

Fundamental of { **SETS** } in Mathematics

(Practice Worksheet)

Contents

TEST 1	1
A Check List of SET	1
Test 2	2
A. Given in Tabular Form	2
B. Given in Descriptive Form	2
C. Given in Set Builder Notation	2
Test 3	3
A. Identify the Set	3
B. Equal vs Equivalent Sets	3
C. Overlapping vs Disjoint Sets	3
Test 4	4
Subsets and the Power Sets	4

Fundamental of { SETS } in Mathematics

(Practice Worksheet)

TEST 1

A Check List of SET

For each question mark (✓) or (X) in the respective column and decide:

- Is it a *collection*?
- Is it *well-defined*?
- Are the elements *distinct*?
- Based on these, is it a *Set*?

Question	Collection	Well-Defined	Distinct	Set
1. The group of all red cars in a parking lot.				
2. The group of tasty fruits.				
3. The sound of thunder.				
4. The letters in the word "APPLE."				
5. The concept of happiness.				
6. The prime numbers less than 20.				
7. The group of intelligent students in a class.				
8. The number 5.				
9. The vowels in the English alphabet.				
10. The collection of planets in our solar system.				



Fundamental of { SETS } in Mathematics

(Practice Worksheet)

Test 2

A. Given in Tabular Form

Write each set in descriptive form and set builder notation.

Tabular Form	Descriptive Form	Set Builder Notation
$A = \{2, 4, 6, 8, 10\}$		
$B = \{\text{January, June, July}\}$		
$C = \{m, a, t, h\}$		
$D = \{1, 4, 9, 16, 25\}$		

B. Given in Descriptive Form

Write each set in tabular form and set builder notation.

Descriptive Form	Tabular Form	Set Builder Notation
$E = \text{Set of even numbers less than 10}$		
$F = \text{Set of vowels in the English alphabet}$		
$G = \text{Set of days of the week starting with 'S'}$		
$H = \text{Set of natural numbers less than 6}$		

C. Given in Set Builder Notation

Write each set in tabular form and descriptive form.

Set Builder Notation	Tabular Form	Descriptive Form
$I = \{x \mid x \in \mathbb{N} \wedge x < 5\}$		
$J = \{x \mid x \text{ is vowel set in English alphabet}\}$		
$K = \{x \mid x = 3n, n \in \mathbb{N} \wedge n \leq 5\}$		
$L = \{x \mid x^2 < 36, x \in \mathbb{N}\}$		

Fundamental of { SETS } in Mathematics

(Practice Worksheet)

Test 3

A. Identify the Set

(Empty, Singleton, Finite, Infinite)

Place a (✓) in the correct column to identify the type of each set.

Set Description	Empty	Singleton	Finite	Infinite
$A = \{ \}$				
$B = \{0\}$				
$C = \{1, 2, 3, 4, 5, 6\}$				
$D = \{x \mid x \in \mathbb{N} \wedge x \text{ is a multiple of } 5\}$				
$E = \{x \mid x \text{ is vowel set in the English alphabet}\}$				
$F = \{x \mid x \text{ is a prime number}\}$				
$G = \{x \mid x \in \mathbb{N} \wedge x^2 = -1\}$				

B. Equal vs Equivalent Sets

For each pair of sets below, determine whether they are Equal, Equivalent, or Neither.

Set 1	Set 2	Relationship
$A = \{2, 4, 6, 8\}$	$B = \{8, 6, 4, 2\}$	
$C = \{a, b, c\}$	$D = \{1, 2, 3\}$	
$E = \{\text{red, green}\}$	$F = \{\text{blue, yellow, green}\}$	
$G = \{\text{mango, apple}\}$	$H = \{\text{apple, mango}\}$	

C. Overlapping vs Disjoint Sets

For each pair, decide whether the sets are **Overlapping** or **Disjoint**.

Set 1	Set 2	Relationship
$A = \{1, 2, 3, 4\}$	$B = \{3, 4, 5, 6\}$	
$C = \{x, y, z\}$	$D = \{a, b, c\}$	
$E = \{\text{odd numbers}\}$	$F = \{\text{multiples of } 3\}$	
$G = \{x \mid x \in \mathbb{Q}\}$	$H = \{x \mid x \in \mathbb{Q}^*\}$	

Fundamental of { SETS } in Mathematics

(Practice Worksheet)

Test 4

Subsets and the Power Sets

For each set below, perform the following tasks:

1. Count the number of subset.
2. Enlist all possible subsets.
3. Determine all proper subsets.
4. Identify the improper subset.
5. Write the power set.

Set 1: $A = \{ \}$

- Number of Subsets:
- Possible Subsets:
- Proper Subsets:
- Improper Subset:
- Power Set:

Set 2: $B = \{1\}$

- Number of Subsets:
- Possible Subsets:
- Proper Subsets:
- Improper Subset:
- Power Set:

Set 3: $C = \{a, b\}$

- Number of Subsets:
- Possible Subsets:
- Proper Subsets:
- Improper Subset:
- Power Set:

Set 4: $D = \{x, y, z\}$

- Number of Subsets:
- Possible Subsets:
- Proper Subsets:
- Improper Subset:
- Power Set:

Set 5: $E = \{+, -, \times, \div\}$

- Number of Subsets:
- Possible Subsets:
- Proper Subsets:
- Improper Subset:
- Power Set:

Set 6: $E = \{g, r, e, a, t\}$

- Number of Subsets:
- Possible Subsets:
- Proper Subsets:
- Improper Subset:
- Power Set:

Hints for Students

- A set with n elements has 2^n subsets.
- A proper subset never equals the original set.
- The improper subset is the set itself.
- The power set is a set that contains all subsets.