = 10 - 6$$

Evaluate Formula 

#### 3) Number of Elements in Exactly One of Sets A, B and C Formula

Formula

$$n(\text{Exactly One of A, B, C}) = n(A) + n(B) + n(C) - 2 \cdot n(A \cap B) - 2 \cdot n(B \cap C) - 2 \cdot n(A \cap C) + 3 \cdot n(A \cap B \cap C)$$

Example

$$12 = 10 + 15 + 20 - 2 \cdot 6 - 2 \cdot 7 - 2 \cdot 8 + 3 \cdot 3$$

Evaluate Formula 

#### 4) Number of Elements in Exactly Two of Sets A, B and C Formula

Formula

$$n(\text{Exactly Two of A, B, C}) = n(A \cap B) + n(B \cap C) + n(A \cap C) - 3 \cdot n(A \cap B \cap C)$$

Example

$$12 = 6 + 7 + 8 - 3 \cdot 3$$

Evaluate Formula 

#### 5) Number of Elements in Intersection of Two Sets A and B Formula

Formula

$$n(A \cap B) = n(A) + n(B) - n(A \cup B)$$

Example

$$6 = 10 + 15 - 19$$

Evaluate Formula 

#### 6) Number of Elements in Power Set of Set A Formula

Formula

$$n_{P(A)} = 2^{n(A)}$$

Example

$$1024 = 2^{10}$$

Evaluate Formula 



### 7) Number of Elements in Set A Formula

Formula

$$n(A) = n(A \cup B) + n(A \cap B) - n(B)$$

Example

$$10 = 19 + 6 - 15$$

Evaluate Formula 

### 8) Number of Elements in Set B Formula

Formula

$$n(B) = n(A \cup B) + n(A \cap B) - n(A)$$

Example

$$15 = 19 + 6 - 10$$

Evaluate Formula 

### 9) Number of Elements in Symmetric Difference of Two Sets A and B Formula

Formula

$$n(A \Delta B) = n(A \cup B) - n(A \cap B)$$

Example

$$13 = 19 - 6$$

Evaluate Formula 

### 10) Number of Elements in Symmetric Difference of Two Sets A and B given $n(A)$ and $n(B)$ Formula

Formula

$$n(A \Delta B) = n(A) + n(B) - 2 \cdot n(A \cap B)$$

Example

$$13 = 10 + 15 - 2 \cdot 6$$

Evaluate Formula 

### 11) Number of Elements in Symmetric Difference of Two Sets A and B given $n(A-B)$ and $n(B-A)$ Formula

Formula

$$n(A \Delta B) = n(A-B) + n(B-A)$$

Example

$$13 = 4 + 9$$

Evaluate Formula 

### 12) Number of Elements in Union of Three Sets A, B and C Formula

Formula

$$n(A \cup B \cup C) = n(A) + n(B) + n(C) - n(A \cap B) - n(B \cap C) - n(A \cap C) + n(A \cap B \cap C)$$

Evaluate Formula 

Example

$$27 = 10 + 15 + 20 - 6 - 7 - 8 + 3$$

### 13) Number of Elements in Union of Two Disjoint Sets A and B Formula

Formula

$$n(A \cup B) = n(A) + n(B)$$

Example

$$25 = 10 + 15$$

Evaluate Formula 

### 14) Number of Elements in Union of Two Sets A and B Formula

Formula

$$n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

Example

$$19 = 10 + 15 - 6$$

Evaluate Formula 



## 15) Subsets Formulas

### 15.1) Number of Non Empty Proper Subsets of Set A Formula

Formula

$$N_{\text{Non Empty Proper}} = 2^{n(A)} - 2$$

Example

$$1022 = 2^{10} - 2$$

Evaluate Formula 

### 15.2) Number of Non Empty Subsets of Set A Formula

Formula

$$N_{\text{Non Empty}} = 2^{n(A)} - 1$$

Example

$$1023 = 2^{10} - 1$$

Evaluate Formula 

### 15.3) Number of Odd Subsets of Set A Formula

Formula

$$N_{\text{Odd}} = 2^{n(A) - 1}$$

Example

$$512 = 2^{10 - 1}$$

Evaluate Formula 

### 15.4) Number of Proper Subsets of Set A Formula

Formula

$$N_{\text{Proper}} = 2^{n(A)} - 1$$

Example

$$1023 = 2^{10} - 1$$

Evaluate Formula 

### 15.5) Number of Subsets of Set A Formula

Formula

$$N_S = 2^{n(A)}$$

Example

$$1024 = 2^{10}$$

Evaluate Formula 



## Variables used in list of Sets Formulas above

- $n(A)$  Number of Elements in Set A
- $n(A')$  Number of Elements in Complement of Set A
- $n(A \cap B)$  Number of Elements in Intersection of A and B
- $n(A \cap B \cap C)$  Number of Elements in Intersection of A, B and C
- $n(A \cap C)$  Number of Elements in Intersection of A and C
- $n(A \cup B)$  Number of Elements in Union of A and B
- $n(A \cup B \cup C)$  Number of Elements in Union of A, B and C
- $n(A - B)$  Number of Elements in A-B
- $n(A \Delta B)$  No. of Elements in Symmetric Difference of A and B
- $n(B)$  Number of Elements in Set B
- $n(B \cap C)$  Number of Elements in Intersection of B and C
- $n(B - A)$  Number of Elements in B-A
- $n(C)$  Number of Elements in Set C
- $n(\text{Exactly One of A, B, C})$  No. of Elements in Exactly One of the A, B and C
- $n(\text{Exactly Two of A, B, C})$  No. of Elements in Exactly Two of the A, B and C
- $n(U)$  Number of Elements in Universal Set
- $N_{\text{Non Empty Proper}}$  Number of Non Empty Proper Subsets
- $N_{\text{Non Empty}}$  Number of Non Empty Subsets of Set A
- $N_{\text{Odd}}$  Number of Odd Subsets of Set A
- $n_{P(A)}$  Number of Elements in Power Set of A
- $N_{\text{Proper}}$  Number of Proper Subsets of Set A
- $N_S$  Number of Subsets



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