MTH 101 - ELEMENTARY MATHEMATICS I SUMMARY

The ____ of sets lies at the foundation of mathematics.
theory

The theory of ____ lies at the foundation of mathematics.
sets

The theory of sets lies at the _____ of mathematics.
foundation

The theory of sets lies at the foundation of_____.
mathematics

The theory of sets lies at the foundation of mathematics.
True

The _____ is a concept that rears its head in almost all fields of mathematics
theory of sets

The theory of sets is a concept that rears its head in almost all fields of mathematics: ____and applied.
pure

The theory of sets is a concept that rears its head in almost all fields of mathematics: pure and_____.
applied

The theory of sets is a concept that rears its head in almost all fields of mathematics: _____ and_____.
pure and applied

A fundamental concept in all a branch of mathematics is that of_____.
set

A _____ is any well-defined list, collection or class of objects.
set

A set is any ____ list, collection or class of objects.
well-defined

A set is any well-defined_____, collection or class of objects.

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list

A set is any well-defined list, _____ or class of objects.
collection

A set is any well-defined list, collection or ____ of objects.
class

A set is any well-defined list, collection or_____.
class of objects

A set is any well-defined list, collection or class of_____.
objects

A set is any well-defined list, collection or class of objects.
True

The objects in sets can be anything.
True

Sets are usually denoted by ____ letters
capital

Sets are usually denoted by capital letters
True

Sets are usually denoted by ____
capital letters

_____ letters will usually represent the elements in our sets
Lower case

If the elements are separated by commas and enclosed in brackets { }. We call this the _____
tabular form of a set

State in words and then write in tabular form $A = \{x\} \mid x^2 = 4^2\}$
A is the set of x such that x squared equals four". The only numbers which when squared give four are 2 and -2. Hence A = {2, -2}

State in words and then write in tabular form $B = \{x\} \mid x - 2 = 5\}$
B is the set of x such that x minus 2 equals 5". The only solution is 7; hence B = {7}

State in words and then write in tabular form C = {x} | x is positive, x is negative}
C is the set of x such that x is positive and x is negative". There is no number which is both positive and negative; hence C is empty, that is, C=Ø

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State in words and then write in tabular form D = {x} | x is a letter in the word "correct"}
"D is the set of x such that x is letter in the work 'correct'. The indicated letters a re c,o,r,e and t; thus D = {c,o,r,e,t}

The objects in sets, as we shall see from examples, can be anything: But for clarity, we now list five particular examples of sets:
Example 1.1 The numbers 0, 2, 4, 6, 8
Example 1.2 The solutions of the equation $x^2+ 2x+1 = 0$
Example 1.3 The vowels of the alphabet: a, e, i, o, u
Example 1.4 The people living on earth
Example 1.5 The students Tom, Dick and Harry

Lower case letters will usually represent the elements in our sets:
Lets take as an example; if we define a particular set by actually listing its members, for example, let A consist of numbers 1,3,7, and 10, then we write
A={1,3,7,10}

But if we define a particular set by stating properties which its elements must satisfy, for example, let B be the set of all even numbers, then we use a letter, usually x, to represent an arbitrary element and we write:
B = {x | x is even}

Which reads "B is the set of numbers x such that x is even". We call this the set builders form of a set. Notice that the vertical line " | " is read "such as". In order to illustrate the use of the above notations, we rewrite the sets in examples 1.1-1.10. We denote the sets by A 1, A 2, ... A10 respectively.

Example 2.1: A1 = {0, 2, 4, 6, 8}
Example 2.2: A2 = {x | $x^2+2x + 1 = 0$}
Example 2.3: A3 = {a, e, i, o, u}
Example 2.4: A4 = {x | x is a person living on the earth}
Example 2.5: A5 = {Tom, Dick, Harry}
Example 2.6: A6 = {x | x is a student and x is absent from school}
Example 2.7: A7 = {England, France, Denmark}
Example 2.8: A8 = {x | x is a capital city and x is in Nigeria}
Example 2.9: A9 = {1, 3, 7, 10}
Example 2.10: A10 = { x | x is a river and x is in Nigeria} It is easy as that!

Q. Write these sets in a set-builder form
1. Let A consist of the letters a, b, c, d and e
A={x | x appears before f in the alphabet} = {xx is one of the first letters in the alphabet}

2. Let B = {2, 4, 6, 8.....}
B = {x | x is even and positive}

3. Let C consist of the countries in the United Nations
C = {x | x is a country, x is in the United Nations}

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4. Let D = {3} 5.
D = {x ⏐ x – 2 = 1} = {x ⏐ 2x = 6}

5. Let E be the Heads of State Obasanjo, Yaradua and Jonathan
E = {x ⏐ x was Head of state after Abacha}

If an object x is a member of a set A, i.e., A contains x as one of its\elements, then we write: x∈A
Which can be read "x belongs to A" or 'x is in A". If, on the otherhand, an object x is not a member of a set A, i.e A does not contain x as one of its elements, then we write; x∉A

It is a common custom in mathematics to put a vertical line " ⏐ " or " \ " through a symbol to indicate the opposite or negative meaning of the symbol.

Example 3:1: Let A = {a, e, i o, u}. Then a∈A, b∉A, f∉A.

Example 3.2: Let B = {x< x is even}. Then 3∉B, 6∈B, 11∉B,14∈B

Sets can be _____ or infinite
finite

Sets can be finite or _____
infinite

A set is _____ if it consists of a specific number of different elements
finite

If in counting the different members of the set the counting process can come to an end it is called_____ set
infinite

Let's look at some examples.

Example 4:1: Let M be the set of the days of the week. The M is finite
Example 4:2: Let N = {0,2,4,6,8.....}. Then N is infinite
Example 4:3: Let P = {x< x is a river on the earth}.

NB: Although it may be difficult to count the number of rivers in the world, P is still a finite set.

The following sets are examples of finite sets
1. The months of the year
2. {1, 2, 3, ... 99, 100}
3. The people living on the earth

{x | x is even} and {1, 2, 3,.....} are _____set
infinite

Set A is equal to set B if_____

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they both have the same members

Set A is equal to set B if they both have the ____ members
same

Set A is equal to set B if they both have the same _____
members

We denote the equality of sets A and B by: _____
A = B

Example 5.1 Let A = {1, 2, 3, 4} and B = {3, 1, 4, 2}. Then A = B, that is {1,2,3,4} = {3,1,4,2}, since each of the elements
1,2,3 and 4 of A belongs to B and each of the elements
3,1,4 and 2 of B belongs to A.

NB: Therefore, that a set does not change if its elements are rearranged.

Example 5.3 Let E={x | x^2–3x = -2}, F={2,1} and G ={1,2,2, 1}, Then E= F= G

A set which contains no elements is called_____
null set

A set which is void or empty is denoted with the symbol_____
∅

Example 6.1: Let A be the set of people in the world who are older than 200 years. According to known statistics A is the null set.
Example 6.2: Let B = {x | x^2= 4, x is odd}, Then B is the empty set.

If every element in a set A is also a member of a set B, then A is called_____.
subset of B

A is a subset of B if_____.
x∈A implies x∈B

More specifically, A is a subset of B if x∈A implies x∈B. We denote this relationship by writing; A⊂B, which can also be read "A is contained in B".

Example 7.1 The set C = {1,3,5} is a subset of D = {5,4,3,2,1}, since each number 1, 3 and 5 belonging to C also belongs to D.

Example 7.2 The set E = {2,4,6} is a subset of F = {6,2,4}, since each number 2,4, and 6 belonging to E also belongs to F. Note, in particular, that E = F. In a similar manner it can be shown that every set is a subset of itself.

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The ____ set ∅ is considered to be a subset of every set
null

The null set ∅ is considered to be a ____of every set
subset

The null set ∅ is considered to be a subset of every set
True

If A is not a subset of B, that is, if A⊄B_____
there is at least one element in A that is not a member of B

B is a proper subset of A if_____
B⊂A and B≠A

B is a ____ of A if B⊂A and B≠A
proper subset

Two sets A and B are said to be _____ if A⊂B or B⊂A
comparable

Two sets A and B are said to be comparable if_____
A⊂B or B⊂A

Note that if A is not comparable to B then there is an element in A which is not in B and ... also, there is an element in B which is not in A.

Example 8.1: Let A = {a,b} and B = {a,b,c}. The A is comparable to B, since A is a subset of B.

Example 8.2: Let R – {a,b} and S = {b,c,d}. Then R and S are not comparable, since a∈R and a∉S and c∉R

In mathematics, many statements can be proven to be _____ by the use of previous assumptions and definitions.
True

In mathematics, many statements can be proven to be true by the use of _____ and definitions.
previous assumptions

In mathematics, many statements can be proven to be true by the use of previous assumptions and_____.
definitions

The essence of mathematics consists of theorems and their proofs.
True

The essence of ____consists of theorems and their proofs.
mathematics

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The essence of mathematics consists of ____ and their proofs.
theorems

The essence of mathematics consists of theorems and their_____.
proofs

If A is a subset of B and B is a subset of C then_____
A is a subset of C

x∈A implies_____
x∈C

In order to avoid saying "set of sets", it is common practice to say____ or "class of sets".
family of sets

In order to avoid saying "set of sets", it is common practice to say "family of sets" or _____
class of sets

The set {{2,3}, {2}, {5,6}} is a ____ of sets.
family

Example 9.1: In geometry we usually say "a family of lines" or "a family of curves" since lines and curves are themselves sets of points.

Example 9.2: The set {{2,3}, {2}, {5,6}} is a family of sets. Its members are the sets {2,3}, {2} and {5,6}.

Example 9.3: Let A = {2, {1,3}, 4, {2,5}}. Then A is not a family of sets; here some elements of A are sets and some are not.

In any application of the theory of sets, all the sets under investigation will likely be subsets of a fixed set called _____ or universe of discourse.
universal set

In any application of the theory of sets, all the sets under investigation will likely be subsets of a fixed set called universal set or_____.
universe of discourse

In plane geometry, the _____ consists of all the points in the plane.
universal set

In human population studies, the_____ consists of all the people in the world.
universal set

The family of all the subsets of any set S is called the ____ of S.
power set

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Universal set is denoted by_____.
U

We denote the power set of S by_____
2^S

Example 11.1: Let M = {a,b} Then 2 M = {{a, b}, {a}, {b}, ∅}

Example 11.2: Let T = {4,7,8} then 2 T = {T, {4,7}, {4,8}, {7,8}, {4}, {7}, {8}, ∅}

If a set S is finite, say S has n elements, then the power set of S can be shown to have 2 n elements. This is one reason why the class of subsets of S is called the power set of S and is denoted by 2 S.

If sets A and B have no elements in common, i.e if no element of A is in B and no element of B is in A, then we say that A and B are ____
disjoint

Example 12.1: Let A = {1,3,7,8} and B = {2,4,7,9}, Then A and B are not disjoint since 7 is in both sets, i.e 7∈A and 7∈B

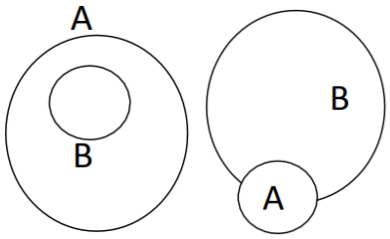
Example 12.2: Let A be the positive numbers and let B be the negative numbers. Then A and B are disjoint since no number is both positive and negative.

Example 12.3: Let E = {x, y, z} and F = {r, s, t}, Then E and F are disjoint.

A simple and instructive way of illustrating the relationships between sets is in the use of the so-called _____ or Venn diagrams.
Ven-Euler diagrams

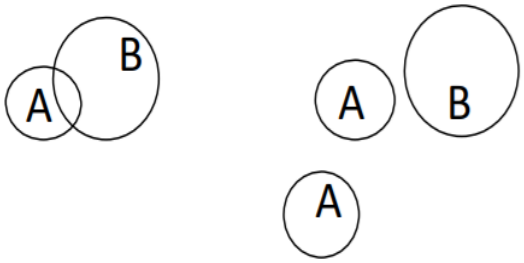
A simple and instructive way of illustrating the relationships between sets is in the use of the so-called Ven-Euler diagrams or____.
Venn diagrams

Example 13.1: Suppose A⊂B and, say, A≠B, then A and B can be described by either diagram

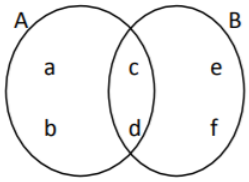


Example 13.2: Suppose A and B are not comparable. Then A and B can be represented by the diagram on the right if they are disjoint, or the diagram on the let if they are not disjoint.

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Example 13.3: Let A = {a, b, c, d} and B= {c, d, e, f}. Then we illustrate these sets a Venn diagram of the form:



In an axiomatic development of a branch of mathematics, one begins with the following

- Undefined terms
- Undefined relations
- Axioms relating the undefined terms and undefined relations

Given a set A with elements 1,3,5,7 the tabular form of representing this set is_____
A = {1, 3, 5, 7}

The set-builder form of the same set is_____
A = {x| x = 2n + 1,0 ≤n≤3}

Given the set N = {2,4,6,8,....} then N is said to be_____
infinite

Given the set N = {2,4,6,8,....} then N is said to be infinite because _____
the counting process of its elements will never come to an end

Two sets of A and B are said to be equal_____
if they both have the same elements

Two sets A and B are _____ if A⊂B and B⊂A
comparable

Two sets A and B are said to be disjoint_____
if they do not have any element in common

In_____, we learn to add, subtract and multiply.
arithmetic

In arithmetic, we learn to____, subtract and multiply.
add

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In arithmetic, we learn to add, ____ and multiply.
subtract

In arithmetic, we learn to add, subtract and_____.
multiply
The _____ of sets A and B is the set of all elements which belong to A or to B or to both.
union

We denote the union of A and B by_____
A∪B

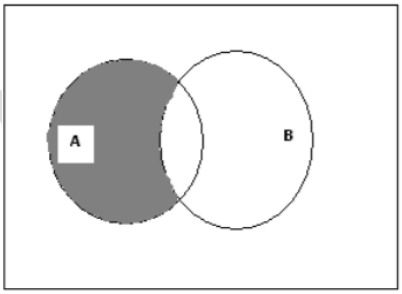
The _____ of sets A and B is the set of elements which are common to A and B
Intersection

A∩B is read as _____
A intersection B

The intersection of A and B may be defined concisely by_____
A∩B = {x∈A, x∈B}

The _____ of sets A and B is the set of elements which belong to A but which do not belong to B.
difference

Example 3.1: In the Venn diagram in Fig 2.3, we have shaded A – B, the area



We denote the difference of A and B by _____
A – B

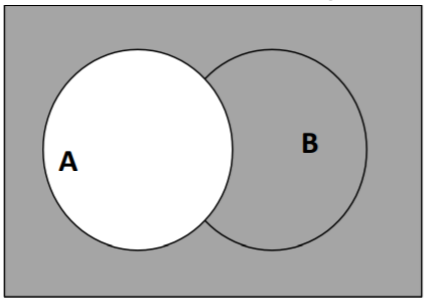
The difference of A and B is sometimes denoted by_____
A/B or A ~ B

The _____ of a set A is the set of elements that do not belong to A, that is, the difference of the universal set U and A.
complement

We denote the complement of A by _____
A′

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Example 4.1: In the Venn diagram in Fig 2.4, we shaded the complement of A, i.e. the area outside A. Here we assume that the universal set U consists of the area in the rectangle.



A' is shaded

The set of real numbers and its properties is called_____.
real number system

One of the most important properties of the real numbers is_____
that points on a straight line that can represent them

There is a natural way to pair off the points on the line and the real numbers, that is, each point will represent a unique real number and each real number will be represented by a unique point. We refer to this line as_____.
real line

The numbers to the right of 0, i.e. on the same side as 1, are called _____
positive numbers

The numbers to the left of 0 are called_____.
negative numbers

The number 0 itself is neither positive nor negative.
True

The number _____ itself is neither positive nor negative.
0

The number 0 itself is neither ____ nor negative.
positive

The number 0 itself is neither positive nor_____.
negative

The _____ are those real numbers …, -3, -2, -1, 0, 1, 2, 3,…
integers

The integers are also referred to as ____
whole numbers

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One important property of the integers is that they are_____ under the operations of addition, multiplication and subtraction
closed

The _____ are those real numbers, which can be expressed as the ratio of two integers.
rational numbers

We denote the set of rational numbers by_____.
Q

The ____ are closed not only under the operations of addition, multiplication and subtraction but also under the operation of division (except by 0).
rational numbers

The _____ numbers are the positive integers.
natural

The natural numbers are the _____ integers.
positive

We denote the set of natural numbers by_____
N

The _____ were the first number system developed and were used primarily, at one time, for counting.
natural numbers

The _____ are closed only under the operation of addition and multiplication.
natural numbers

The natural numbers are closed only under the operation of ____ and multiplication.
addition

The natural numbers are closed only under the operation of addition and_____.
multiplication

The _____ are those natural numbers p, excluding 1, which are only divisible 1 and p itself.
prime numbers

We list the first few prime numbers: 2,3,5,7,11,13,17,19…
The _____ are those real numbers which are not rational
irrational numbers

Examples of irrational numbers are _____
√3, π, √2, etc.

_____is used to denote the irrational numbers.

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Q

The set of complex numbers is _____ of the set of real numbers.
superset

The set of complex numbers is superset of the set of_____.
real numbers

Every _____ can be represented by a "non-terminating decimal".
real number

Every real number can be represented by a_____.
non-terminating decimal

The decimal representation of a rational number p/q can be found by_____
dividing the denominator q into the numerator p

The notation $x < 5$ means that_____
x is a real number which is less than 5

The notation $2 < x < 7$; means_____
$2 < x$

The fundamental property of the positive numbers which is used to prove properties of the relation $a < b$ is that_____
the positive numbers are closed under the operations of addition and multiplication

Remark 3.2: The following statements are true when a, b, c are any real numbers:
1. $a < a$
2. if $a < b$ and $b < a$ then $a = b$.
3. if $a < b$ and $b < c$ then $a < c$.

The statement $|x| < 5$ can be interpreted to mean that_____
the distance between x and the origin is less than 5

A1 is an _____ as it does not contain either end point
open interval

A2 is a _____ as it contains bother endpoints
closed interval

A3 and A4 are open-closed and closed-open respectively.
True

Let A be a set of numbers, then A is called _____set if A is the subset of a finite interval.
bounded

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Let A be a set of numbers, then A is called bounded set_____
if A is the subset of a finite interval

Set A is _____ if there exists a positive number M such that $|x| < M$.
bounded

A set is called _____ if it is not bounded
unbounded

A set is called unbounded if _____
it is not bounded

Intervals on the real line are_____, closed, open-closed or closed-open depending on the nature of the endpoints.
open

Intervals on the real line are open, _____, open-closed or closed-open depending on the nature of the endpoints.
closed

Intervals on the real line are open, closed, _____ or closed-open depending on the nature of the endpoints.
open-closed

Intervals on the real line are open, closed, open-closed or ____ depending on the nature of the endpoints.
closed-open

A _____ is a succession of numbers of which each number is formed according to a definite law which is the same throughout the series.
series

A series is a _____ of numbers of which each number is formed according to a definite law which is the same throughout the series.
succession

A series is a succession of numbers of which each number is formed according to a _____ which is the same throughout the series.
definite law

A series is_____
a succession of numbers of which each number is formed according to a definite law which is the same throughout the series

A _____is a succession of terms spanned by a rule or formula.
sequence

A sequence is a _____ of terms spanned by a rule or formula.
succession

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A sequence is a succession of terms spanned by a _____ or formula.
rule

A sequence is_____
a succession of terms spanned by a rule or formula

A sequence is a succession of terms spanned by a rule or_____.
formula

Examples
1. 1, 2, 3, 4, 5…
2. 2, 4, 6, 8, 10…
3. a, a 2 , a
4 , a 8 , a 16 …

A sequence may be _____ or infinite.
finite

A sequence may be finite or_____.
infinite

A _____ sequence is one whose first and last element are known
finite

An _____ sequence is one whose terms are uncountable.
infinite

The general term of a sequence (formula) can be written as: We can now generate the sequence by substituting
Un = n +1
2n 1

_____ is a sequence in which each term differs by a common difference.
Arithmetic sequence

Arithmetic sequence is a sequence in which each term differs by a_____.
common difference

A _____ is a sequence in which each successive terms of the sequence are in equal ratio.
geometric sequence

A geometric sequence is a sequence in which each successive terms of the sequence are in_____.
equal ratio

A _____ is the term wise summation of a sequence.
series

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A series is the term _____ of a sequence.
wise summation

A series is the term wise summation of a_____.
sequence

A _____is an equation of the form ax + bx + c = y 2 where a, b and c are constants.
quadratic equation

A quadratic equation is an equation of the form _____ where a, b and c are constants.
ax + bx + c = y 2

A quadratic equation is an equation of the form ax + bx + c = y 2 where a, b and c are_____.
constants

x and y are _____ and dependent variables respectively.
independent

x and y are independent and _____ variables respectively.
dependent

x and y are _____ and_____ variables respectively.
independent and dependent

There are ____ ways to solve a quadratic equation.
three

The following are the ways to solve a quadratic equation

- Factoring
- Completing the Square
- Quadratic Formula

_____ is a typical method to solve a quadratic equation whenever the polynomial ax2+bx+c can be easily factored.
Factoring

_____ is a method that can be used to solve any quadratic equation.
Completing the square

The expression inside radical b 2−4ac is called_____.
the discriminant

_____ can be defined thus: If a result involving natural numbers is true for 1 and its validity for a natural number k implies its validity for k + 1, then the formular is true for all numbers.
Mathematical induction

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A complex variable z is of the form a + bi, where a and b are real numbers and i is called_____.
imaginary number

Two complex numbers z1 and z2 are equal_____
if their real parts are equal

A _____ is the locus of a curve (equidistant from a point).
circle

A _____ could be described by its centre (fixed) and its radius.
circle

A circle could be described by its _____(fixed) and its radius.
centre

A circle could be described by its centre (fixed) and its_____.
radius

The _____ is the distance between the centre of the circle and the circumference
radius

The radius is the distance between the centre of the circle and the _____
circumference

The properties of equation of a circle are the following
1. The coefficient of the two variables x and y must be the same
2. There must be no term in xy
3. The equation must be second degree or simply in second degree of x and y respectively.

A _____ is any well-defined class of objects
Set

The set is read as _____
A is the set of numbers x such that x is even

Given the equation $9x^2 - 16y^2 = 44$, the intersection on x-axis is _____
4

A set is ___ if it consist of a specific number of elements
Finite

If in counting the different members of a set, the counting process does not come to an end, then the set is ____
Infinite

The ____ set is considered to be a subset of every set

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Empty

_____ is the locus of points equidistant from a fixed point
Circle

If $b^2 - 4ac = 0$, then the solutions of the quadratic equation $ax^2 + bx + c$ are real and _____
equal

The common ratio of 2, 6, 18, 54, . . . is _____
3

The _____ sequence is a sequence in which each term differs by a common difference
Arithmetic

If a set A is finite, then it is necessarily ____
Bounded

(3, 10) is an ____ interval
Open

The intersection of two intervals is also an _____
Interval

If $a < b$ and $c < 0$, then _____
|x|

The set of complex numbers is a superset of the set of ____ number
Real

The number 0 is itself neither positive nor ____
Negative

$J = \left\{ \frac{a}{b} \middle| a, b \in \mathbb{Z}, b \neq 0 \right\}$ is the set of _____ numbers
Rational

The members of a family of sets are ____
Sets

In plane geometry, the universal set consists of all the ____ in the plane
Points

Let M = {a, b}, then $2^M = 4$, the value of M is _____
2

A = {1, 3, 7, 8} and B = {2, 4, 7, 9} are not disjoint since ____ is in both sets

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7

In an axiomatic development of a branch of mathematics, one begins with ____
Undefined terms

Two different lines cannot contain more than one point in _____
Common

The _____ set, contains no elements and is a subset of every set
Null

Although physically, it might be impossible to count the number of people on the earth, the set is still _____
Finite

The ____ is the set of all elements which belong to A or to B or to both
Union

____ is usually read "A union B"
AUB

The union of A and B is sometimes denoted by A + B and is called the set theoretic sum of A and _____
B

The ______ is the set of elements which are common to A and B
Intersection

The ______of sets A and B is the set of elements which belong to A but which do not belong to B
Difference

The ____ of a set A is the set of elements that do not belong to A
Complement

E = {2, 4, 6, . . . } is the set of _____
Even numbers

P = {1, 2, 3, . . . } is the set of _____
Natural numbers

In terms of their elements, two sets are called disjoint if they have _____
no element in common

The set of all y values of a relation is called the _____
Domain

The set of element in {x | x is a positive even integer less than 4} is: _____
{1,2,3}

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The common ratio is ____, when the fourth term is divided by the second term is 9
3

In slope-intercept form, the equation of a line passing through the point (-3,2) and parallel to 4x-y=7 is given as_____
y=4x+4

The distance between the points (-3, 19), (-7, -5) to the nearest tenth is_____
24.3

Power set of empty set has exactly_____ number of subset.
Zero

The x intercept of 9x-2y=18 is _____
(3,0)

What is the coordinate of the y-intercept of the linear equation 9x-2y=18 is_____
(0,2)

The leading coefficient of y=6x3-3x2+4x+5 is_____
6

If A and B are sets and A ∪ B =A ∩ B, then the two sets are_____
Equal

The intersect of the sets {1,2,5} and {1,2,6} is the set_____
{1, 2}

The solution of a quadratic equation is sometimes called ____
Roots

Given the circle, the radius of the circle is_____
Zero

The equation of the line passing through the point (-3,7) with slope zero can be written as_____
y=7

The Common difference of sequence 2,-2 ,-6,… is_____
-4*

The complex number is represented by_____
x+iy

Set that have unlimited numbers of elements are referred to as_____
infinite set

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The radius of the circle with the equation: is _____
5

The sum of -5+ 4i+9+ 6i in standard form (+ bi) is_____
4+10i

The cardinality of the Power set of the set {0,1,2} is _____
6

The union of the sets {1,2,5} and {1,2,6} is the set_____
{1, 2, 5, 6}

The individual objects in a set are called_____
element

The Common difference of sequence 5,8,11,14,… is_____
3

Collection of well-defined objects is called a_____
set

The set of positive integers is an example of_____ set
infinite

If A∪B=B∪A, then the sets A and B are_____
commutative

The product of 4+iand 4-iis_____
17

A linear system of equations made up of two intersecting lines has _____ solution(s).
two

The Sum of the roots of the quadratic equation 3x2 -5x -2 is_____
5/3

The solutions of a quadratic equation x2 + 5x – 6 = 0 are _____ and_____
1 , -6

In standard form a+ bi, 3- 5i--5+ 11i+(9+ 6i) can be reduced to_____
17-10i

Any set that contains a definite number of elements is called_____
finite set

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One factor of the expression 8x2 – 19x + 6 is x -2. The other is_____
8x-3

Expansion of 3-6i2 is_____
-27-36i

If the difference between the third term and the second term is 12, then the common difference is_____
12

If Set D = {x: x is an odd number between 10 and 18}, the elements_____
{11,13,15,17}

The minimum value of is_____
-4

The numerator of the quotient 5-3i2+ 7i in standard form (a+ bi) is _____
-11-4i

When b2-4ac<0, then the equation has_____ solution.
two complex

The first and seventh terms of a geometric progression are 812 and 329 respectively. Hence, the common ratio is_____
2/3

If two sets have distinct elements, they are said to be_____
disjoint

The slope of the linear equation y=12x-2 is_____
2/3

The slope of the linear equation y=-14x+7 is _____
-1/4

If U={a,b,c,d,e}, A={a,c,e} and B={a,b,e}, then (A∩B)=_____
{a,e}

The value of i15is _____
-i

Find the product of 4 + i and 4 – i.
17

Find the next term of each sequence 4 -16, 64, -256 1024, …
-4096

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Find the next term of each sequence 4, 16, 36, 64, 100
144

Find the next term of each sequence 4, -12, 36, -108, 324
-972

Expand and simplify (2x - 1)(x + 3)
x2+5x-3

Factorize completely. 9x2-24x-16
(3x-4)2

(x-3)2 is equal to ____
x2 – 6 x + 9

Find an equation whose roots are -2 and 1.
x2+x-2=0

When solving a linear system of equations, you are looking for which of the following?
Point(s) of intersection

A linear system of equations made up of two intersecting lines has _____ solution(s)
one

If the legs of a right triangle measure 5 and 12 cm respectively, the measure of the third side is_____
13 cm

Which of the following is an equation of a circle?
x2 + y2 = 9

The set of all y=f(x) values of a relation is called the _____.
domian

If a system of equations has one solution, then the equations will have _____.
different slopes

The solution(s) of a Quadratic Equation is/are also sometimes called _____.
root(s)

The square root of a number is the same as raising the number to the _____
(1/2) power

The x intercept of 2x – 3y = 6 is _____
(3,0)

Given \(ax^{2} +bx + c = 0\), with \(a \neq 0\), and \(b^{2} - 4ac > 0\), then the equation has_____

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real and distinct solutions

One of the following is not a method of solving quadratic equations
trichotomy

Solving \(x^{2}=3\) we obtain_____
\(– 1, 4 \)

Solving \(x^{2}=\) we obtain_____
\(\pm \sqrt{3}\)

\(x^{2}-3x-4\) is factored as_____
(x – 4)(x + 1)

\(x\) and\(y\) in \(ax^{2}+bx+c=y\), are respectively called_____
independent and dependent variables

The 7th term of an A.P whose first term is 102 and common difference is \(– 3\), is_____
84

One of the following is an arithmetic progression
\(3, 5, 7, 9, \cdots\)

Which of the following is not infinite?
\(x|x = 4 \)

A shorter notation for \(x| 3\leq x < 5\) is_____
[3, 5)

The set \(\left \{ x|2\leq x\leq 5\right \}\) is a/an____
closed interval

Which of the following correctly defines the absolute value |x| of a number x?
|x|= x if x > 0

The natural numbers are closed under the operation of_____
addition

If a < b and b < c, then_____
a < c

If a < b, then_____
b – a is a positive number

Let the universal set be the set of positive integers and let A be the set of the positive even numbers. Find A compliment

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\(\left \{ 1,3,5,...\right \}\)

Let R be the set of real numbers and let Q be the set of rational numbers. Then \(R – Q\) consist of the_____
irrational numbers

Which of the following, concisely defines the union of A and B?
\(\left \{ x|x\in A \, or \, x\in B \right \}\)

B is a proper subset of A if_____
\(B\subset A\) and \(B \neq A\)

In the roster form, the set of natural is_____
\(\left \{ 1,2,3... \right \})

Two sets A and B are equal iff every \(x\in A\) belongs to B and every \(y\in B\) belongs to A. This is called _____
Axiom of extension

Which of the following is true of axiomatic development of plane Euclidean geometry?
two different points are on one and only one line

In an axiomatic development of plane Euclidean geometry, “points” and “lines” are_____
undefined terms

Let \(E=t { x,y,z }\) and \(F=t { r,s,t }\) then E and F are_____
disjoint

The power set of a set M is denoted by_____
\(2^{M}\)

One of the following is not a family of sets
\(t{ 2,t { 0,1 } }\)

Let \(E=t { x|x^{2}-3x=-2 }\), \(H=t { 1,2 }\). Then
E=H

Write the set \(B=t { 2,4,6,8,… }\) in set builder form_____
\(B=t { x|x is even and positive }\)

List the elements of the set \(B=t { x|x-2=5 }\)
\(t{ 7 }\)

If A' is a complement of set A, the equivalent of (A')' is____
A

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Let x be the required Arithmetic Mean, then if 8, x, 16 form three successive terms in the Arithmetic Progression, x is_____
12

Let Z = 5 + 12i, The value of |Z| is_____
13

In the solution of a quadratic equation $x^2 - 4x + 5 = 0$, the roots are_____
imaginary

Let x be the required Geometric Mean (GM) between a and b. Then a, x, b, are the successive terms in the Geometric Progression. The GM is_____
square root(ab)

In a geometric series, the first term is 7, the last term is 448, and the sum is 889. The common ratio, r is_____
r = 2

The sum of the first n terms of a series is \ [2n^2 - n\]. The nth term is_____
4n – 3

Factorize the equation \(3x^2-11x-4=0\)
\((3x+1(x-4)\)

Let set \(A={x\in Z:0\leq x < 2}\) list the member of A
[C] \(A={0,1}\)

Solve the inequality \(\frac{2z+3}{z+2}\leq 1\)
[B] \(-2<z\leq -1\)

\(Z={â€¦,-3,-2,-1,0,1,2,3,â€¦}\) denotes a set of _____
Integer number

A vector having unit magnitude is called_____
Unit vector

The notion \(\ni\) mathematically denotes_____
Such that

In a group of 250 students, 170 are boys. If 120 students including all the girls wear glasses, determine the number of boys that wear glasses
40

The seventh term of an A.P is 15 and the fourth term is 9. Find the first term and common difference
[A] \(a=3, d=2\)

Given \(A=3+4i\) and \(B=2+5i\), find AB_____

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[A] \(AB=-14+23i\)

The second term of a GP is 4, the fifth term is 81. Find the seventh term.
C] \(\frac{729}{4}\)

If \(z_1=3+2i\) and \(z_2=4+3i\) and are complex numbers, find \(z_1z_2\)
\(6+17i\)

The science that deals with the collection of objects with common properties is called?
Set

Two set A and B are said to be disjoint if?
\(A\cap B={}\)

Given the sequence \(a, ar, ar^2, ar^3,â€¦\), obtain the \(n\) term of the G.P
\(U_n=ar^{n-1}\)

Which of the following set laws holds?
\(A\cup \Phi=A\)

Given \(z=3+2i\), evaluate \(|z|\)
\(\sqrt{13}\)

Find the sum of the series \(\sum_{n=1}^{4}(2n+n^3)\)
120

Find all values of satisfying the inequality \(-11\leq 4-3x\leq 28\)
\(-8\leq x\leq 5\)

Find the seventh term of an A.P whose first term is 102 and common difference is -3
84

Solve the inequality \(3-4t\leq 8+t\)
\(t\qeq -1\)

G _____ H, if and only if \\(G\\subset H\\)\nand \\(H\\subset G\\)\n
\\(=\\)

The set \\(\\left \\{ 1,3,...,199 \\right \\}\\)is a ____ set.\n
Finite

A set D of people in the world who are older than 300 years is a/an ___ set.
Empty

If \\(E=\\left \\{ 2,4,6 \\right \\}\\)\nand \\(F=\\left \\{ 6,5,4,3,2 \\right \\}\\)\nthen E is a ____ of F.

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Subset

I is a _____ set of J if \\(J\\subset I\\)\n\\(J= I\\)\n
Proper

The _____ set is a subset of every set.
Null

Given that \\(B=\\left \\{ 5,6,7,8 \\right \\}\\)\nand \\(C=\\left \\{ 7,5,8,6 \\right \\}\\)\nthen B and C are ____ sets.
Equal

A set, A consisting of all even number is a _____ set.
Infinite

Two set K and L are said to be comparable, if \\(K\\subset L\\)\n___\\(L\\subset K\\)\n
or

If\\(Z = \\left \\{ 14,700,-473,4644,84 \\right \\}\\)\nThen, Z is ____.
Bounded

Given that \\(V =\\left \\{ 1,3,4,2 \\right \\}\\) and \\(W=\\left \\{ 6,4,7,2 \\right \\}\\) then \\(V \\cap **W\\)\n is\n\n \\(\\left \\{ 2 , 4\\right \\}\\)**

A set of the form \\(y = \\left \\{ y/y\\leqslant 4\\right \\}\\)\nis of _____intervals.
Infinite

Suppose \\(M =\\left \\{ 1,2 \\right \\}\\)\nand \\(N =\\left \\{ 2,3,4 \\right \\}\\) Then, M and N are _____, since \\(1\\in M\\)\n\\(2\\notin M\\)\n\n
Not comparable

If A is a subset of B and B is a subset of C. Then, A is a subset of _____.
C

If A is a subset of B and B is a subset of C. Then, A is a subset of _____.
A

If two sets R and S have no element in common R and S are _____ sets.
Disjoint

If \\(Q=\\left \\{ 1,2,3 \\right \\}\\) then \\(2^{Q}\\)\nhas ____ elements.\n
8

The set \\(\\left \\{ \\left \\{ a,b \\right \\},\\left \\{ a \\right \\}\\left \\{ c,d \\right \\} \\right \\}\\)\nis a /an _____ of sets.
Family

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The _____ of two sets X and Y is denoted by \\(X-Y\\)\n
Difference

The set of all real numbers EXCEPT, _____ numbers are of utmost importance in real analysis.
Complex

The set \\(\\left \\{ \\left \\{ a,b \\right \\},\\left \\{ a \\right \\}\\left \\{ c,d \\right \\} \\right \\}\\)\nis a /an _____ of sets.
Family

The _____ of two sets X and Y is denoted by \\(X-Y\\)\n
Difference

The set of all real numbers EXCEPT, _____ numbers are of utmost importance in real analysis.
Complex

2,4,6,8,10 is a/an _____ sequence.
Finite

Given that\\(\\mathbb{Z}=\\left \\{ ...,-3,-2,-1,0,1,... \\right \\}\\)\nthe elements of\\(\\mathbb{Z}\\)\ncan also be called _____ numbers.
Whole

Given the sequence \\(\\frac{1}{4},\\frac{1}{8},\\frac{1}{16}\\)\nthen r is _____.
\\(\\frac{1}{4}\\)

Sets and their relationships are depicted diagrammatically on a _____ diagram
Venn

\\(\\pi ,\\sqrt{2},\\sqrt{3}\\)are examples of _____ numbers.
Irrational

An Arithmetic sequence whose first term is 102 and common difference is -3, has its 7th term as _____.
84

\\(B = \\left \\{ m/2< m< 5\\right \\}\\) is a/an _____ interval.
Open

A _____ is a sequence in which each successive terms of the sequence are in equal ratio.
GP

If the first term of an A.P is 67 and the common difference is Then, the sum of the first 20 terms is _____.
\\(-1130\\)

Every real number can be represented by a _____ decimal.
Non-terminating

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What are the values of x for which \[\frac {x^3 + 3x^2 + 2x} { x^2 + 5x +6} = 0 \]?
x = 0, -1, or -2

Let x be the required Arithmetic Mean, then 8, x, 16 form three successive terms in the Aritmetic Progression. Find x.
12

The sum of the first and third terms of a Geometric progression is \[6\frac{1}{2}\] and the sum of the second and fourth terms is \[9\frac{3}{4}\].Find the first term.
2

The coordinate of the centre and the radius of the circle \[y^2 + x^2 ??? 14x -8y + 56 = 0\] is ____
(7,4)

The sum of five numbers in an Arithmetic Progression is 25 and the sum of their squares is 165. Find the common difference.
-2

Let x be the required Geometric Mean (GM) between a and b. Then a, x, b, are the successive terms in the Geometric Progression. Find the GM
\[\sqrt{ab}\]

Let \[Z_1 = 12 + 5i,~~ Z_2 = 14 ??? 7i\] express \[Z_1 Z_2\] in standard form
203 -14i

The limiting value of \[\frac{n^{3}+5n^{2}+2}{2n^{3} + 9} \] as \[n\rightarrow \infty\]is _____
½

Suppose A = (1, 4), B = (4, 5), C = (5, 7), then\[(A \times B) \cap (A \times C)\] is _____
{(1, 5), (4,5)}

A company sets up a smoking fund and invests N10, 000 each year for 5years at 9% compound interest, the worth of the fund after 5years is ____
N 59, 847

The common ratio in a geometric series having first term 7, the last term 448, and the sum 889 is _____
2

The number of terms in an A.P. whose first term is 5, common difference 3, and sum 55 is _____
5

The 383rd term of the series 5 + 8 + 11 + ... is_____
128

The sum of five numbers in an A.P is 25 and the sum of their squares is 165. Find the numbers

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\[\pm 2\]

The sum of the first n terms of a series is 2n^2 n. Find the nth term and of the series.
4n-3

Find the number of terms in an A.P. whose first term is 5, common difference 3, and sum 55.
5

Let \[Z_{1} = 5 + 12i, ~~ Z_{2} =3 + 4i\]. Find \[(Z_{1})^{2} - (Z_{2})^{2}\] in standard form
-92 + 96i

Find the distance between points A(-3, 4) and B(2, 5)
\[\sqrt{26}\]

What is the polar form of a complex number Z = 3 + 4i?
Z = 5(Cos45 + isin45)

In solving the quadratic equation \[x^2 -4x + 3 =0\], the roots are _____
real

Which term of the Arithmetic Progression 49, 44, 39, . . . , is 9?
Nineth term

Find the equation of the circle center (2 , -3) and radius 4
\[y^2 + x^2 -4x + 6y - 3 =0\]

Let Z = 5 + 12i, find |Z|
13

Express 5 + 12i in a polar form, i.e in form of\[Z = r(cos {\theta} + isin {\theta})\]
Z = 13(Cos45 + isin45)

The sum of the first n terms of a series is \[2n^2 - n\]. Find the nth term
4n – 3

In a geometric series, the first term is 7, the last term is 448, and the sum is 889. Find the common ratio, r
r = 2

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