N.C.E.R.T. Text Book Chapters

Chapter No.	MATHEMATICS
1	L 1 Knowing our Numbers
2	L 2 Whole Numbers
3	L 3 Playing with Numbers
4	L 4 Basic Geometrical Ideas
5	L 5 Understanding Elementary Shapes
6	L 6 Integers
7	L 7 Fractions
8	L 8 Decimals
9	L 9 Data Handling
10	L 10 Mensuration
11	L 11 Algebra
12	L 12 Ratio and Proportion
13	L 13 Symmetry
14	L 14 Practical Geometry

Maths Course Structure - Class VI

Number System

(60 hrs)

(i) Knowing our Numbers:

Consolidating the sense of numberness up to 5 digits, Size, estimation of numbers, identifying smaller, larger, etc. Place value (recapitulation and extension), connectives: use

(ii) Playing with Numbers:

Simplification of brackets, Multiples and factors, divisibility rule of 2, 3, 4, 5, 6, 8, 9, 10, 11. (All these through observing patterns. Children would be helped in deducing some and then

(iii) Whole numbers

Natural numbers, whole numbers, properties of numbers (commutative, associative, distributive, additive identity, multiplicative identity), number line. Seeing patterns,

(iv) Negative Numbers and Intergers

How negative numbers arise, models of negative numbers, connection to daily life, ordering of negative numbers, representation of negative numbers on number line. Children to see

(v) Fractions:

Revision of what a fraction is, Fraction as a part of whole, Representation of fractions (pictorially and on number line), fraction as a division, proper, improper & mixed fractions, equivalent fractions, comparison of fractions, addition and subtraction of fractions (Avoid large and complicated unnecessary tasks). (Moving towards abstraction in fractions)
Review of the idea of a decimal fraction, place value in the context of decimal fraction, inter conversion of fractions and decimal fractions (avoid recurring decimals at this stage), word problems involving addition and subtraction of decimals (two operations together on money, mass, length and temperature)

Algebra

(15 hrs)

INTRODUCTION TO ALGEBRA

• Introduction to variable through patterns and through appropriate word problems and generalisations (example 5 X 1 = 5 etc.)
• Generate such patterns with more examples.
• Introduction to unknowns through examples with simple contexts (single perations)

Ratio and Proportion

(15 hrs)

• Concept of Ratio
• Proportion as equality of two ratios
• Unitary method (with only direct variation implied)
• Word problems

Geometry   **(65 hrs)**

(i) Basic geometrical ideas (2 -D):

Introduction to geometry. Its linkage with and reflection in everyday experience.
• Line, line segment, ray.
• Open and closed figures.
• Interior and exterior of closed figures.
• Curvilinear and linear boundaries
• Angle — Vertex, arm, interior and exterior,
• Triangle — vertices, sides, angles, interior and exterior, altitude and median
• Quadrilateral — Sides, vertices, angles, diagonals, adjacent sides and opposite sides (only convex quadrilateral are to be discussed), interior and exterior of a quadrilateral.

• Circle — Centre, radius, diameter, arc, sector, chord, segment, semicircle, circumference, interior and exterior.

(ii) Understanding Elementary Shapes (2-D and 3-D):

• Measure of Line segment
• Measure of angles
• Pair of lines
- Intersecting and perpendicular lines
- Parallel lines
• Types of angles- acute, obtuse, right, straight, reflex, complete and zero angle
• Classification of triangles (on the basis of sides, and of angles)
• Types of quadrilaterals – Trapezium, parallelogram, rectangle, square, rhombus.
• Simple polygons (introduction) (Upto octagons regulars as well as non regular).
• Identification of 3-D shapes: Cubes, Cuboids, cylinder, sphere, cone,prism (triangular), pyramid (triangular and square)
Identification and locating in the surroundings
• Elements of 3-D figures. (Faces, Edges and vertices)
• Nets for cube, cuboids, cylinders, cones and tetrahedrons.

(iii) Symmetry: (reflection)

• Observation and identification of 2-D symmetrical objects for reflection symmetry
• Operation of reflection (taking mirror images) of simple 2-D objects
• Recognising reflection symmetry (identifying axes)

(iv) Constructions (using Straight edge Scale, protractor, compasses)

• Drawing of a line segment
• Construction of circle
• Perpendicular bisector
• Construction of angles (using protractor)
• Angle 60°, 120° (Using Compasses)
• Angle bisector- making angles of 30°, 45°, 90° etc. (using compasses)
• Angle equal to a given angle (using compass)

• Drawing a line perpendicular to a given line from a point a) on the line b) outside the line.

Mensuration

(15 hrs)

CONCEPT OF PERIMETER AND INTRODUCTION TO AREA

Introduction and general
understanding of perimeter using many shapes. Shapes of different kinds with the same perimeter. Concept of area, Area of a
rectangle and a square Counter examples to different misconcepts related to perimeter and area. Perimeter of a rectangle – and
its special case – a square. Deducing the formula of the perimeter for a rectangle and then a square through pattern and generalisation.

Data handling

(10 hrs)

(i) What is data - choosing data to examine a hypothesis?
(ii) Collection and organisation of data - examples of organising it in tally bars and a table.
(iii) Pictograph- Need for scaling in pictographs interpretation & construction.
(iv) Making bar graphs for given data interpreting bar graphs+.

MONTHLY SPLIT UP OF SYLLABUS
Session:2012-13
CLASS –VI MATHEMATICS

Month	No. of working Days	Tentative No. of Periods	Chapter No.	Name of the Chapter	Class Room Period	Total No. of Periods
April	23	25	1	1. Knowing our Numbers	**13**	**29**
And		29	2	2. Whole Numbers	**12**	
May	4	4				
June	7	8	3	3. Playing with Numbers	15	30
And	25(19+6)	30	4	4. Basic Geometrical Ideas	11	
July		22				
August	25	26	5	5. Understanding Elementary Shapes	11	26
			6	6. Integers	11	
September	22(16+6)	18	7	7. Fractions	9	18
			8	8. Decimals	7	
October	18	20	9	9. Data Handing	15	22
November	23(17+6)	22	10	10. Mensuration	20	22
	Cumulative Test			Revision for Half Yearly Exam.	0	
December	17	20	11	11. Algebra	20	22
January	24(18+6)	22	12	12. Ratio and Proportion	22	24
			13	13. Symmetry		
February	22	24	15	Practical Geometry	10	24
				Revision for S.E.E.	12	
March	—	—	—	Revision for S.E.E.		

Maths Lesson Summary - Class VI
Knowing Our Numbers

Comparing Numbers

The arrangements of numbers from the smallest to the greatest is called ascending order.

The arrangement of numbers from the greatest to the smallest is called descending order.

If two numbers have unequal number of digits, then the number with the greater number of digits is greater.

If two numbers have equal number of digits, then the number with the greater digit is greater.

Commas added to numbers help us read and write large numbers easily. As per Indian Numeration, the first comma is placed after hundreds place, then commas are placed after every two digits. (Example: 12,34,567)

As per International Numeration, the first comma is placed after hundreds place, then commas are placed after every three digits. (Example: 1,234,567)

1 gram = 1,000 milligrams

1 kilogram = 1,000 grams

1 kilometre = 1,000 metres

1 metre = 100 centimetres

1 centimetre = 100 millimetres

1 litre = 1,000 millilitres

Estimation of the Numbers

A reasonable guess of the actual value is called an estimate.

A quick, rough estimate of the result of number operations can be done by rounding off the numbers is involved.

Estimating numbers to the nearest tens is done by rounding off numbers 1, 2, 3 and 4 to 0 and number 6, 7, 8, 9 to 10.

Estimating numbers to the nearest hundreds is done by rounding off numbers 1 to 49 to 0 and numbers 51 to 99 to 100.

Estimating numbers to the nearest thousands is done by rounding off numbers 1 to 499 to 0 and the numbers 501 to 999 to 1000.

Roman Numerals

In Roman numerals a symbol is not repeated more than three times, but the symbols V, L and D are never repeated.

Roman numerals are read from left to right and the letters of Roman numerals are arranged from the largest to the smallest.

If a symbol of smaller value is written to the right of a symbol of greater value, then its value gets added to the value of greater symbol.

If a symbol of smaller value is written to the left of a symbol of greater value, its then value is subtracted from the value of the greater symbol.

The symbol "I" can be subtracted from "V" and "X" only.

The symbol "X" can be subtracted from "L", "M" and "C" only.

Importance of Brackets

Brackets help in simplifying an expansion with more than one mathematical operation.

In an expression that includes brackets, the numbers inside the brackets must be simplified into a single number first, followed by the operation outside the bracket.

Whole Numbers

Whole Numbers

The numbers used for counting are called natural numbers.

The number that comes immediately before another number in counting is called its predecessor.

The number that comes immediately after another number in counting is called is successor.

To find the successor of any given natural number, just add 1 to the given number.

The value of nothing is represented by the number zero.

Natural numbers together with the number zero are called Whole numbers.

Properties of Whole Numbers

The sum of two whole numbers is the same, no matter in which order they are added. This is called the commutative property of addition.

A whole number added to 0 remains unchanged. Thus, 0 is called the additive identity in whole numbers.

The product of two whole numbers is the same, no matter in which order they are multiplied. This is called the commutative property of multiplication.

A whole number multiplied by 1 remains unchanged. Thus, 1 is called the multiplicative identity in whole numbers.

Whole numbers are closed under addition and multiplication.

Subtraction and division are not commutative in whole numbers.

Whole numbers are not closed under subtraction and division.

While adding whole numbers, we can group the numbers in any order. This is called the associative property of addition.

While multiplying whole numbers, we can group the numbers in any order. This is called the associative property of multiplication.

The sum of the product of a whole number with two other whole numbers is equal to the product of the whole number with the sum of the two other whole numbers. This called the distributive property of multiplication over addition.

Playing with Numbers

Prime and Composite Numbers

An exact divisor of a number is called its factor.

The number 1 is a factor of every number.

Every number is a factor of itself.

The factors of a number are either less than or equal to the number itself.

All numbers have a finite number of factors.

The product of two numbers is called a multiple of each of the two numbers being multiplied.

A number is a multiple of all its factors.

Every number is a multiple of 1 and itself.

There are infinite multiples of a number.

Numbers that have only two factors in the form of 1 and the number itself are called prime numbers.

Numbers that have more than two factors are called composite numbers.

The number 1 is neither a prime number nor a composite number.

All number having 0, 2, 4, 6 or 8 in the unit's or one's place are multiples of 2 and are called even numbers.

All numbers having 1, 3, 5, 7 or 9 in the unit's place are called odd numbers.

The number 2 is the smallest prime number and also the only prime number that is even.

All prime numbers, except 2, are odd numbers.

The sum of any two prime numbers, except 2, is an even number.

Divisibility of Numbers

A number that has 0, 2, 4, 6 or 8 in its place is divisible by 2.

A number is divisible by 3 if the sum of its digits is divisible by 3.

A number is divisible by 4 if the number formed by its last two digits is divisible by 4.

A number that has 0 or 5 in its ones place is divisible by 5.

A number is divisible by 6 if that number is divisible by both 2 and 3.

A number is divisible by 8 if the number formed by its last three digits is divisible by 8.

A number is divisible by 9 if the sum of its digit is divisible by 9.

A number that has 0 in its ones place is divisible by 10.

If the difference between the sum of digit at odd and even places in a given number is either 0 or a multiple of 11, then the given number is divisible by 11.

If a number is divisible by another number, then it is also divisible by all factors of the other number.

If two numbers are divisible by another number, then their sum and difference is also divisible by the other number.

If a number is divisible by two co-prime numbers, then it is also divisible by the product of the two co-prime numbers.

If the only common factor of two numbers is 1, then the two numbers are called co-prime numbers.

Prime Factorisation, HCF and LCM

Writing a number as a product of its prime factors is called prime factorization of the number.

The greatest common factor of given numbers is called their highest common factor (HCF).

The HCF of given numbers is equal to the product of their common prime factors in prime factorization.

The lowest common multiple of given numbers is called their Least Common Multiple (LCM).

The LCM of given number is equal to the product of their prime factors counted as the maximum number of times they occur in their prime factorization.

Basic Geometrical Ideas

Points, Lines and Curves

The point, the line segment, the line and the ray are the fundamental elements of geometry.

A point represents a location or a position, and is dimensionless. It can be denoted by single capital letter of the English alphabet.

Line segments are defined as the shortest distance between two points.

A line segment joining points L and M is denoted by $\overline{LM}$.

A distance between the two end points of a line segment is the length of the line segment.

A line is made up of an infinite number of points that extend indefinitely in both directions.

A line containing points L and M is denoted by $\overleftrightarrow{LM}$.

A plane is said to be a very thin flat surface that does not have any thickness and is limitless.

A minimum of three points are required to represent a plane.

Curves can be defined as figures that flow smoothly without a break.

Curves that do not intersect themselves are called simple curves.

The end points of open curves do not meet. While the endpoints of closed curve join to enclose an area.

For a closed curve, you can identify three regions – the interior of the curve, the boundary of the curve and the exterior of the curve.

Angles, Polygons and Circles

A curve that does not cross itself is called a simple curve.

Angle is made up of two rays starting from one common end.

Simple closed curves made up of only line segment are called polygons.

A circle is a simple closed curve formed by a point moving at the same distance from a fixed point.

Two rays join at a common point to form an angle.

A polygon made up of three line segments is called a triangle.

A polygon made up of four line segments is called a quadrilateral.

A triangle has three vertices, three sides and three angles.

A quadrilateral has four vertices, four sides and four angles.

Sides that have a common vertex are called adjacent sides.

A circle is formed by a point moving at the same distance from a fixed point.

A circle is also a simple closed curve; however, it does not have any sides or angles.

An air is a part of the circumference of a circle.

A chord is a line segment joining two points that lie on a circle.

The part of a circle that is enclosed by a chord and an arc is called a segment of the circle.

A chord passing through the centre of the circle is called its diameter.

A diameter is the longest chord of a circle.

A diameter of a circle divides the circle into two halves. Each half is called a semi-circle.

A line segments that joints the centre of the circle and a point on the circle is called the radius of the circle.

The radius of a circle is half of the diameter.

A part of the circle that is enclosed by two radii and an arc is called a sector.

Understanding Elementary Shapes

Line and Angles

Using a ruler and a divider is the accurate method to measure the length of a line segment.

An angle that measures 90° is called a right angled. A right angle makes a quarter revolution.

An angle that measures 180° is called a straight angle. A straight angle makes a half revolution.

An angle that measures less than 90° is called an acute angle.

An angle that measures more than 90° and less than 180° is called an obtuse angle.

An angle that measures more than 180° and less than 360° is called a reflex angle.

If two lines intersect at right angles, they are called perpendicular lines.

A perpendicular bisector is the line that is perpendicular to a line segment and divides the line segment into two halves.

Two Dimensional Figures

A triangle is called scalene triangle if all the three sides are of unequal length.

A triangle is called an isosceles triangle if two of its sides are equal length.

A triangle is said to be an equilateral triangle if the lengths of all of its sides are equal.

When an angle is less than 90°, it is called an acute angle.

If all the angles of a triangle are less than 90°, then it is called an acute angled triangle.

If one angle of a triangle is 90°, then it is called a right angle angled triangle.

If one angle of a triangle is greater than 90°, then it is called an obtuse-angle triangle.

In a parallelogram, the opposite sides are parallel and equal, and the opposite angles are equal.

In a rectangle, the opposite sides are parallel and equal, the diagonals are equal, and all the angles are right angles.

In a square, all the sides and diagonals are equal, and all the angles are right angles.

In a rhombus, all the sides are equal and the diagonals are not equal.

In a trapezium, a pair of opposite sides is parallel.

Three Dimensional Shapes

A solid shape will generally have dimensions like length, breadth and height.

A face is the flat surface on a solid figure.

Two faces meet on a line segment called an edge.

A point where three or more edges meet is called a vertex.

The names of prism and pyramid are given after their bases.

Integers

Whole numbers along with negative numbers are called integers.

A positive integer and its corresponding negative integer lie at the same distance from zero on the number line, but in opposite directions.

The value of integers decreases when we move towards the left on the number line.

The value of integers increases when we move towards the right on the number line.

The sum of two positive integers is a positive integer.

The sum of two negative integers is a negative integer.

To find the sum of two positive or two negative integers, add the given integers and put the sing of the given integers before the sum.

The sum of a positive and a negative integer is equal to the difference between the two integers without considering their signs. The sum takes the sign of the larger integer.

Two integers whose sum is equal to zero are called additive inverses of each other.

Integers represented by the same number, but having opposite signs are additive inverses of each other.

When we subtract a larger positive integer from a smaller positive inter, the difference is a negative integer.

To subtract a negative integer from any given integer, add the additive inverse of the negative integer to the given integer.

Fractions

Types of Fractions

A fraction is a number representing a part of a whole. The whole can be a group of objects or can be a single object.

Fractions can be represented on the number line. It is possible to show every fraction on the number line.

Proper fractions are fraction in which the numerator is less than the denominator.

Improper fractions are fractions in which the numerator is greater than the denominator.

Mixed fractions are a combination of a whole and a part.

Line fractions are fractions with the same denominators.

Unlike fractions are fractions with different denominators.

If the numerator and the denominator of a fraction have no common factor except ne, then it is said to be in its simplest form or lowest form.

Equivalent fractions are fractions that have the same value in its simplest form.

The equivalent fraction of a given fraction is obtained by multiplying both the numerator and the denominator of the given fraction by the same number.

Comparing Fractions

Like fractions are fractions with the same denominator.

In like fractions, the fraction with the greater numerator is greater.

Two fractions are unlikely if they have different denominators.

If two fractions with the same numerator but different denominator are to be compared, the fraction with the smaller denominator is greater of the two.

Addition and Subtraction of Fractions

Like fractions can be added or subtracted by taking the common denominator as the denominator of the resultant fraction.

The sum of the numerators of like fractions is the numerator of the resultant fraction.

The difference between the numerators of like fractions is the numerator of the resultant fraction.

Unlike fraction can be added or subtracted by making their denominators the same. This can be done by taking the LCM of the denominators of the unlike fractions.

Two mixed fraction can be added or subtracted by adding or subtracting the whole number of the two fractions and then adding or subtracting the fractional parts together.

Two mixed fractions can also be converted into improper fractions and then added or subtracted.

Decimals

Comparing Decimals

A decimal number is a number (based on the number 10) that contains a decimal point.

The value given to a digit by virtue of its location in a numeral is called its place value.

Tenths $= \frac{1}{10}$

Hundredth $= \frac{1}{100}$

Thousandths $= \frac{1}{1000}$

The decimal point comes between the unit place and tenths place in a decimal number.

Decimals can be represented on the number line.

Every decimal can be written as a fraction.

Any two decimal numbers can be compared. The comparison starts with the whole part of the numbers. If the whole parts are equal then the tenth parts can be compared, and so on.

Decimals are used in many ways in our lives. For example, in representing the money, length and weight.

Addition and Subtraction of Decimals

While adding or subtracting two decimal numbers, ensure that the decimal point of each number is exactly one below the other.

While adding or subtracting two decimal numbers, the numbers, the number of decimal places after the decimal point should be equal. In case they are equal, the gaps must be filled with zero after the last digit.

Data Handling

Data handling

Data is a collection of numbers used to give some information.

Data can be organized using tally marks.

We depict each observation with the help of tally marks.

When an observation occurs more than four time, while recording it the first time, we cross the last four tally marks.

Make sets of not more than five tally marks.

Pictograph

A pictograph represents data in the form of pictures, object or parts of objects.

The key of a pictograph tells the number that each picture or symbol represents.

Bar Graph

Bar diagram or bar graph is a graph in which data is represented in horizontal or vertical bars of equal width or a diagram using bars whose lengths represent collection of data.

Bar graphs or bar diagrams help to represent data visually. Bar graphs have bars of uniform width and the length of each bar represents a number or a numerical value.

In a bar graph, bars can be drawn either vertically or horizontally with uniform spacing between the bars.

While drawing a bar graph, an appropriate scale must be chosen.

The scale in a bar graph is the number represented by a unit length of a bar.

Mensuration

Perimeter

Perimeter = Sum of all the sides of any closed figure.

Perimeter of a rectangle = 2 × (length + breadth)

Perimeter of a square = 4 × length of its side

Perimeter of an equilateral triangle = 3 × length of its side

Closed figure: A figure without an open end is a closed figure.

Regular closed figures: Figures in which all sides and angles are equal.

The perimeter of a regular closed figure = Sum of its sides.

Area

Area is the amount of surface enclosed by an closed figure.

The following conventions are adopted to calculate the area of the figure using a squared or graph paper.

Count the area or the amount of surface enclosed by fully-filled squares as one square unit or unit square.

Count half-filled squares as half a square unit.

Count squares that are more than half-filled as one square unit.

Ignore less than half-filled squares.

Area of a Rectangle = Length $\times$ Breadth

Area of a Square = Side $\times$ Side

Algebra

Variables

The branch of mathematics that deals with numbers, operations on numbers and properties of number is called arithmetic.

The branch of mathematics that deals with the figures and shapes is called geometry.

Algebra is a branch of mathematics that deals with letters. Where these letters represent some unknown quantities.

As these letters represent numbers, all mathematical operations can also be carried out on them.

A variable is a letter that represents an unknown quantity; the value of a variable varies.

A variable can be represented by any letter from the English alphabet.

A quantity whose value does not vary, is called a constant.

An expression consisting of variables, constants and mathematical operators is called an algebraic expression.

Use of Variables

The formula for the perimeter of a square is 4s, where s is the side of the square.

The formula for the perimeter of a rectangle is 2l + 2b, where l and b are the length and breadth of the rectangle.

The formula for the perimeter of a triangle is $x + y + z$, where x, y and z are sides of the triangle.

Commutativity of addition of two numbers: $a + b = b + a$.

Commutativity of multiplication of two numbers: $a \times b = b \times a$.

Associativity of addition of numbers: $(a + b) + c = a + (b + c)$.

Associativity of multiplication of numbers: $(a \times b) \times c = a \times (b \times c)$.

Distributivity of multiplication over addition of numbers: $a \times (b + c) = a \times b + a \times c$.

Equations

An equation is a mathematical statement, which indicates that the value of the left hand side is equal to the value of the right hand side.

An equation puts a condition on the variable.

The value of the variable that makes the LHS of an equation equal to its RHS is called the solution of the equation.

The solution of an equation can be found by using the trial and error method.

In this method, different values of the variables are substituted in the equation.

The value for which the equation is satisfied is the solution of the equation.

Ratios and Proportions

Ratios

To calculate ratio, the two quantities have to be measured using the same unit.

To calculate equivalent ratio, convert the ratio into a fraction and then multiply or divide the numerator and the denominator by the same number.

Proportions

If the ratio between Quantity A and Quantity B is equal to the ratio between Quantity C and Quantity D, then the four quantities A, B, C and D are said to be in proportion.

For example 3 : 2 = 30 : 20 so 3, 2, 30 and 20 are in proportion.

Proportion is denoted by the symbol "::" or "=". Therefore, the quantities 3, 2, 30, 20 can be written as 3 : 2 :: 30 : 20 or 3 : 2 = 30 : 20.

In the proportion a : b :: c : d, the quantities a and d are the extreme terms, and b and c are the middle terms.

The method of calculating the value of one unit and using this value to calculate the value of the required number of units is called the unitary method.

Symmetry

Line Symmetry

Figures that get divided into two halves by a line such that the two halves overlap each other completely are said to show Line Symmetry.

The line that divides a figure into two halves that are exactly the same is called the Line of Symmetry of the figure.

Objects that show line symmetry appear more balanced and beautiful.

A shape may have just one or more than one line of symmetry.

A kite shape just one or more than one line of symmetry.

A kite shape has only one line of symmetry.

A rectangle has two lines of symmetry.

An equilateral triangle has three lines of symmetry.

A square has four lines of symmetry.

A circle has an infinite number of lines of symmetry.

When completing a given figure against a given line of symmetry.

Each part of the constructed figure is equal in measurement to its corresponding part in the given figure.

Each point on the given figure and its corresponding point on the constructed figure are at the same distance from the line of symmetry.

Mirror Symmetry

An object and its mirror image are equal in shape and size.

An object and its image are always at the same distance from the surface of the mirror, called the mirror line.

An object and its image show mirror symmetry with the mirror line being the line of symmetry.

The left and right sides of an object and its mirror image are opposite to each other.

Letters written from right to left, appear written from left to right in their mirror image.

The letters A, H, I, M, O, T, U, V, W, X and Y appear the same in their mirror image. All the other letters of the alphabet appear reversed in their mirror image.

Practical Geometry

Basic Constructions

A ruler is a flat and straight-edged strip, whose one side is graduated into centimeters and the other side is graduated into inches.

Rulers are used for measure lengths and drawing line segments.

A compass has two ends. One end holds a pointer, while the other end holds a pencil.

Compasses are used for making off the equal length, drawing arcs and drawing circles.

A divider has two pointers and it is used to compare lengths.

Set-square always come in pairs. Both of them have right angles at one corner. The other two angles of one set-square are 45° each, while the other two angles of the second set-square are 30° and 60°.

Set-squares are used for drawing perpendicular lines and drawing parallel lines.

A protractor is a semi-circular tool, whose curved edge is graduated into degrees in both the directions.

A protractor is used to measure and draw angle of measures varying from 0° to 180°.

Construction of Lines

Two lines are said to be perpendicular when they intersect each other at angle of $90°$.

The perpendicular bisector is a perpendicular line that bisects the other line into two equal parts.

Constructing of Angles

An exact copy of an angle can be constructed using a ruler and a compass.

The angle bisector is the ray that bisects an angle into two equal angles.

Angles that are multiples of 15° are called special angles.

A special angle can be constructed using a ruler and a compass.

An angle of 30° is constructed by bisecting an angle 60°.

An angle of 45° is constructed by bisecting an angle of 90°.

Mathematics for Class 6

1. Knowing our Numbers

Q 1 Write the following expression using bracket:

Multiply the difference of seven and two by five.

Mark (1)

Q 2 Find a three-digit number, which can be formed by using the digits 0, 3, 5 without repeating any digits.

Mark (1)

Q 3 Arrange the following in ascending order:

6392, 6782, 6789, 6654

Mark (1)

Q 4 How will the number 3,53,552 be read out according to Indian System?

Mark (1)

Q 5 Place value of 9 in 9,83,04,600 is _____.

Mark (1)

Q 6 Write 645340001 using comma in International System of Numeration.

Mark (1)

Q 7 Find the difference between the place values of "1" in 3116365.

Mark (1)

Q 8 Write 88 in Roman numerals.

Mark (1)

Q 9 Round 526 to nearest tens.

Mark (1)

Q 10 Subtract the face value of 7 from its place value in the number 9,87,964.

Marks (2)

Q 11 Arrange the following numbers in descending order:

100101, 100001, 100011, 101001

Marks (2)

Q 12 Write in Roman numerals.

(a) 65

(b) 77

Marks (2)

Q 13 Arrange the numbers in ascending order: 947, 10009, 8331, 502

Marks (2)

Q 14 Place commas correctly and write the numerals.

(a) Nine crore five lakh forty-one.

(b) Fifty eight million four hundred twenty three thousand two hundred two.

Marks (2)

Q 15 Arrange the numbers in ascending order: 847, 9754,8320, 571

Marks (2)

Q 16 Write 96 and 79 in Roman Numerals.

Marks (2)

Q 17 a) How many thousands make a million?

b) How many lakhs make a crore?

Marks (2)

Q 18 Without repetition, make the greatest and smallest 4-digit number using the digits : 3, 5, 7, 4

Marks (2)

Q 19 Which one is greater, greatest 5-digit number or the smallest 6-digit number. Also

find difference between the two numbers.

Marks (2)

Q 20 Write the sum of XX and XXIX in Roman numerals.

Marks (2)

Q 21 Use the following digits without repetition and make the greatest and smallest 5-digit number:

2, 8, 7, 4, 0

Marks (2)

Q 22 Estimate: 527 - 325 and write in Roman number.

Marks (2)

Q 23 Estimate the product using general rule:

427 x 54

Marks (2)

Q 24 Fill in the blanks:

(a) 1 metre = _____centimetres

(b) 1 gram = _____milligrams

(c) 1 litre = _____ millilitres

Marks (3)

Q 25 In an election, the successful candidate registered 4,67,350 votes and his nearest rival secured 2,18,800

votes. By what margin did the successful candidate win the election?

Marks (3)

Q 26 A jar has 3 litres and 500 ml of milk. In how many glasses, each of 25ml capacity, can it be filled?

Marks (3)

Q 27 Population of a city was 2,42,621 in the year 1995. In the year 2005 it was found to be increased by 50,658. What was the population of the city in 2005?

Marks (3)

Q 28 The town newspaper is published every day. One copy has 15 pages. Everyday 13,560 copies are printed. How many total pages are printed everyday?

Marks (3)

Q 29 Rashi and Sameera both went to the store to buy paper napkins. Rashi bought 7623 napkins and Sameera bought 1575 napkins. How many napkins did they buy in all?

Marks (3)

Q 30

Alok and Anuj worked as salesperson at a bookstore. They sold 6283 story books in all. Anuj sold 3324 story books. How many story books were sold by Alok?

Marks (3)

Q 31 A factory makes 5532 plastic spoons per day. How many plastic spoons will the factory make in 25 days?

Marks (3)

Q 32 The population of a town was 9,75,689. In the first year it increased by 4563 and in the second year it decreased by 8976. What was the population of the town at the end of second year?

Marks (4)

Q 33 If a black-board costs Rs 450 and a chair costs Rs 225, find the total amount needed to buy 70 black-boards and 40 chairs.

Marks (4)

Q 34 A book exhibition was held for four days in a school. The number of tickets sold at the counter on the first, second, third and final day was respectively 1094, 1812, 2050 and 2751. Find the total number of tickets sold on all the four days.

Marks (4)

Q 35 Estimate the following products: (i) 87×313 (ii) 898×784

Marks (4)

Q 36 Write the expressions for each of the following using brackets.

(i)Four multiplied by the sum of nine and two.

(ii) Divide the difference of eighteen and six by four.

(iii) Forty five divided by three times the sum of three and two.

(iv) Product of the sum of seven and two and difference of ten and three.

Marks (4)

Q 37 A box contains 2,00,000 medicine tablets, each weighing 20 mg. What is the total weight of all the tablets in the box in grams and in kilograms?

Marks (4)

Most Important Questions

Q 1

Read the following numbers. Write the greatest number.

(i)   314, 444   (ii)   200, 245

(iii)   345, 210   (iv)   724, 455

Q 2

Arranging the following numbers in ascending order:

234, 654, 444, 102, 450

756, 766, 878, 234, 555

4560, 6555, 1200, 239, 768

657, 8777, 9453, 2343

Q 3 Arranging the following numbers in descending order:

560, 740, 234, 534, 880, 222

7560, 4566, 2345, 6505, 7888, 9234

5607, 5555, 67091, 6744

7650, 1120, 4505, 67744, 83456

Q 4 Write the 3 digit numbers formed by using the digits 2, 1, 7,

taking each digit only once in each number.

Q 5 Form the largest number with the digits 4, 6, 1, 0 and 9.

Q 6 Form the largest number with the digits 4, 6, 1, 0 and 9.

Q 7 Form the least and the greatest numbers, using the following digits:

(i)   6, 2 and 5   (ii)   3, 0, 1 and 9

(iii)   7, 3, 0, 2 and 6   (iv)   4, 5, 1, 0, 4 and 8

Q 8 Write down the:

Least number of 3 digit

Greatest number of 4 digit

Q 9 Write each of the following numbers in expanded form:

456

7655

8923

7210

Q 10 Write each of the following numbers in short form:

2 x 100 + 3 x 10 + 6

7 x 1000 + 7 x 100 + 2 x 10 + 8

6 x 10000 + 2 x 1000 + 3 x 100 + 7 x 10 + 9

5 x 10000 + 6 x 1000 + 0 x 100 + 8 x 10 + 8

Q 11 Express each of the following in figures:

Twenty-two hundred forty four

Seven-thousand seven hundred seventy

Q 12 Express each of the following in words:

450

7890

30444

85321

Q 13 Place commas correctly and write the numerals:

Forty-four thousand seven hundred.

Sixty-one lakh, fifty-one thousand three hundred seven.

Eight crore, twenty-four lakh, fifty-five thousand nine hundred.

Two million three hundred thirty-three thousand five hundred four.

Q 14 Insert commas suitably and write the names according to

Indian System of Numeration:

(i)   67435   (ii)   8111223

(iii)   723563   (iv)   5091900

Q 15 Insert commas suitably and write the names according to

International System of Numeration:

(i)   65771238   (ii)   82347192

Q 16 Fill in the blanks:

1 km   = _____meters

1 Gram   = _____milligrams

1 liter = _____milliliters

Q 17 70 Black - boards and 40 chairs were purchased for a school.

 If each black - board costs Rs. 450 and each chair costs Rs.

 225. Find total amount.

Q 18 The population of a town is 9,75,689. In one year it increased

by 4563 and next year it decreased by 8976 and. What

population was left?

Q 19 Estimate the following sums using general rule:

439 and 345

710 and 300

10,000 and 12,456

5,290, 45,000 and 3,450

Q 20 Estimate the following difference using general rule:

456 and 225

796 and 314

22,245 and 10,400

8,325 and 452

Q 21 Estimate the following (by rounding off to nearest tens):

941   (b) 312

(c) 777   (d) 137

(e) 309   (f) 654

Q 22 Estimate the following (by rounding off to nearest hundreds):

(a) 6,941   (b) 6,320

(c) 916   (d) 129

(e) 309   (f) 802

(g) 346   (h) 3,684

(i) 1,311   (j) 586

Q 23 Estimate the following (by rounding off to nearest thousands):

(a) 3,456   (b) 7,850

(c) 25,554   (d) 7,220

(e) 6,500   (f) 92,535

Q 24 Estimate the following products (by general rule):

278 x 361   (b) 5281 x 3451

(c) 34 x 486   (d) 453 x 200

Q 25 Solve the followings:

5 (4 – 3)

23 (45 – 32)

(12 + 22)(34 + 30)

(5 + 6) + 10

5 x (7 + 3)

(10 + 12) x (8 + 6)

Q 26 Write in Roman numerals:

12

34

40

22

Q 27 Write in numbers:

IX

LXV

C

XC

Q 28 Solve the following:

X + V

V + III

XV + II

IX + IX

II + VI

Q 29 Solve the following:

V – I

VII - IV

IX – III

XL - VII

2. <u>Whole Numbers</u>

Q 1 Write the two digit number whose successor is a three digit number.

Mark (1)

Q 2 Write the smallest 4-digit number with the last digit as 5.

Mark (1)

Q 3 Write the next three natural numbers after 2011.

Mark (1)

Q 4 How many whole numbers are there between 53 and 72?

Mark (1)

Q 5 Insert the appropriate sign (>, <) between 5892346 and 43896211.

Mark (1)

Q 6 Write the smallest natural number.

Mark (1)

Q 7 True or False: The sum of whole numbers is always a whole number.

Mark (1)

Q 8 True or False: The difference of two whole numbers is always a whole number.

Mark (1)

Q 9 Is (6 - 3) same as (3 - 6)?

Mark (1)

Q 10 A number remains unchaged when multiplied by _____.

Mark (1)

Q 11 True or False: The predecessor of a two digit number is always a two digit number.

Mark (1)

Q 12 Which natural number has no predecessor?

Mark (1)

Q 13 The digits 5 and 7 are interchanged in the number 27658. Find the difference between the original number and the new number.

Marks (2)

Q 14 Simplify: $255 \times 42 + 255 \times 58$

Marks (2)

Q 15 Find the product using suitable property.
84×9

Marks (2)

Q 16 Find 102 X 103 using distributivity.

Marks (2)

Q 17 Find 7 X 109 using distributivity.

Marks (2)

Q 18 Write the appropriate sign (>, <) between the following:

a)   5030___5003

b)   1370___1307

Marks (2)

Q 19 Write three consecutive whole numbers starting from 199.

Marks (2)

Q 20 Write the successor and predecessor of 60000.

Marks (2)

Q 21 Write the next four natural numbers after 99909.

Marks (2)

Q 22 Write the successor and predecessor of 500390.

Marks (2)

Q 23 Find the value of the following: $350 \times 68 + 32 \times 35 \times 10$

Marks (3)

Q 24 Tina bought 3 packs of white T-shirts and 5 packs of blue T-shirts for her volleyball team. Both T-shirts come in the pack of 12. How many T-shirts did Tina buy in all?

Marks (3)

Q 25 On a certain day, 15 adults visited an amusement park. The next day 20 adults visited the amusement park. The entrance fee for the adults is Rs 250. How much amount is collected from the adults in these two days?

Marks (3)

Q 26 A shopkeeper sold 40 notebooks one day. The next day he sold 50 notebooks. If the notebook costs Rs 12, how much did he earn in all?

Marks (3)

Q 27 Multiply using suitable rearrangements. 25 x 7896 X 4 X 50 X 2

Marks (3)

Q 28 Rohan spends Rs 30 for dinner and Rs 15 for juice each day. How much money he spends in 5 days on these things?

Marks (3)

Q 29 Find the sum by suitable arrangement:

2067 + 342 + 1933 + 558

Marks (3)

Q 30 The product of two numbers is 504347. If one number is 317, find the other number.

Marks (4)

Q 31 The school canteen charges Rs. 30 for lunch and Rs. 5 for milk each day. How much money does Rajesh spend in 7 days on these things?

Marks (4)

Q 32 A taxidriver filled his car petrol tank with 40 litres of patrol on Monday. The next day, he filled the tank with 55.5 litres of petrol. If the petrol costs Rs. 50 per litre, how much did he spend in all on petrol?

Marks (4)

Most Important Questions

Q 1 The numbers which we use for counting are known as _____

Q 2 Natural number _____ has not predecessor.

Q 3 All natural numbers are _____ numbers also.

Q 4 The smallest 6-digit number that can be formed by the digits 9, 6, 0, 5, 8, 1 is _____

Q 5 Successor of 301,999 is _____.

Q 6 The least Natural Number is _____.

Q 7 Three consecutive predecessors of 70010 are _____.

Q 8 The difference between the largest 5-digit number and smallest 5-digit number is _____.

Q 9 The product of two Odd Numbers is _____.

Q 10 Product of an even number and an odd number is _____.

Q 11 Write the next three natural numbers after 5099

Q 12 How many whole numbers are between 25 and 50 (including 25 & 50) ?

Q 13 Write the successor and predecessor of 89567009

Q 14 Write three consecutive whole numbers starting from 9999

Q 15 Sum of two odd numbers is always odd (T/F)

Q 16 Sum of two Even number is always even (T/F)

Q 17 Which is greater between 676 and 667

Q 18 Which natural number has not predecessor?

Q 19 A line that shows the whole numbers as equidistant points in it is _____.

Q 20 23 lies on the left of 33. (T/F)

Q 21 Find using the number line :

    11 - 4

Q 22 Find using the number line :

$3 + 4$

Q 23 Find using the number line :

2×4

Q 24 Find using the number line :

$4 + 2 + 1$

Q 25 Find using the number line :

$(9 - 4) + 2$

Q 26 Adding two whole numbers always gives a _____ number.

Q 27 _____ when multiplied with 100 gives the product 100.

Q 28 42 $(4 + 2) = (42 \times 4) + (42 \times 2)$ is an example of _____ property.

Q 29 Closure Property is satisfied in Whole Numbers with respect to _____ and _____ mathematical operations.

Q 30 $38 + 83 = 83 + 38$ is an example of _____ property.

Q 31 $6 (7 \times 3) = (6 \times 7) \times 3$ is an example of _____ property.

Q 32 $(98 + 14) \times 0$ is equal to _____.

Q 33 Additive identity element of 24 is _____.

Q 34 _____ , _____ & _____ properties are not applicable to the subtraction of Whole Numbers.

Q 35 The multiplicative identity element of 20 is _____.

Q 36 Find 17×109 using distributivity.

Q 37 Find 102×103 using distributivity.

Q 38 Find the sum $837 + 208 + 363$ by suitable arrangement.

Q 39 Find 84×9 using distributivity.

Q 40 Find 12×35 using distributivity.

Q 41 The school canteen charges Rs 20 for lunch and Rs 4 for milk for each day.

How much money do you spend in 5 days on these things?

Q 42 Multiply using suitable rearrangements.

$25 \times 7896 \times 4 \times 50 \times 2$

Q 43 A taxi driver filled his car petrol tank with 40 liters of petrol on Monday. The next day he filled the tank with 50 liters of petrol. If the petrol costs Rs 44 per liter, how much did he spend in all on petrol?

Q 44 A vendor supplies 32 liters of the milk to a hostel in the morning and 68 liters of milk in the evening. If the milk costs Rs 15 per liters, how much money is due to the vendor per day?

Q 45 In class VI, there are 5 sections and 50 students in each section. If the monthly fees in that school is Rs. 4000 per student, find the total fee collected for entire class VI.

Q 46 Which greatest 5–digit numbers is exactly divisible by 40?

Q 47 Simplify 350 $\times$ 68 + 32 $\times$ 35 $\times$ 10 by using properties of multiplication.

Q 48 The digits of 5 and 7 are interchanged in the number 27658 find the difference between the original number and the new number.

Q 49 The product of two numbers is 504347. If one of the numbers is 317, find the other number.

Q 50 State True of False.

(a) Sum of two odd numbers is always odd.

(b) Every whole number has its predecessor.

(c) Is $a \div b = b \div a$ where a, b are natural numbers?

(d) The smallest 5–digit number ending with 5 is 10005.

(e) If x + 3 = 12, then xcan only be 9.

3. Playing with Numbers

Q 1 Are the following numbers co-prime?49 and 51

Mark (1)

Q 2 Write the smallest prime number.

Mark (1)

Q 3 Is 6 a perfect number?

Mark (1)

Q 4 What is the HCF of two prime numbers?

Mark (1)

Q 5 Are 11 and 13 twin-primes?

Mark (1)

Q 6 Express 34 as the sum of two prime numbers.

Mark (1)

Q 7 True or False: The sum of even numbers is always even.

Mark (1)

Q 8 Find the least common multiples of 6 and 8.

Mark (1)

Q 9 Find the prime factorisation of 96.

Marks (2)

Q 10 Find the first five multiples of 7.

Marks (2)

Q 11 Find all possible factors of 64.

Marks (2)

Q 12 Which of the following numbers are prime?

(i)   89

(ii)   127

Marks (2)

Q 13 Write all the prime numbers between 10 and 20.

Marks (2)

Q 14 Write all the composite numbers between 1 and 10.

Marks (2)

Q 15 Check whether 438750 is divisible by 2, 4 and 5. Give reasons.

Marks (3)

Q 16 Using divisibility tests, check the divisibility of 376948 by 11.

Marks (3)

Q 17 Find the first three common multiples of 8 and 12.

Marks (3)

Q 18 Find the H.C.F of 96, 128.

Marks (3)

Q 19 Find the L.C.M of 112, 160 and 188.

Marks (3)

Q 20 Rohan completes one round of a running track in 8 minutes and Saroj completes it in 6 minutes. How long will it take for both to arrive at their starting point together, if they start at the same time and maintain their speed?

Marks (3)

Q 21 Complete the following tree:
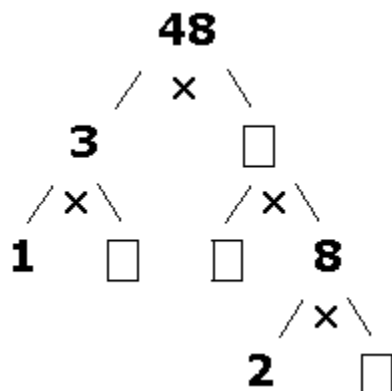
Marks (4)

Q 22 Find the least five-digit number which when divided by 20, 40, 75 leaves remainder 9 in each case.

Marks (4)

Q 23 The length, breadth and height of a hall are 3675 cm, 2100 cm and 1050 cm respectively. Find the maximum length of a tape which can measure the the three dimensions of the hall exactly.

Marks (4)

Q 24 Find the smallest 4-digit number which is divisible by 6, 8, 9.

Marks (4)

Q 25 Check the divisibility of 390612 by 3 and 9 .

Marks (4)

Q 26 A florist has 36 tulips, 27 roses and 18 lilies to create bouquets. What is the largest number of bouquets he can make without having any flowers left over?

Marks (4)

Q 1 Write the factors of 28.

Q 2 Write prime numbers between 2 & 25.

Q 3 Write the first three multiples of 46.

Q 4 Express as a sum of two odd primes

a)   64

b)   98

Q 5 True/false

a)   sum of three odd numbers is even

b) sum of two odd numbers and one even number is even.

Q 6 What are twin primes? Give four examples.

Q 7 What is a prime triplet? Give an example.

Q 8 What are perfect numbers? Give an example.

Q 9 Express as a sum of three odd primes.

a)   53

b)   61

Q 10 Fill in the blanks:

a)   The smallest composite number is _____ .

b)   The smallest prime number is _____ .

c)   1 is the only number that is neither _____ nor _____ .

Q 11 Is 901351 divisible by 11 ?

Q 12 a) The numbers which are not multiple of 2 are called _____ numbers.

b) The numbers which are a multiple of 2 are called _____ numbers.

Q 13 Find the divisibility of 390612 by 3 and 9

Q 14 Is 12930 divisible by 6?

Q 15 Test the divisibility of 45884 by 4 and 8.

Q 16 What least value should be given to * so that the number 653*47 is divisible by 11 ?

Q 17 What least value should be given to * so that the number 153*48 is divisible by 9 ?

Q 18 What least value should be given to * so that the number 8456*4107 is divisible by 3?

Q 19 Without actual division,check the divisibility of 376948 with 11.

Q 20 Check whether 438750 is divisible by 2, 4, 5, 8, 10. Give Reasons.

Q 21 Write True/False:

a)   If a number is divisible by a given number, then it is divisible by its multiples also.

b)   If a number is divisible by two co-primes then it is divisible by their product also.

c)   If a number divides the sum of two numbers then it also divides the numbers individually.

d)   If a number divides the difference of two numbers then it also divides the numbers individually.

e)   If 15 divides 45, then 5 and 3 also divide 45.

Q 22 Find the greatest number which divides 258 and 323 leaving remainders 2 and 3 respectively.

Q 23 Find the smallest number of 4- digits exactly divisible by 12,15, 20 and 35.

Q 24 a) The HCF of two co- prime numbers is _____.

b) The LCM of two co-prime numbers is _____.

Q 25 a) Are (41,43) twin- primes?

b) Are (49, 51) co-primes?

Q 26 Find the prime factors of 96.

Q 27 Find the least number which when divided by 9, 12, 16, 30 leaves in each case a remainder of 3.

Q 28 Find the HCF of 35,42,77

Q 29 Find the greatest 4-digit number which is divisible by 4,6,12

Q 30 Find the smallest 5-digits number, which is exactly divisible by 9,15,18.

Q 31 Find the first three common multiples of 6 and 8

Q 32 Find the L.C.M of 112, 160 and 188 by division method

Q 33 Find the H.C.F of 96, 128 (using division method)

Q 34 Find the H.C.F of 96, 128 (using prime factorization method)

Q 35 Fill in the blanks:

1)   The smallest prime number is ____

2)   The number 1 is neither _____ nor _____

3)   The H.C.F of two prime numbers is _____

4)   24 can be expressed as the sum of two prime no's _____and _____

5)   Complete the following tree:
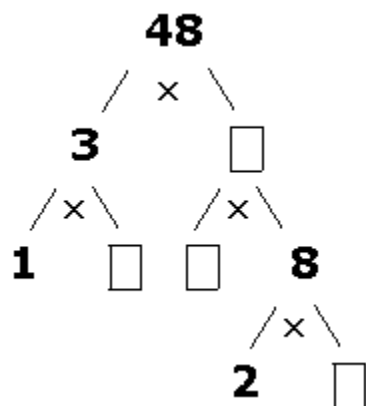
Q 36 Find the least five-digit number, which leaves remainders 9 in each case when divided by 20, 40, 75

Q 37 The length breadth and height of a hall are 3675 cm, 2100 and 1050 cm respectively. What can be the maximum length of a tape with which we can measure the length breadth and height of the hall?

Q 38 Three boys can go on a circular pathway in 3min 20sec, 3min 40 sec and 4 min respectively. If they start simultaneously from same place and at the same time, when will they meet next?

4. Basic Geometrical Ideas

Q 1 How many points does the line given below contain?

Mark (1)

Q 2 Name the common arm of $\angle$DOE and $\angle$FOE.
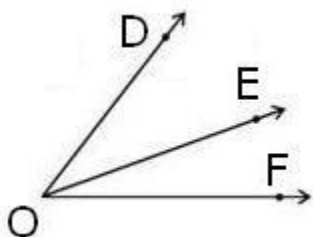
Mark (1)

Q 3 Name the point(s) lying in the interior of $\angle$DOE
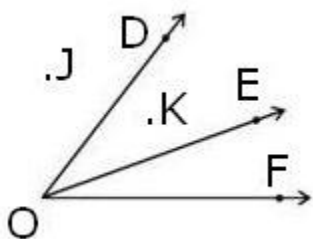
Mark (1)

Q 4 State True or False: Two lines intersect in more than one point.

Mark (1)

Q 5 How many lines can be drawn through a given point?

Mark (1)

Q 6 What is the starting point of a ray PQ?

Mark (1)

Q 7 Name a portion of a line having two end-points.

Mark (1)

Q 8 True or False: A ray can be extended indefinitely in one direction.

Mark (1)

Q 9 Name the point(s) in the interior of ∠DOF.
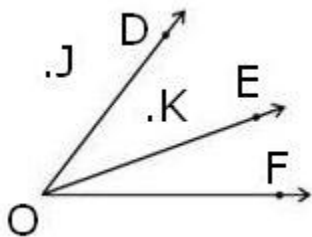
                                                    Mark (1)

Q 10 A polygon formed by four line segments is called a _____.

                                                    Mark (1)

Q 11 _____ is the longest chord of a circle.

                                                    Mark (1)

Q 12 All the radii of a circle are _____.

                                                    Mark (1)

Q 13 Any part of a circle is called an _____ of the circle.

                                                    Mark (1)

Q 14 The distance around a circle is its _____.

                                                    Mark (1)

Q 15 True or False: Two lines in a plane always intersect in a point.

                                                    Mark (1)

Q 16 Fill in the blank:

(i) AC = AB + ____

(ii) BC = BD – ____.

                                                    Marks (2)

Q 17 A triangle has _____ sides and _____ angles.

                                                    Marks (2)

Q 18 From the figure given below, find
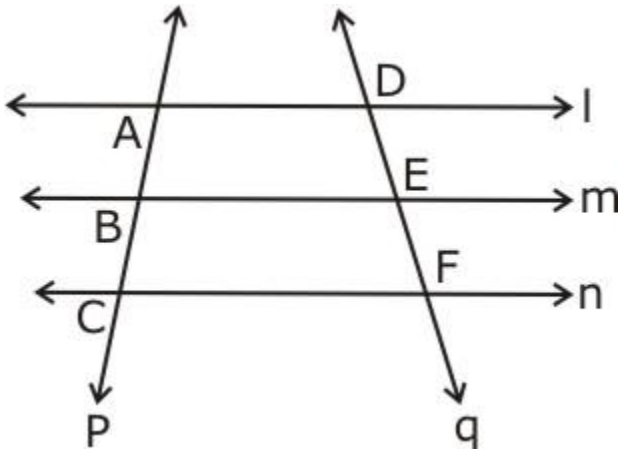
(i) lines whose intersection point is *F*.

(ii) all pairs of parallel lines.

Marks (2)

Q 19 In the following figure:
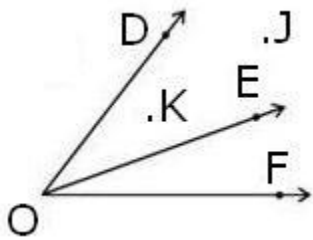
1) Name the three angles.

2) Name the common vertex.

3) Name the three rays.

Marks (3)

Q 20 Name the three vertices.
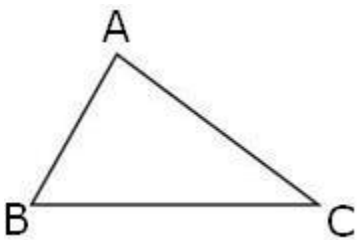
1)   Name the three vertices.

2)   Name the three sides.

3)   Name the three angles.

Marks (3)

Q 21 For a quadrilateral MNOP,

a) Name two pairs of opposite sides.

b) Name four pairs of adjacent sides.

c) Name two pairs of opposite angles.

Marks (3)

Q 22 How many angles are formed in the given figure? Name them.
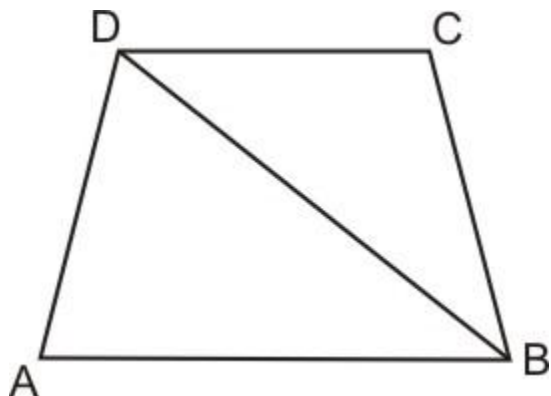
Marks (3)

Q 23 Given below is a circle with centre O. Identify

(i) four radii

(ii) a diameter

(iii) a chord
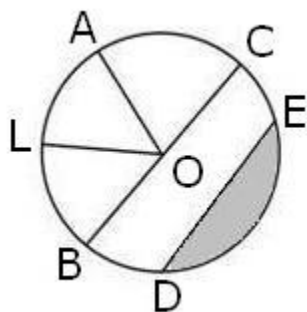
(iv) a segment

Marks (4)

Q 24 Define the following terms:

(i) Line segment, (ii) Line, (iii) Intersecting lines, (iv) Parallel lines.

Marks (4)

Q 25 Define polygon and its components.

Marks (4)

Most Important Questions

Q 1 Name the line segments in the figure.

Is O, the end point of each line segment?
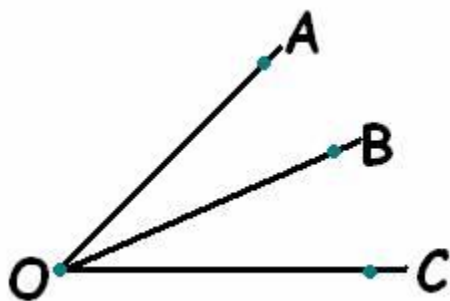
Q 2 Identify lines, line segments and rays in the following figure.

<1>   <2>   <3>   <4>   <5 >   <6>   <7>
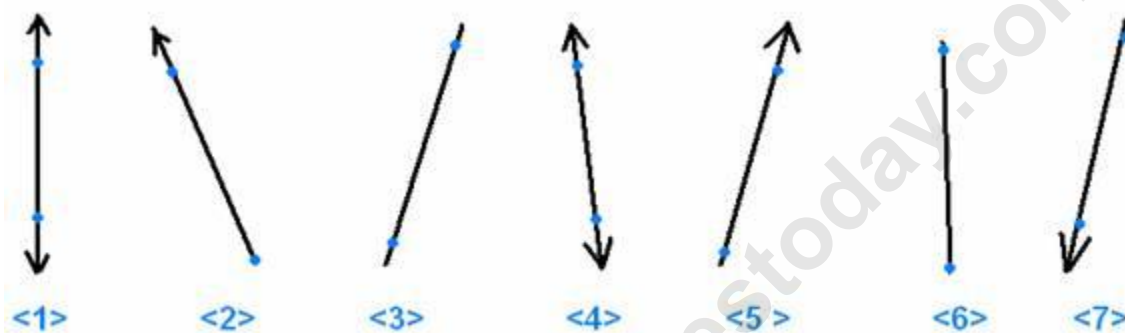
Q 3 Name the intersecting pairs of line and point of intersections.
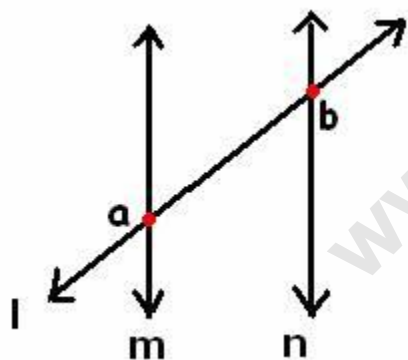
Q 4 Name all parallel lines in the figure.
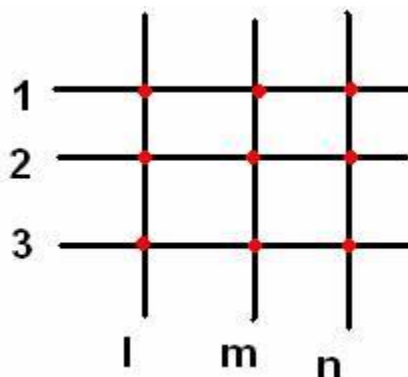
Q 5 Which one is the right representation of ray AB?

(a) AB   (b) $\overline{AB}$ (c) $\overrightarrow{AB}$ (d) $\overline{\overline{AB}}$

Q 6 Can two lines intersect at more than two points?

Q 7 Can more than two lines intersect at one point?

Q 8 How many lines can pass through (a) one point? (b) two point?

Q 9 Name the end points of the line segment shown in figure.
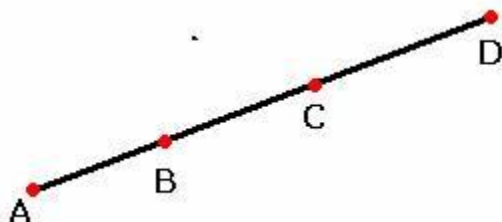
Q 10 Name the line given in all possible (three) ways, choosing only two letters at a time from the three given.

Q 11 Name the line given in all possible (three) ways, choosing only two letters at a time from the three given.

Q 12 Identify the closed curves from the following:
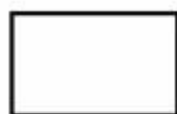
(a)   (b)   (c)   (d)

Q 13 Identify the open curves from the following.
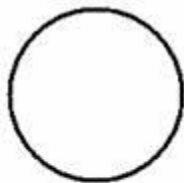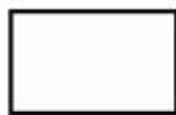
(a)   (b)   (c)   (d)

Q 14 Identify the simple curves from the following:

(a)   (b)   (c)   (d)
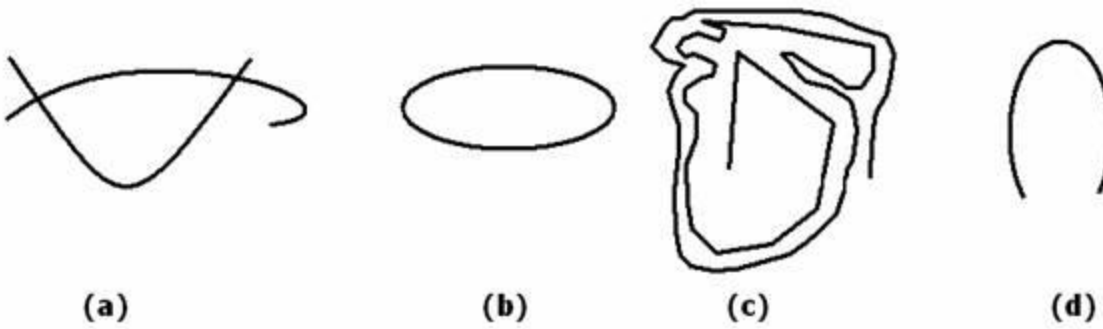
Q 15 Name the interior, boundary and exterior points of the curve shown in figure.
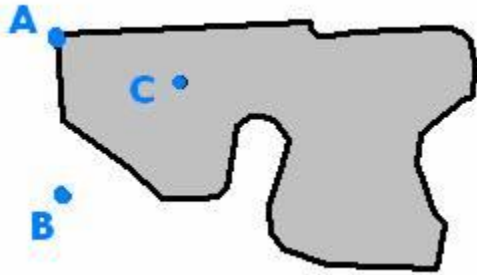
Q 16 Identify the polygons from the following figures.

(a)   (b)   (c)   (d)
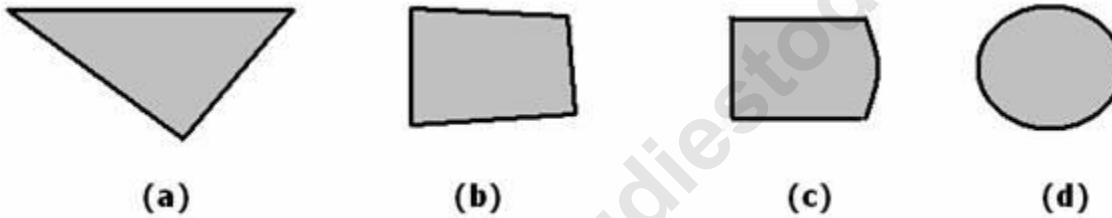
Q 17 Name all sides of the following polygon.
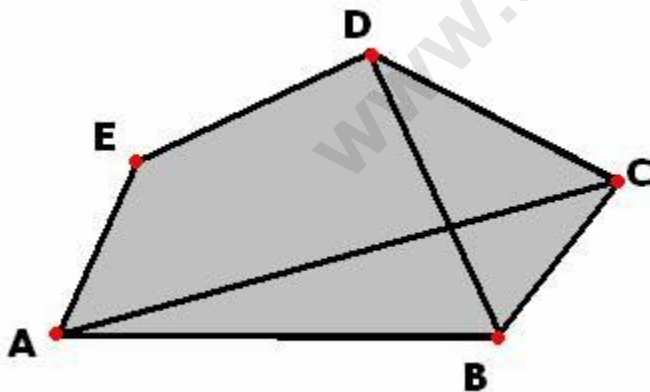
Q 18 Name all vertices of the following polygon.
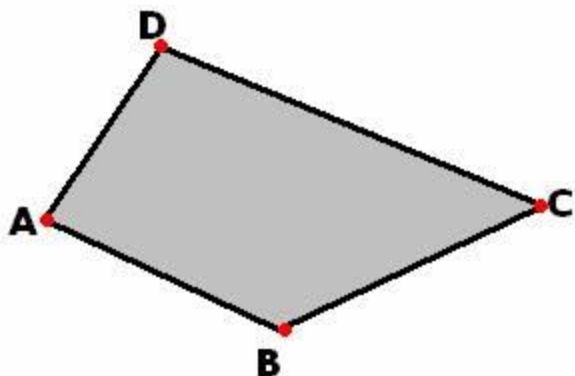
Q 19 Name all diagonals of the following polygon.
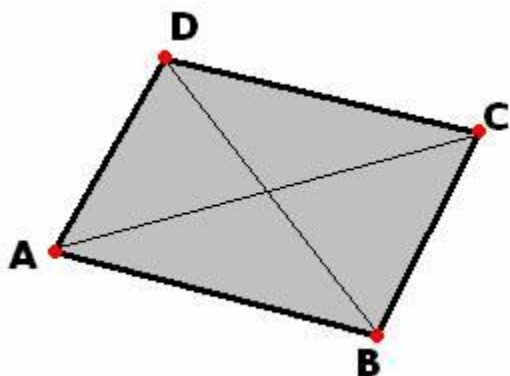
Q 20 Consider the following figure and answer the question.
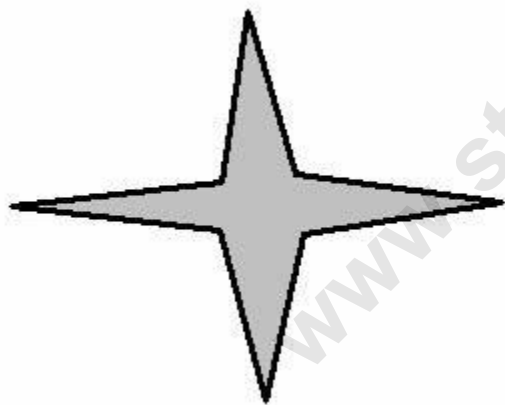
(a) Is it a curve.   (b) Is it closed.

Q 21 Name the angles of the following figure.
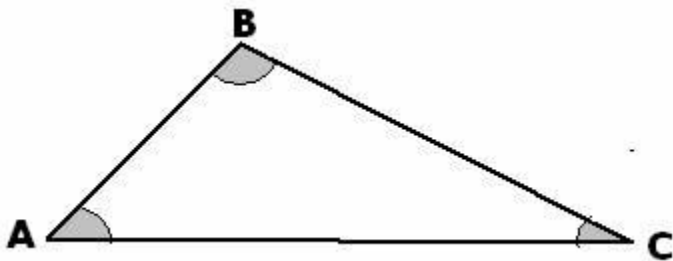
Q 22 Identify the triangles from the following.
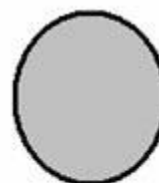
(a)   (b)   (c)   (d)

Q 23 Identify the quadrilaterals from the following.
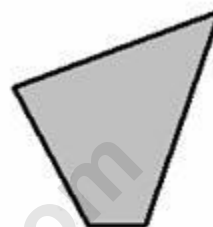
(a)   (b)   (c)   (d)

Q 24 Identify the circles from the following:
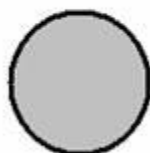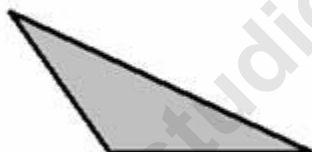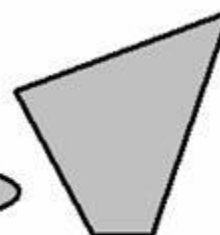
(a)   (b)   (c)   (d)

Q 25 Write the name of all three triangles.
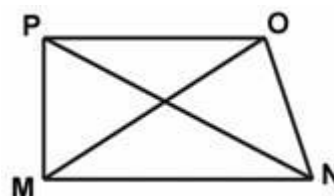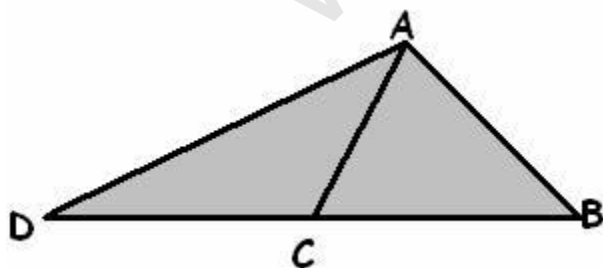
Q 26 In the given quadrilateral MNOP identify:

a) Two pairs of opposite sides.

b) Four pairs of adjacent sides.

c) 2 pairs of opposite angles.

d) 2 diagonals.

e) Any two pair of adjacent angles.

Q 27

Fill in the blanks

1) The boundary of a circle is_____.

2) The interior of a triangle along with its boundary is called _____.

3) A _____ has its end – point on the circle.

4) Lines, which never meet are _____ lines.

Q 28 In the following figure identify:
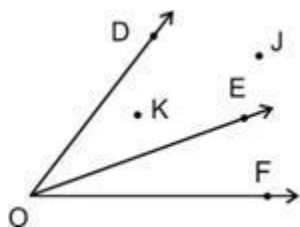
1) Any three angles.

2) Name the common Vertex.

3) Name the three rays.

Q 29 Which is the common arm of $\angle$DOE & $\angle$FOE.
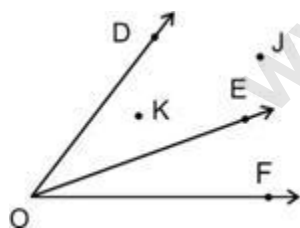
5. Understanding Elementary Shapes

Q 1 If a clock hand starts from 12 and stops at 12 . What type of figure does it draw?

Mark (1)

Q 2 In $\triangle$ ABC, AB = 13 cm , BC = 13 cm , CA = 5 cm. Classify the triangle on the basis of its sides.

Mark (1)

Q 3 Write the measure of a straight angle.

Mark (1)

Q 4 Is rectangle a quadrilateral?

Mark (1)

Q 5 What is the shape of cycle's wheel ?

Mark (1)

Q 6 Can a triangle have two obtuse angles ?

Mark (1)

Q 7 State true or false : A reflex angle is less than a straight angle.

Mark (1)

Q 8 State true or false : A rectangle is a parallelogram ?

Marks (2)

Q 9 In a $\triangle$ ABC, AB = 13 cm , BC = 12 cm, CA = 5 cm and

$\angle$ C = 90°. Classify the triangle of the basis of sides and angle.

Marks (2)

Q 10 Can a right-angled triangle have two right angles ?

Marks (2)

Q 11 a) What is the shape of Joker's cap ?

b) What is the shape of a basketball ?

Marks (2)

Q 12

a) If a clock hand starts from 12 and stops at 9. How many right angles has it moved?

   b) Where will the hand of a clock stop if starts at 3 and makes one fourth of a revolution clockwise?

Marks (2)

Q 13 Fill in the blanks:

a. When the sum of the measures of two angles is that of a right angle, then each one of them is _____ angle.

b. When the sum of the measure of two angles is that of a straight angle and one of them is acute then other will be_____

c. Line joining the opposite vertices of a polygon is called a _____

Marks (3)

Q 14 If LM is perpendicular to PQ and intersects it at point M, then find $\angle$ LMQ.
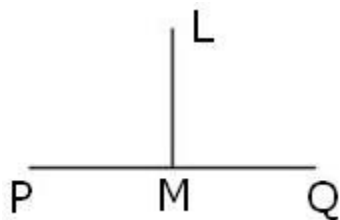
Marks (3)

Q 15 If BD = 2 BA + AD and LM =3 LP – PM , find which one is greater BD or LM ?

Given that BA = 3 cm , AD = 2.5 cm, LP = 4 cm and PM = 1.5 cm.

Marks (3)

Q 16 State the following statements as true or false. Correct the statement if false.

(a) An obtuse angle < 90º .

(b) A measure of complete angle is 360º.

(c) Straight angle lies between one fourth and half of a revolution.

Marks (3)

Q 17 In the following figure, a can in the form of a cylinder is given. Find:

(a) Bases   (b) Edges   (c) Corners
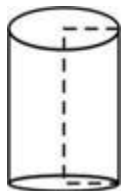
Marks (3)

Q 18 Count the number of sides of the following polygons and name them.
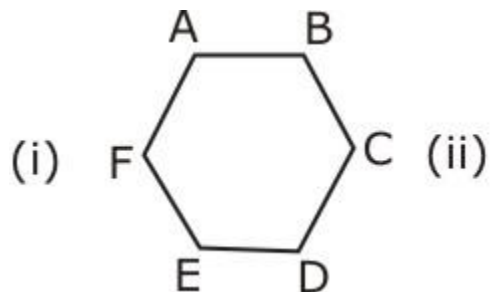
Marks (3)

Q 19 Complete the following information (put √ if correct and X if not true).

Quadrilaterals	Opposite sides		All sides Equal	Opp Angles Equal	Diagonals	
	Parallel	equal			Equal	Perpendicular
a)Parallelogram						
b)Rectangle						
c)Square						
d)Rhombus						

Marks (4)

Q 20 With the help of protractor draw angles of

(i) 105° (ii) 60°

and identify the angles (whether it is obtuse or acute).

Marks (4)

Q 21 Name the types of following triangles:

a. Triangle with lengths of sides 7 cm, 8 cm and 9 cm.

b. $\triangle$ PQR such that PQ=QR=RP=5 cm.

c. $\triangle$ ABC with AB=8.7 cm, AC=7 cm and BC= 6 cm.

d. $\triangle$ DEF with $\angle$D=90°.

e. $\triangle$ XYZ with $\angle$Y=90° and XY=YZ.

f. $\triangle$ LMN with $\angle$L=30°, $\angle$M=70° and $\angle$N=80°.

Marks (4)

Q 22 Give reasons for the following:

a. A square can be thought of as a special rectangle.

b. A rectangle can be thought of as a special parallelogram.

c. A square can be thought of as a special rhombus.

d. Squares, rectangles, parallelograms are all quadrilaterals.

e. Square is also a parallelogram.

Marks (4)

Q 23   Define

   a)   Obtuse-angled-triangle

b) Right-angled-triangle

c) Acute-angled-triangle

d) Zero angle

e) Isosceles triangle

Marks (5)

Q 24 Match the following:

(A)   TRAPEZIUM

(B)   CUBE
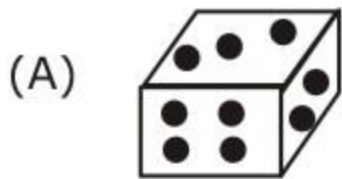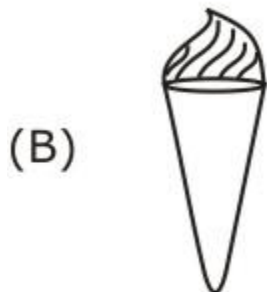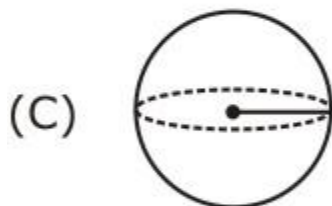
(C)   PYRAMID

(D)   CONE

(E)   SPHERE

Marks (5)

Most Important Questions

Q 1 If a clock hand starts from 12 and stops at 12, what angle does it make?

Q 2 A line segment has _____ end-points.

Q 3 Name any two ways of comparing two line segments

Q 4 What kind of error can occur if the viewing on a ruler is not proper?

Q 5 1 cm= _____ mm

Q 6 a) If a clock hand starts from '12' and stops at 9, how many right angles has it moved?

b) Where will the hand of a clock stop if starts at 3 and makes $\frac{1}{4}$ of revolution clockwise.

Q 7 Fill in the blanks:

one revolution = _____ degrees

half revolution = _____ degrees

one-fourth revolution = _____ degrees

three-fourth revolution = _____ degrees

Q 8 What part of a revolution have you turned through if you stand facing

a) east and turn clockwise to face north?

b) west and turn anticlockwise to face north?

Q 9 Write True or False. Correct the statement if it is false.

a) Measure of a complete angle is 360.

b) Straight angle is between $\frac{1}{4}$ and $\frac{1}{2}$ of a revolution.

Q 10 If BD = 2 (BA) + (AD) and LM = 3(LP) – (PM)

and BA = 3 cm, AD = 205 cm, LP = 4 cm, PM = 1.5 cm.
Which of the two (BD or LM) is greater ?

Q 11 By how many right angles will the hour hand move if it starts from

a) 6 and stops at 3

b) 4 and stops at 7

c) 1 and stops at 1, making a full revolution.

(movement is made in clockwise direction)

Q 12   Fill in the blanks:

1. When the sum of the measures of two angles is that of a right angle, then each one of them is _____

2. When the sum of the measure of two angles is that of a straight angle one of them should be obtuse or_____

3.A line segment can be measured by an instrument called _____

4. We are facing North and we turn east clockwise, the angle formed is _____

5.One complete revolution is a _____ angle.

Q 13 A reflex angle is > 180 and < 360 . (T/F)

Q 14 An acute angle is > 90 and < 180 . (T/F)

Q 15 At 1.00pm, the angle made between the arms of a clock is _____.

Q 16 Write two letters of the English alphabet which illustrate perpendicularity.

Q 17 The lines of a railway track illustrate perpendicularity(T/F)

Q 18 If LM is perpendicular to PQ and intersects it at point M.

a) Find $\angle$LMQ.

b) if PM = MQ, what do we call LM?
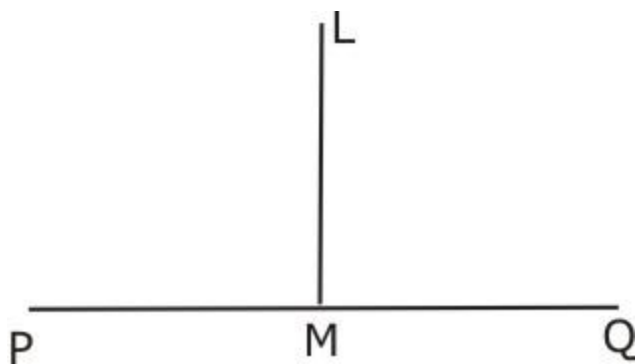
Q 19 Give one example each of acute, obtuse & reflex angle from the hands of a clock.

Q 20 With the help of protractor draw angles of:

(i) 105° (ii) 60°

and identify the type of angle.

Q 21 Define :

a)Zero angle

b) Complete angle

c) Perpendicular Lines

d) Perpendicular Bisector

e) Protractor

Q 22 In triangle ABC, AB = 13cm, BC = 13 cm, CA = 5cm.

Classify the triangle of the basis of sides.

Q 23 Is rectangle a quadrilateral?

Q 24 A triangle with no side equal is _____ .

Q 25 Is a right angled equilateral triangle possible?

Q 26 Is square a rectangle?

Q 27 Can a right – angled – triangle have two right angles

Q 28 In triangle ABC,AB = 13cm

BC = 12 cm

CA = 5cm

and □c=90.

Classify the triangle of the basis of sides and angle.

Q 29 Is rectangle a parallelogram?

Is trapezium a parallelogram?

Q 30 Fill in the blanks

a)   All sides of a rhombus are _____ in length.

b) Opposite sides of a rectangle are _____ in length.

Q 31 Find the type of triangle with angle measures

a)   35-95-50

b)   90-40-50

Q 32 Count the number of sides of the following polygons and name them:
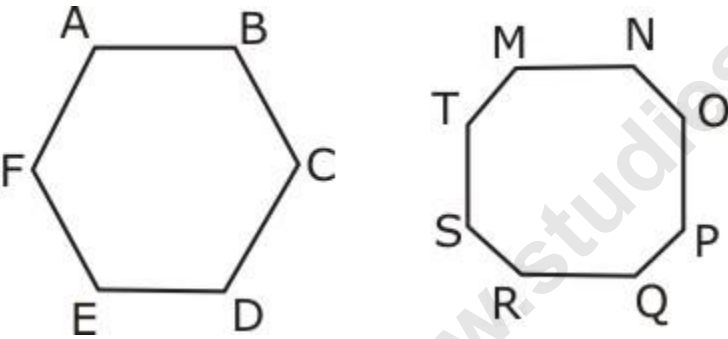
Q 33 Name the triangles based on Sides & Angles.

Q 34 Complete the following information (put √ if correct and X if not true.

Quadrilaterals	Opposite sides		All sides	Opp Angles	Diagonals	
	Parallel	equal	Equal	Equal	Equal	Perpendicular
a)Parallelogram						
b)Rectangle						
c)Square						
d)Rhombus						
e)Trapezium						

 Q 35 Give reasons for:

a. A square can be thought of as a special rectangle.

b. A rectangle can be thought of as a special parallelogram.

c.   A square can be thought of as a special rhombus.

d. Squares, rectangles, parallelograms are all quadrilaterals.

e. Square is also a parallelogram.

Q 36 What is the shape of ball of wool ?

Q 37 What is the shape of a cap of a joker ?

Q 38 A brick resembles a _____ 3-d shape.

Q 39 Define a face

Q 40 A sphere has ___ edge.

Q 41 a) What is the shape of a round marble ?

b) What is the shape of a basket- ball?

Q 42 Fill in the blanks

A cone has ____ edges & _____ faces

Q 43 Fill in the blanks

A square pyramid has a square has its base.

It has _____ faces, _____ edges, _____ vertices.

Q 44 Find the number of edges, faces and vertices in the figure given below.
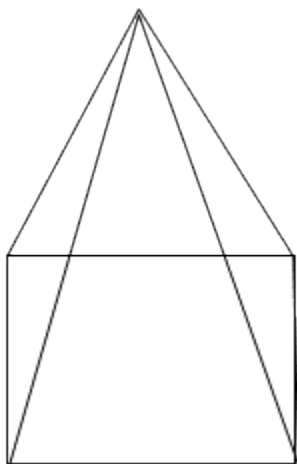
Q 45 Fill in the blanks

A square pyramid has a square has its base.

It has _____ faces, _____ edges, _____ vertices.

Q 46 A triangular pyramid has a triangular has its base.

It has _____ faces, _____ edges, _____ vertices

Q 47 A prism has _____ faces, _____ edges, _____ vertices.

6. Integers

Q 1 True or False: The predecessor of −193 is −194.

Mark (1)

Q 2 Write the following as integer with appropriate sign:

A profit of Rs 1500

Mark (1)

Q 3 Which is greater? −8 or −10

Mark (1)

Q 4 True or False: The smallest negative integer is -1.

Mark (1)

Q 5 True or False: 0 is larger than all negative integers.

Mark (1)

Q 6 Write the following situation as integer with appropriate sign.a bank withdrawal of Rs 500

Mark (1)

Q 7 Fill in the blanks with >, < or = sign. (-7) + (-2) _____ (-3)

Marks (2)

Q 8 Find:40 - (-25) - (-1)

Marks (2)

Q 9 Find: (-37) - 25 + (-19) + (-3)

Marks (2)

Q 10 Subtract - 14 from - 22.

Marks (2)

Q 11 Find the sum of -315, 14 and 36.

Marks (2)

Q 12 Draw a number line and represent the following number:

(a) +8

(b) −10

Marks (2)

Q 13 Add without using number line:(-15) + (+ 10)

Marks (2)

Q 14 Find the sum of -15, 114 and −36.

Marks (2)

Q 15 Subtract +8 from -8.

Marks (2)

Q 16 Subtract (-25) from (-19).

Marks (2)

Q 17 Write the following integers in decreasing order:-10, 1, -3, -7, 9, 2, -4, 5

Marks (2)

Q 18 Use number line to add (-2) + 7 + (-9).

Marks (3)

Q 19 Fill in the blanks with >, < or = sign.(-43) - (-54) _____ (-54) - (-43)

Marks (3)

Q 20 Find : 1 - 2 + 3 - 4 + 5 - 6 + ... + 19 - 20.

Marks (3)

Q 21 Fill in the blanks:

(i) -6 +--- = 0

(ii) 19 +---- = 0

(iii) ---- -215 = -64

Marks (3)

Q 22 Fill in the blanks with >, < or = sign. (-3) + (-7) ____ (-7) - (-3)

Marks (3)

Q 23 Rama got ₹500. She earns ₹300 by selling candy, ₹150 by selling peanuts. She spends ₹600 on her dress and ₹200 on ice cream. How much money is left with her?

Marks (4)

Q 24 Solve the following.

(i) The sum of two integers is – 20. If one integer is 20, find the other integer.

(ii) The sum of two integers is 147. If one integer is – 59, find the other integer.

Marks (4)

Q 25 The height of a lighthouse is 50 m and the depth of the seabed is 25 m, both are measured from the mean sea level. What is the height of the light house from the seabed?

Marks (4)

Q 26 Add the given numbers:

(i) 20, – 1, 2, – 20, 10, – 10, 6,–7

(ii) 5, – 9, 11, 5, – 6, 14, –7, 3, – 5

Marks (4)

Most Important Questions

Q 1 Write opposite of the following.

(i)   Increase in weight   (ii)   30 km east

(iii)   326 BC   (iv)   Loss of Rs. 500

(v)   200 m above sea level

Q 2 Represent the following numbers as integers with appropriate signs.

(i)   An aeroplane is flying at a height two thousand metre above the ground.

(ii) A submarine is moving at a depth, eight hundred metre below the sea level.

(iii) A deposit of rupees two hundred.

(iv) Withdrawal of rupees seven hundred.

Q 3 Which number is to the right of the other on number line.

(i) 2, 9

(ii) -3, - 8

(iii) 0, -1

(iv) -11, 10

(v)   -6, 6

(vi)   1, -100

Q 4 Write all the integers between the given pairs (write them in the increasing order.)

(i)   0 and -6

(ii)   -4 and 5

(iii) -8 and -14

(iv)   -30 and -20.

Q 5 Write True (T) or False (F), if false then correct the statement.

(i) -8 is to the right of -10 on a number line.

(ii) -100 is to the right of -50 on a number line.

(iii) Smallest negative integer is -1

(iv) -26 is greater than -25.

Q 6 Draw a number line and answer the following.

(i) which number will we reach if we move 4 numbers to the right of -3.

(ii) Which number will we reach if we move 5 numbers to the left of 2.

(iii) If we are at -7 on the number line, in which direction should we move to reach -13.

(iv) If we are at -5 on the number line, in which direction should we move to reach -1.

Q 7 Represent the following numbers on a number line.

(i) $+5$

(ii) -10

(iii) +8

(iv) –1

(v) –6

Q 8 Using the number line write the integer which is

(i) 2 more than 5.

(ii) 4 more than –5.

(iii) 5 less than 2.

(iv) 4 less than –2.

Q 9 Use number line and add the following integers:

(i) 9 + (-5)

(ii) 5 + (-10)

(iii) (-1) + (-6)

(iv) (-5) + 9

(v) (-1) + (-2) + (-3)

(vi) (-2) + 8 + (-3)

Q 10 Add without using number line.

(i) 11 + (-6)

(ii) (–13) + (+19)

(iii) (-10) + (+20)

(iv) (-250) + (+150)

(v) (-380) + (-270)

(vi) (-217) + (-100)

Q 11 Find the sum of

 (i) 137 and –350

(ii) –52 and 52

(iii) –312, 39 and 190

(iv) –50, -200 and 300

Q 12 Find the sum:

(i) (-7) + (-9) + 4 + 15

(ii) (37) + (-2) + (-65) + (-7)

Q 13 Find

(i) 35 – (25)

(ii) 72 – (80)

(iii) (–15) – (–19)

(iv) (–20) – (12)

(v) $23 - (-11)$

(vi) $(-32) - (-30)$

Q 14 Fill in the blanks with >, < or = sign.

(i) $(-3) + (-6)$ _____ $(-3) - (-6)$

(ii) $(-21) - (-10)$ _____ $(-31) + (-10)$

(iii) $45 - (-11)$ _____ $57 + (-3)$

(iv) $(-25) - (-42)$ _____ $(-42) - (-25)$

Q 15 Fill in the blanks.

　　　(i) $(-7) +$ _____ $= 0$

　　　(ii) $14 +$ _____ $= 0$

　　　(iii) $13 + (-13) =$ _____

　　　(iv) $(-4) +$ _____ $= -13$

　　　(v)   _____ $- 15 = -11$

Q 16 Find.

　　　(i) $(-7) - 8 - (-20)$

　　　(ii) $(-13) + 32 - 8 - 2$

　　　(iii) $(-7) + (-8) + (-80)$

　　　(iv) $50 - (-40) - (-2)$

7. Fractions

Q 1 Find two equivalent fractions of $\dfrac{7}{9}$.

Mark (1)

Q 2 Express $\dfrac{23}{4}$ as mixed fraction.

Mark (1)

Q 3 Express $2\dfrac{7}{8}$ as improper fraction.

Mark (1)

Q 4 Reduce $\dfrac{140}{160}$ to simplest form.

Mark (1)

Q 5 Find the equivalent fraction of $\dfrac{5}{9}$ with denominator 63.

Mark (1)

Q 6 Find the equivalent fraction of (36/48) with numerator 9.

Marks (2)

Q 7 **Find the equivalnet fraction of $\dfrac{2}{9}$ with denominator 63.**

Marks (2)

Q 8 Find two equivalent fractions of each of the following:

(i) $\dfrac{2}{3}$

(ii) $\dfrac{1}{5}$

Marks (2)

Q 9 Draw a number line and locate the points $\dfrac{1}{2}, \dfrac{1}{4}, \dfrac{3}{4}, \dfrac{4}{4}$ on it.

Marks (2)

Q 10 Express the following mixed fractions as improper fractions:

(a) $2\dfrac{3}{4}$

(b) $7\dfrac{1}{9}$

Marks (2)

Q 11 Express the following as mixed fractions:

(a) $\dfrac{17}{4}$

(b) $\dfrac{11}{3}$

Marks (2)

Q 12 After reading 5/8 of a book, 168 pages are left. How many pages are there in all in a book?

Marks (3)

Q 13

Mrs. Mehta bought $8\dfrac{1}{2}$ litres of milk. Out of which, $5\dfrac{3}{4}$ litres was c

How much milk is left with her?

Marks (3)

Q 14 Check whether the following fractions are equivalent:

(a) $\dfrac{5}{9}, \dfrac{30}{54}$

(b) $\dfrac{3}{10}, \dfrac{12}{50}$

(c) $\dfrac{7}{13}, \dfrac{5}{11}$

Marks (3)

Q 15 Reduce the following fractions to simplest form:

(a) $\dfrac{48}{60}$

(b) $\dfrac{150}{60}$

(c) $\dfrac{84}{98}$

Marks (3)

Q 16 Simplify : $8\dfrac{1}{4} - 2\dfrac{5}{6}$

Marks (3)

Q 17 Compare fractions $\dfrac{5}{6}$ and $\dfrac{7}{9}$.

Marks (3)

Q 18 There are 12 dozen bananas in a basket. 5/24 of them are rotten and 1/3 of them are to be sent back. How many bananas can be used?

Marks (4)

Q 19 Express each of the following as an improper fraction.

(i) $4\dfrac{3}{7}$ (ii) $13\dfrac{7}{9}$ (iii) $7\dfrac{3}{5}$ (iv) $31\dfrac{2}{3}$

Marks (4)

Q 20 Solve the following.

(i) $\dfrac{1}{7} + \dfrac{2}{5} + \dfrac{1}{3}$ (ii) $3\dfrac{1}{2} + 4\dfrac{5}{9}$

(iii) $4\dfrac{5}{6} + 2\dfrac{1}{8}$ (iv) $6\dfrac{11}{12} + \dfrac{2}{3}$

Marks (4)

Q 21 Mayank spent 1/3 of an hour painting his toy and 1/6 of an hour polishing his shoes. How much time did he spend in all?

Marks (4)

Q 22 Ranu Tyagi was given one and half hours to do a test. She finished the test in one and one- sixth hours. How much earlier did she finish her test?

Marks (4)

Q 23 Arrange the following in descending order.

(i) $\dfrac{4}{6}, \dfrac{5}{8}, \dfrac{7}{12}, \dfrac{5}{16}$ (ii) $\dfrac{8}{17}, \dfrac{8}{9}, \dfrac{8}{5}, \dfrac{8}{13}$

Marks (4)

Q 24 Match the equivalent fractions.

(i) $\dfrac{250}{400}$ (a) $\dfrac{2}{3}$

(ii) $\dfrac{180}{200}$ (b) $\dfrac{2}{5}$

(iii) $\dfrac{660}{990}$ (c) $\dfrac{1}{2}$

(iv) $\dfrac{180}{360}$ (d) $\dfrac{5}{8}$

(v) $\dfrac{220}{550}$ (e) $\dfrac{9}{10}$

Marks (5)

Q 25 Complete the addition-subtraction box.
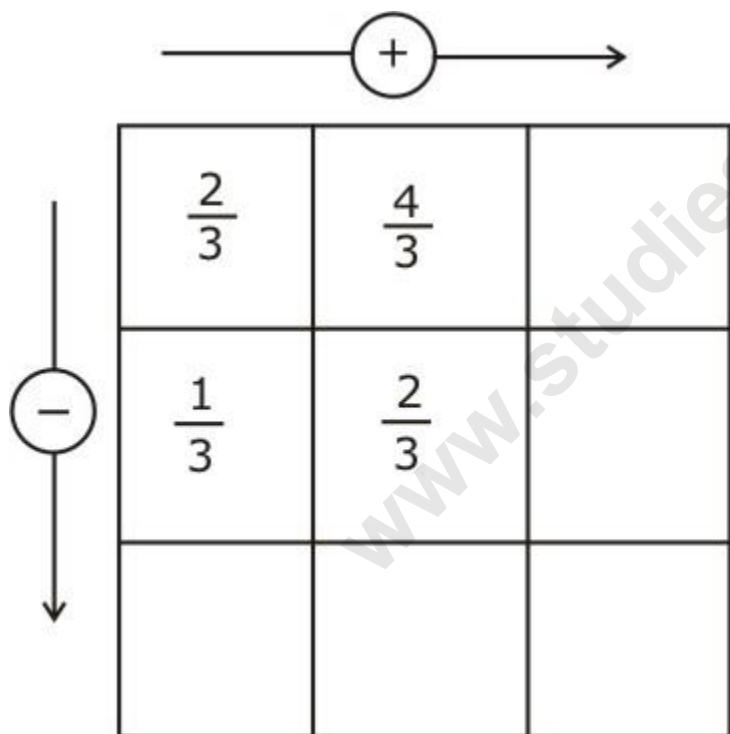
Marks (5)

Most Important Questions

Q 1 Color the part according to the given fraction.

(i) $\frac{1}{6}$ (ii) $\frac{1}{4}$ (iii) $\frac{1}{3}$ (iv) $\frac{4}{9}$
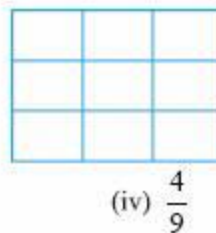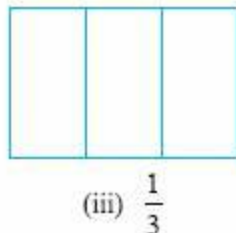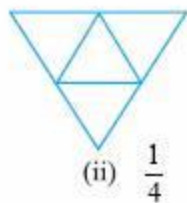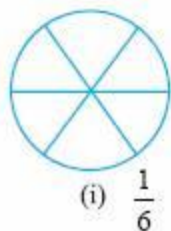
Q 2 Write the natural numbers from 2 to 12. What fraction of them are prime numbers?

Q 3 What fraction of these circles has X's in them?

Q 4 What fraction of a day is 8 hours?

Q 5 Kanchan dyes dresses. She had to dye 30 dresses. She has so far finished 20 dresses. What fraction of dresses has she finished?

Q 6 Kristin received a CD player for her birthday. She bought 3 CDs and received 5 others as gifts. What fraction of her total CDs did she buy and what fraction did she receive as gifts?

Q 7 Show $\frac{3}{5}$ on a number line.

Q 8 Show 3/7 on a number line.

Q 9 Show 0/7 on a number line.

Q 10 Arya, Abhimanyu and Vivek shared lunch. Arya has bought two sandwiches, one made of vegetable and one of jam. The other two boys forgot to bring their lunch. Arya agreed to share his sandwiches so that each person will have an equal share of each sandwich. How can Arya divide his sandwiches so that each person has an equal share? What part of a sandwich will each boy receive?

Q 11 Give a proper fraction

Whose numerator is 5 and denominator is 7.

Whose denominator is 9 and numerator is 5.

Q 12 A fraction is given. How will you decide, by just looking at it, whether the fraction is

Less than 1?

More than 1?

Q 13 Fill up using one of these : '>', '<' or '='

a) $\dfrac{1}{2}$ ☐   1

b) $\dfrac{3}{5}$ ☐   1

c)   1   ☐ $\dfrac{7}{8}$

d) $\dfrac{4}{4}$ ☐   1

e) $\dfrac{2005}{2005}$ ☐

Q 14

Express the following as mixed fraction :

(a) $\dfrac{17}{4}$

(b) $\dfrac{11}{3}$

(c) $\dfrac{27}{5}$

(d) $\dfrac{7}{3}$

Q 15 Express the following mixed fractions as improper fractions:

a) $2\dfrac{3}{4}$

b) $7\dfrac{1}{9}$

c) $5\dfrac{3}{7}$

Q 16 **Are $\dfrac{1}{3}$ and $\dfrac{2}{7}$; $\dfrac{2}{5}$ and $\dfrac{2}{7}$; $\dfrac{2}{9}$ and $\dfrac{6}{27}$ equivalent? Give reason.**

Q 17 Identify the fractions in each. Are these fractions equivalent fractions.
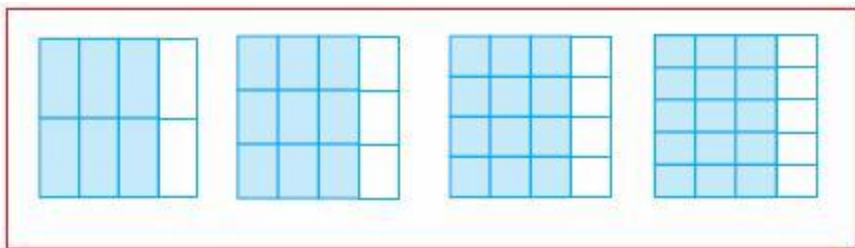
Q 18 Find five equivalent fractions of $\dfrac{2}{3}$.

Q 19 Find the equivalent fraction of $\dfrac{2}{5}$ with numerator 6.

Q 20 Find the equivalent fraction of $\dfrac{2}{9}$ with denominator 63.

Q 21 Write the simplest form of $\dfrac{15}{75}$.

Q 22 Is $\dfrac{49}{64}$ in its simplest form?

Q 23 Write the fractions. Are all these fractions equivalent?
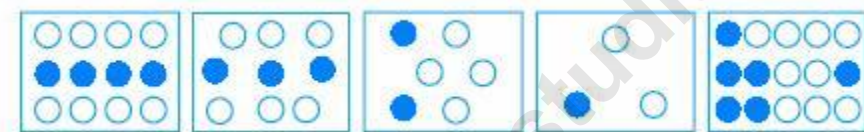
Q 24 You get one-fifth of a bottle of juice and your sister gets one-third of a bottle of juice. Who gets more?

Q 25 Which is the larger fraction?

$\dfrac{7}{10}$ or $\dfrac{8}{10}$.

Q 26 Write in ascending order and also in descending order.

$\dfrac{1}{5}, \dfrac{11}{5}, \dfrac{4}{5}, \dfrac{3}{5}, \dfrac{7}{5}$.

Q 27 Arrange the following in ascending and descending order.

$\dfrac{1}{12}, \dfrac{1}{23}, \dfrac{1}{5}, \dfrac{1}{7}, \dfrac{1}{50}, \dfrac{1}{9}, \dfrac{1}{17}$.

Q 28 Compare $\dfrac{5}{6}$ and $\dfrac{13}{15}$.

Q 29 Ila read 25 pages of a book containing 100 pages. Lalita read $\dfrac{2}{5}$ of the same book. Who read less?

Q 30 Rafiq exercised for $\dfrac{3}{6}$ of an hour, while Rohit exercised for $\dfrac{3}{4}$ of an hour. Who exercised for a longer time?

Q 31 Add with the help of a diagram.

$$\dfrac{1}{8} + \dfrac{1}{8}.$$

Q 32 Fill in the missing fractions.

(a) $\dfrac{7}{10} - \square = \dfrac{3}{10}$

(b) $\square - \dfrac{3}{21} = \dfrac{5}{21}$

(c) $\square - \dfrac{3}{6} = \dfrac{3}{6}$

(d) $\square + \dfrac{5}{27} = \dfrac{12}{27}$

Q 33 Write this fraction appropriately as addition and subtraction.
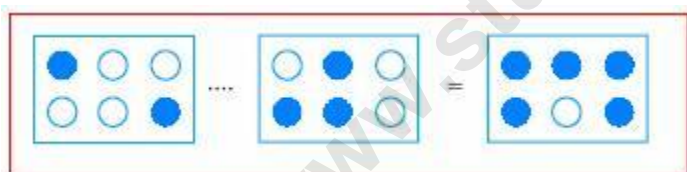
Q 34 Javed was given $\dfrac{5}{7}$ of a basket of oranges. What fraction of oranges was left in the basket?

Q 35 Add $\dfrac{2}{5}$ and $\dfrac{3}{7}$.

Q 36 Subtract $\dfrac{2}{5}$ from $\dfrac{5}{7}$.

Q 37 Add $2\dfrac{4}{5}$ and $3\dfrac{5}{6}$.

Q 38 Naina was given $1\frac{1}{2}$ piece of cake and Najma was given $1\frac{1}{3}$ piece of cake. Find the total amount of cake was given to both of them.

Q 39

Nadini's house is $\frac{9}{10}$ km from her school. She walked some distance and then took a bus for $\frac{1}{2}$ km to reach the school. How far did she walk?

Q 40 Jaidev takes $2\frac{1}{5}$ minutes to walk across the school ground. Rahul takes $\frac{7}{4}$ minutes to do the same. Who takes less time and by what fraction?

Q 41 Jaidev takes $2\frac{1}{5}$ minutes to walk across the school ground. Rahul takes $\frac{7}{4}$ minutes to do the same. Who takes less time and by what fraction?

8. <u>Decimals</u>

Q 1 Write the following number as a decimal. Two hundred five and three-tenths

Mark (1)

Q 2 Convert 2.55 into fraction.

Mark (1)

Q 3 Write 3/25 as a decimal.

Mark (1)

Q 4 Write the following as a decimal:

$$9000 + 600 + 60 + 6 + \frac{2}{10} + \frac{1}{100}$$

Mark (1)

Q 5 13.9 lies in between_____ and_____nearest to _____ on a number line.

Mark (1)

Q 6 Write 0.999 as fraction. Reduce the fraction to lowest term.

Mark (1)

Q 7 Which is greatest: 0.0903, 0.00903, 0.000903?

Mark (1)

Q 8 Write in words 521.21.

Mark (1)

Q 9 Find the sum of: 27.076 + 0.557 + 0.004

Marks (2)

Q 10 Convert 42 ml into litres.

Marks (2)

Q 11 Convert 42 cm into km.

Marks (2)

Q 12 Write as decimals.

a) 3 km and 50 cm

b) Two thousand rupees and fifty-five paise

Marks (2)

Q 13 Add: Rs 24.03 and 532 paise

Marks (2)

Q 14 Write the following as decimals.

a) Eighteen thousand six and seven-thousandths

b) Sixty-five hundred point three five two

Marks (2)

Q 15 Write as fractions in lowest terms.

a) 0.444

b) 0.101

Marks (2)

Q 16 a) 5.1 lies in between_____ and_____nearest to _____ on a number line.

b) 2.6 lies in between_____and ____nearest to _____ on a number line.

Marks (2)

Q 17 Write the following numbers as decimals.

a) $200 + 60 + 5 + \dfrac{1}{10}$

b) $1000 + \dfrac{1}{100} + \dfrac{6}{10}$

Marks (2)

Q 18 Write the following numbers as decimal.

a) Two ones and five-tenths

b) Three hundred and three-tenths

Marks (2)

Q 19 Convert 445 cm into km.

Marks (2)

Q 20 Find the sum of: 207.076 + 0.5257 + 1.005

Marks (2)

Q 21 Represent the following decimals on a number line.

A = 0.2

B = 1.5

C = 1.8

Marks (3)

Q 22 Represent the shaded portion as a decimal number and fraction.
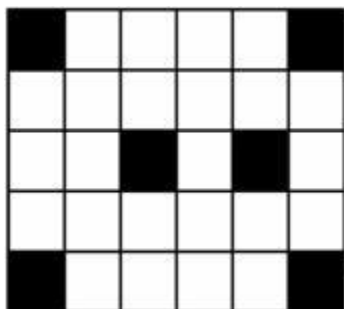
Marks (3)

Q 23 Find the solution of: (1280.69 + 1024.25) - (13.5 + 2121.32)

Marks (3)

Q 24 Two ropes of lengths 10 m 67 cm and 16 m 32 cm are joined together to get a single longer rope. Find the maximum length of the single rope obtained.

Marks (3)

Q 25 Sonal and her younger sister, Rita saved Rs 39.75 and Rs 20.50, respectively to buy a birthday card for their mother. Find the total amount collected by Sonal and Rita.

Marks (3)

Q 26 Convert into fractions.

a) 13.8

b) 13.08

c) 13.008

Marks (3)

Q 27 Write as decimals.

a) $\frac{3}{2}$

b) $\frac{1}{5}$

c) $\frac{25}{4}$

Marks (3)

Q 28 Ramesh bought vegetables from the market weighing 15 kg in all. Out of this, 10.250 kg is potatoes and 3.500 kg is tomatoes and the rest are onions. Find the weight of onions.

Marks (4)

Q 29 Express the following as meters by using decimals.

 (i) 123 cm   (ii) 342 cm

(iii) 5043 cm   (iv) 234 cm

Marks (4)

Q 30 Express the following as centimeters by using decimals.

 (i) 452 mm   (ii) 324 mm

(iii) 152 mm   (iv) 329 mm

Marks (4)

Q 31 Roma travelled 4 km 340 m by bus, 3 km 493 m by car and the remaining distance of 3 km and 298 m by motorcycle. How much distance did she

travel in all?

Marks (4)

Q 32 A rope is of length 7.47 m. If 2.43 m is cut from it, how much rope is left?

Is this rope sufficient to tie a cloth line between two hooks which are 6 m apart?

Marks (4)

Q 33 Convert following decimals into fractions.

 (i) 0.25   (ii) 5.151

(iii) 12.3   (iv) 23.5

Marks (4)

Most Important Questions

Q 1 Write the following numbers in decimal from:

Sixty two and five-tenths

Three hundred four and two tenths

Q 2 Write each of the following as decimals in words:

$30 + 5 + (4/10)$

$400 + 2 + (3/10)$

Q 3 Write each of the following as decimals:

2/10

$4 + (5/10)$

32/10

1/2

14/5

Q 4 Write the following decimals in the place value table:

12.5

7.45

0.67

215.5

Q 5 13.9 lies in between_____ &_____nearest to _____ on the number line.

Q 6 5.4 lies in between which two whole numbers?

Q 7 Write the following numbers in decimal from:

(a) Sixty two and five-tenths

(b) Three hundred four and two tenths

Q 8 Write each of the following decimals in words:

(a) 30 + 5 + (4/10)

(b) 400 + 2 + (3/10)

Q 9 Write each of the following as decimals:

(a) 2/10

(b) 4 + (5/10)

(c) 32/10

(d) 1/2

(e) 14/5

Q 10 Write the following decimals in the place value table:

(a) 12.5

(b) 7.45

(c) 0.67

(d) 215.5

Q 11 Reduce the following decimals as fractions to lowest form:

(a) 2.5

(b) 1.0

(c) 14.2

Q 12 On the given number line, find the value of A, B, C, D and E.

Q 13 13.9 lies between which two whole numbers? It is closer to which number?

Q 14 5.4 lie in between which two whole numbers.

Q 15 Is 2.5 more than 2?

Q 16 Which is greater of 5.64 and 5.603?

Q 17 Write 445 cm into Km.

Q 18 Convert 50 rupees 90 paise into decimal.

Q 19 Find the sum of 280.68 + 28.5 + 38.

Q 20 Add 27.076, 0.557 and .004.

Q 21 Subtract 238.53 m from 250 m.

Q 22 Find the correct value of 9.756 – 6.28.

Q 23 The weight of an empty gas cylinder is 17kg 75g. The weight of the gas contained in it is 14kg 350g.

What would be the total weight of the cylinder filled with gas?

Q 24 Ms. Purba purchased a book worth Rs 345.00 from a bookseller and gave him a 500-rupee note. How much balance did she get back?

Q 25 What is to be added to 72.5 to get 90?

Q 26 What is to be subtracted from 6.8 to get 0.24?

Q 27 Amit purchased 5 kg 400 g rice, 3 kg 30 g sugar and 11 kg 750 g flour the total weight of his purchases.

Q 28 Mohanty had 25 m 5 cm long cloth. She cuts 8 m 25 cm length of cloth from this for making a curtain. How much cloth is left with her?

9. Data Handling

Q 1 The collection of facts, figures, numbers etc. is called......

Mark (1)

Q 2 Fill in the blanks : The number represented by tally marks ||||| || is_____.

Mark (1)

Q 3 Fill in the blanks: Pictograph represents data in form of …..

Mark (1)

Q 4 Define bar graph.

Mark (1)

Q 5 There are 25 students in class VI. Represent the number of students by tally marks.

Mark (1)

Q 6 The data below represents the number of Maths books sold by a shopkeeper in six days.

Days	Number of books sold
Monday	60
Tuesday	40
Wednesday	30
Thursday	50
Friday	30
Saturday	60

Draw a bar graph to represent the above data.

Marks (2)

Q 7 Given Bar-Graph , represent the amount of oil purchased by the government from 1998-2005, Read the Graph and give your observation under following topics:
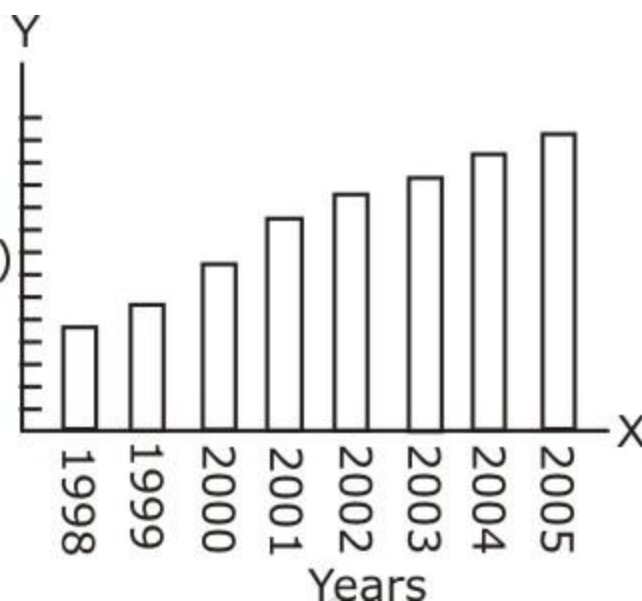
a)   In which year maximum oil purchased ?

b)   In which year minimum oil purchased ?

Marks (2)

Q 8 The marks of hindi test conducted in a class of 40 students are as follows:

30, 54, 61, 83, 47, 93, 26, 78, 64, 55

80, 56, 43, 67, 94, 73, 48, 39, 84, 63

54, 61, 92, 43, 24, 84, 72, 36, 57, 90

77, 69, 42, 56, 74, 81, 46, 34, 29, 40

Prepare a table with tally marks.

Marks (2)

Q 9 The weights of 25 students of a class are given below, prepare a frequency chart.

44 kg, 46 kg, 39 kg, 41 kg, 45 kg

34 kg, 36 kg, 49 kg, 43 kg, 35 kg

43 kg, 42 kg, 37 kg, 34 kg, 38 kg

40 kg, 42 kg, 45 kg, 46 kg, 47 kg

41 kg, 48 kg, 47 kg, 40 kg, 41 kg

Marks (2)

Q 10 Define the different types of data.

Marks (2)

Q 11 In a Mathematics test, marks obtained by the 40 students are as follows, arrange them in a table by using the tally marks.

8	1	3	7	6	5	5	4	4	2

4	9	5	3	7	1	6	5	2	7
7	3	8	4	2	8	9	5	8	6
7	4	5	6	9	6	4	4	6	6

Also find:

(a) How many students obtained maximum marks.

(b) How many students obtained minimum marks.

(c) How many students obtained marks more than 4.

Marks (3)

Q 12 The following pictograph shows the number of students of class VI in a school, using the different means of transport to travel to school.

Find:

(a)   Number of Students coming by Car.

(b) The Most Popular way of traveling used by the students.

(c) Which means of transport is used by the minimum number of students

(d) How many students are using the transport other than Car, School Bus, Cycle.

Marks (4)

Q 13 A record is prepared for the tourists who stayed in Hotel Taj for 5 months:

Months	March	April	May	June	July
Number of Tourists	100	150	200	300	100

Draw a bar graph for the given data.

Marks (4)

Q 14 Mayank surveyed traffic in front of his village house for 1 hour.

Vehicles	Cars	Buses	Lorries	Motorbikes	Bicycles
Number of Vehicles	25	10	25	35	40

Draw a bar graph of this data.

Marks (4)

Q 15 Mr. Rohan prepared a table representing the choice of fruits of his schoolmates. Draw a bar graph for this data.

Name of Fruits	Orange	Apple	Banana	Guava	Grapes
Number of Students	12	10	8	5	7

Marks (4)

Q 16 The number of English books sold by a shopkeeper on six consecutive days is shown below:

Days	Monday	Tuesday	Wednesday	Thursday	Friday
Number of Books Sold	60	55	50	45	30

Draw a bar graph to represent the above information choosing the scale of your choice.

Marks (4)

Q 17 Following are the details of number of students present in a class of 40 students during a week. Draw the pictograph for this information.

Days	Number of students present
Monday	24
Tuesday	28
Wednesday	36
Thursday	32
Friday	32
Saturday	24

Marks (5)

Most Important Questions

Q 1 Data means information in the form of ……………… a) Numerical figure b) Assorted figures

Q 2 Information can be gathered from ………….. to arrange them in a particular order.

Series/Data

Q 3 Pictograph represents data in the form of ………………

Q 4 Tally marks are the marks to represents …………… of data under a particular condition we represent 5 as

……………

Q 5 The marks in mathematics of 30 students are as follows:

77,	37,	84,	58,	60,	48,	62,	56,	75,	78
50,	60,	44,	58,	52,	64,	98,	59,	70,	39
78,	68,	53,	61,	48,	60,	55,	98,	67,	90

Arrange these marks in ascending order, 30-39 one group, 40-49 second group, etc. in a table by using tally marks.

(a) Find how many students are getting above 90 marks.

(b) Find how many students are getting 50 to 59 marks.

(c) If 40 is the pass marks how many have failed?

(d) How many have scored 70 or more?

Q 6 Prepare a tally marks table of the following ages of class VI in a school:

11, 12, 12, 10, 13, 13, 12, 11, 11, 12, 12, 13, 11,

12, 12, 10, 12, 11, 10, 11, 12, 12, 11, 10, 11, 11

Q 7 Following figures relate to the weekly wages (in Rs.) of 15 workers in a factory are:

300, 250, 200, 250, 200, 150, 350, 200, 250, 200, 150, 300, 150, 200, 250

Prepare a frequency table and give the answers of the following questions:

(a) What is the range of the wages (in Rs)?

(b) How many workers are getting Rs 350?

(c) How many workers are getting the minimum wages?

Q 8 The number of students who absent from the class during a week are given below:

Day	Monday	Tuesday	Wednesday	Thursday	Friday
No. of absent	6	3	4	2	5

Draw the pictograph.   (Take the scale =   1 absent.)

Q 9 The numbers of chairs in five rooms of a school are given below:

Room number	I	II	III	IV	V
No. of chair	30	40	50	40	30

Draw the pictograph.   (Take the scale =   10 chairs.)

Q 10 A cupboard of a library has 7 shelves. In each shelf a raw of books is arranged. The details of arrangement as follows:
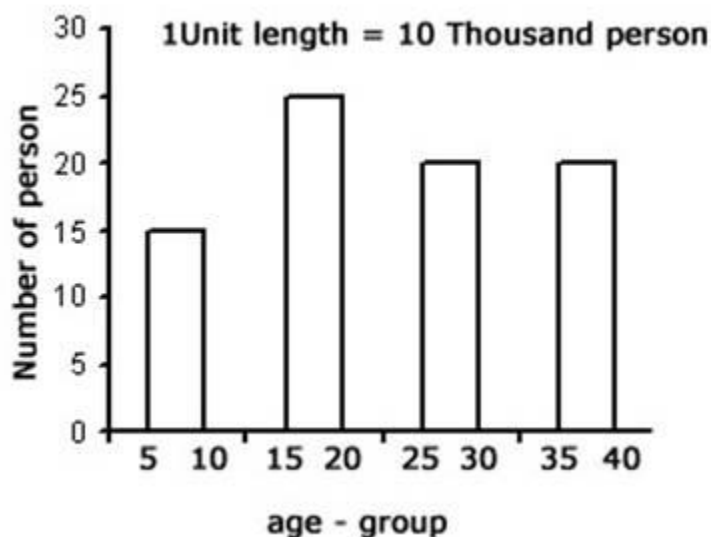

Answer the following questions:

(a) Which row has the maximum number of books?

(b) Which row has the least number of books?

(c) Are there any rows which have equal number of books?

(d) Is there any row which does not have books?

Q 11 What is a Bar Graph?

Q 12 Read the bar graph representing the number of persons in various age groups and answer the following questions:

Answer the following questions:

(a) How many persons lie in the age group 15-20?

(b) In which age groups number of persons are equal?

Q 13 Read the bar graph and answer the following questions:

Bar Graph of the number of students in class VI of a school during academic year 1995 - 1996 to 1990 - 2000
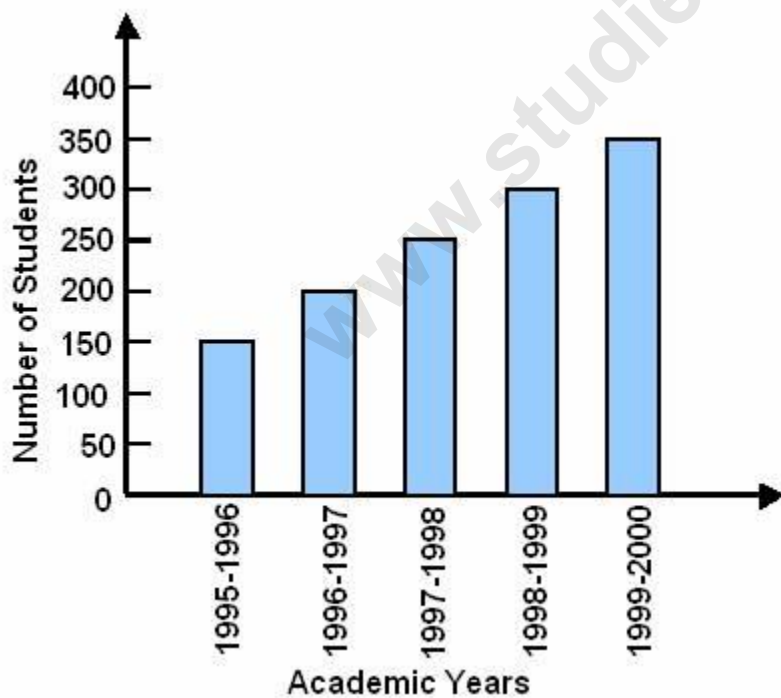
(a) What is the information given by the bar graph?

(b) What is the order of the change of the number of students over several years?

(c) Is the enrolment during 1995 - 1996 half than that of 1998 - 1999?

Q 14 Read the bar graph and answer the following questions:

Bar Graph showing the number of copies of 'Mathematics for Class X' sold by a book-seller during the five months of 2008.
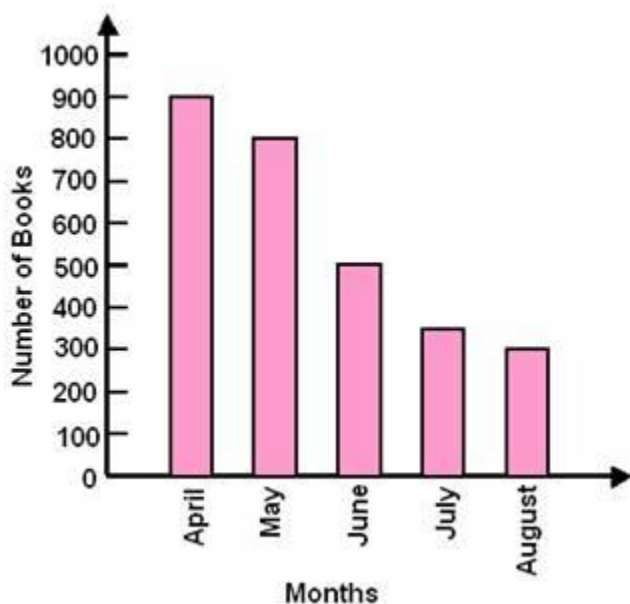
(a) What is the information given by the bar graph?

(b) In which month was the sale of the book maximum?

(c) In which month was the sale of the book minimum?

(d) What is the total sale of the book during these five months?

Q 15 A survey was carried out in a certain school to find about the interest of different sports and the result is given in the following table:

Sports	Volley ball	Kho-kho	Kabbadi	Football	Cricket
No. of Students	20	18	40	35	45

Draw a bar chart.

Q 16 In certain school the result of the last 6 years of class VI are given below:

Year	2002	2003	2004	2005	2006	2007
Result (in %)	50	72	68	45	65	80

Represent the above information with the help of bar chart.

Q 17 The traffic police studied the vehicular traffic at a busy road crossing in Delhi on Monday. The number of vehicles passing through the crossing after every 2 hours from 6 am to 8 pm is recorded in the following table:
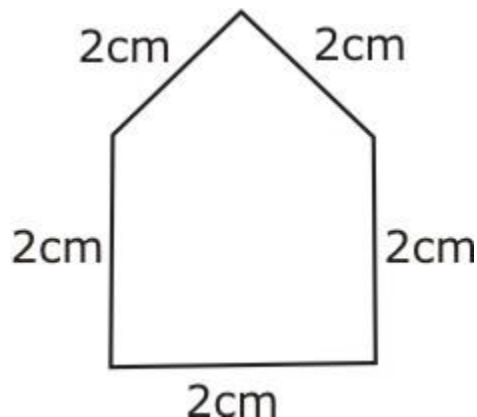
Time (hours)	6 - 8	8 – 10	10 – 12	12 – 2	2 – 4	4 - 6	6 - 8
No. of Vehicles	60	840	1230	1000	700	1600	450

Represent the above information with the help of bar chart.
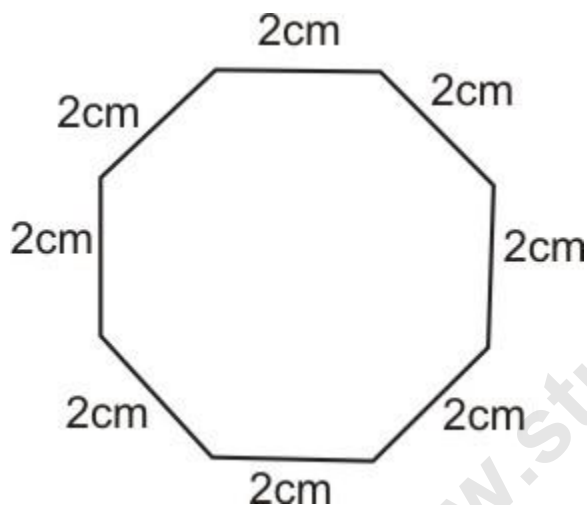
10.   Mensuration

Q 1 Calculate the perimeter of the following figure:

2cm   2cm
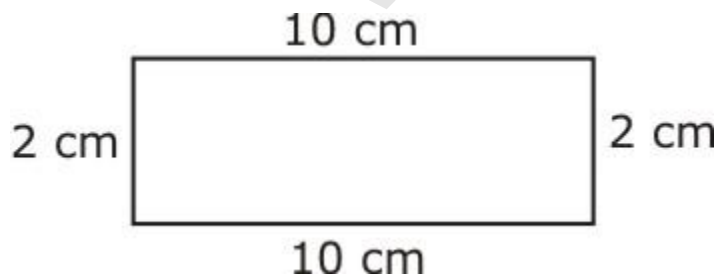
2cm   2cm

2cm

Mark (1)

Q 2 Calculate the perimeter of the following figure :

2cm

2cm   2cm

2cm   2cm

2cm   2cm

2cm

Mark (1)

Q 3 Calculate the distance covered by a person to go around the following figure:

10 cm

2 cm   2 cm

10 cm

Marks (2)

Q 4 Find the perimeter of rectangle whose length is 30 cm and breadth is 10 cm.

Marks (2)

Q 5 Find the perimeter of square whose side is 13 cm.

Marks (2)

Q 6 Find the perimeter of triangle whose sides are 5 cm, 4 cm, 3 cm.

Marks (2)

Q 7 Find the length of a rectangle whose perimeter is 64 cm and breadth is 20 cm.

Marks (2)

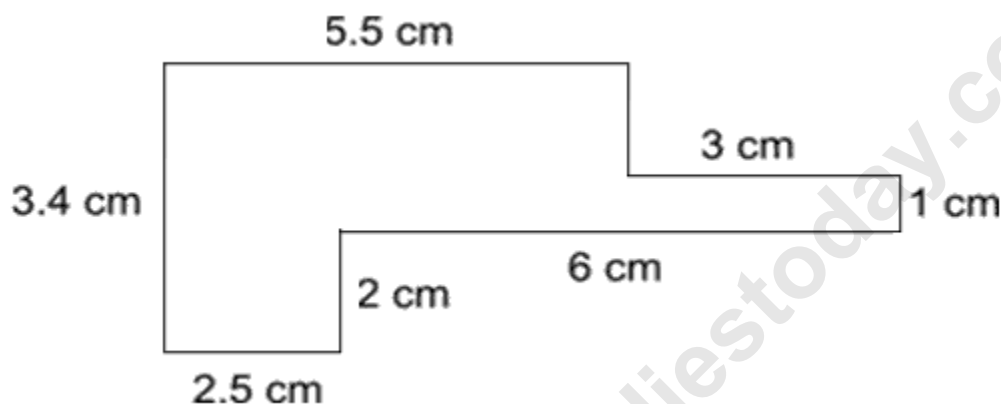Q 8 Perimeter of a square is 104 m find the length of its side.

Marks (2)

Q 9 Find the area of a square of whose length is 1 unit.

Marks (2)

Q 10 Find the area of a square in cm^2 whose side is 35 mm.

Marks (2)

Q 11 Find the area of figure.

Marks (3)

Q 12 A hall in the form of a rectangular region is 14 m by 12 m. How many marble slabs 8 cm by 6 cm are needed to cover the floor of the hall.

Marks (3)

Q 13 A rectangular metal plate is 54 cm long and 43 cm wide. If the cost of metal is given by ₹75 per sq m, find the cost of the plate.

Marks (3)

Q 14 A carpet 6.20 m long and 3.40 m broad is bounded by a tape around the edges. How much tape is needed? If the cost of the tape is ₹4 per meter, find the cost of the required tape.

Marks (3)

Q 15

A square piece of land has each side equal to 150 m. If three layers of metal wire are to be used to fence it, then what is the length of the wire needed?

Marks (4)

Q 16 Riya runs around a square field of side 85 m. Ajay runs around a rectangular field with length180 m and breadth 110 m. Who covers more distance and by how much?

Marks (4)

Q 17 Mohan has a rectangular field of length 240 m and breadth 170 m. He wants to fence it with

4 rounds of rope. What is the total length of rope he must use?

Marks (4)

Q 18 Find the cost of fencing a square park of side 200 m at the rate of ₹18 per metre.

Marks (4)

Q 19 Anand wants to cover the floor of a room 30 m wide and 60 m long by squared tiles. If each square tile is

of side 1.5 m, then find the number of tiles required to cover the floor of the room.

Marks (4)

Q 20 A floor is 10 m long and 8 m wide. A square carpet of side 4.5 m is laid on it. Find the area of floor

uncovered by the carpet.

Marks (4)

Q 21 The top of a rectangular box of sides 80 cm by 20 cm is covered with a tape of breadth 16 cm. What is the

length of tape used?

Marks (4)

Q 22 How many squares of side 1 cm are possible from a wire of length 36 cm?

Marks (5)

Q 23 A rectangular grassy lawn measuring 48 m by 35 m is to be surrounded externally by a path, which is 2.5

m wide. Find the cost of the leveling the path at the rate of ₹4.50 per sq m.
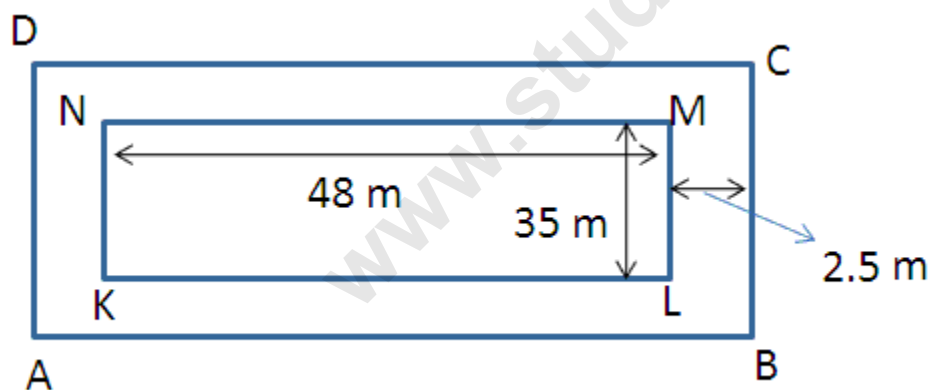
Marks (5)

Q 24 A rectangle and a square have the same perimeter 100 m. find the side of the square. If the rectangle has a

breadth 2 m less than that of the square, find, breadth, length and area of the rectangle.
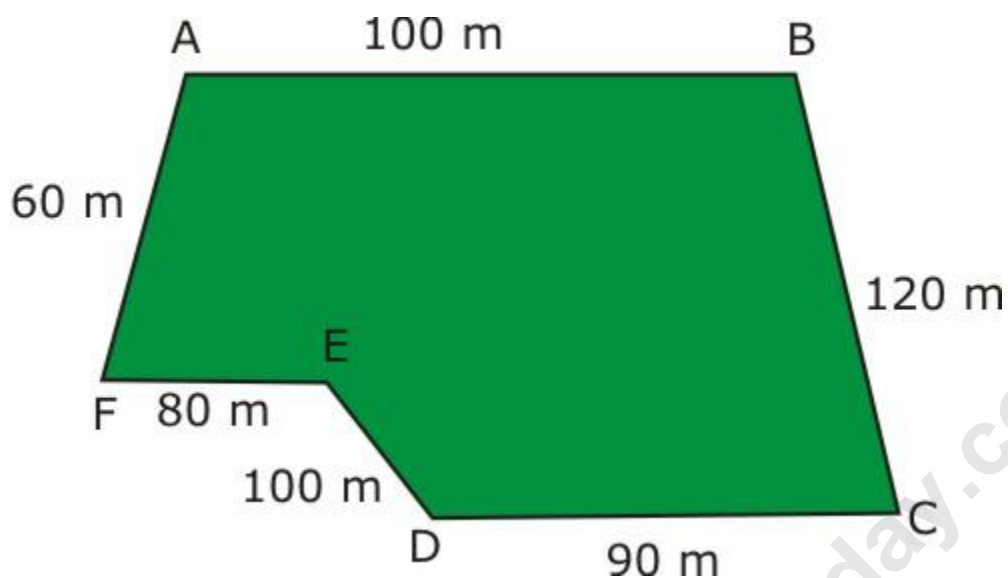
Marks (5)

Q 25 Two cross roads each 3 m wide, run at the right angle through the centre of a rectangular park 72 m by 50

m, such that each is parallel to one of the side of the rectangle. Find the area of the remaining portion of the

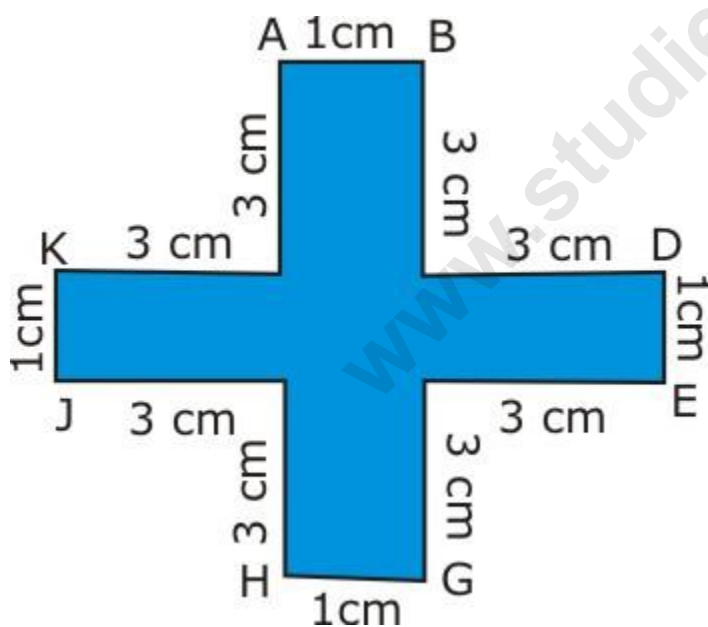park also find the cost of gravelling these path at Rs. 4.50 per sq m.
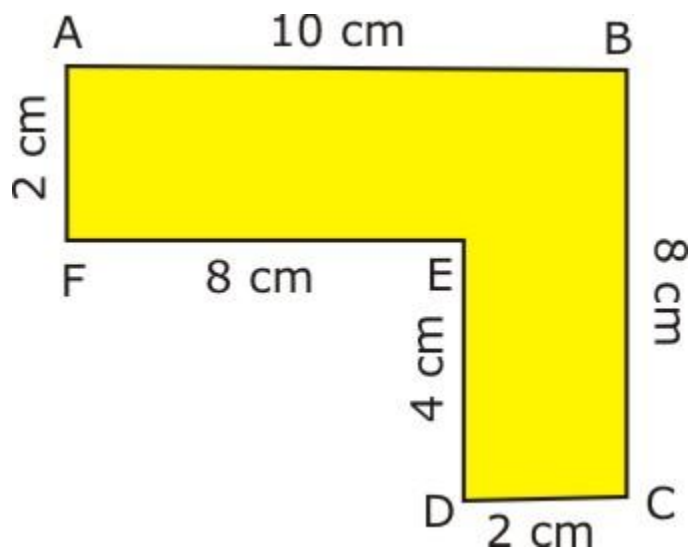
Marks (5)

Most Important Questions

Q 1 Find the perimeter of the given figure.

Q 2 Find the perimeter of the given figure.

Q 3 Find the Perimeter of the given figure.
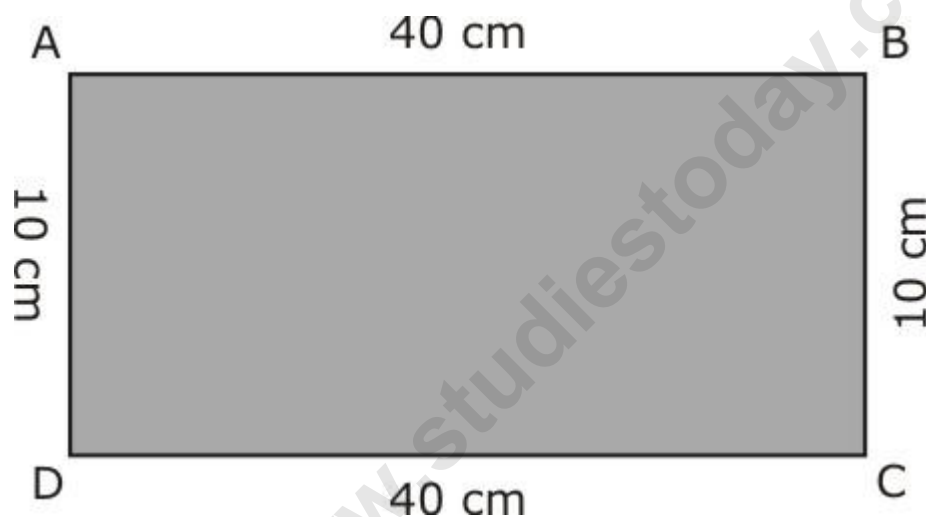

Q 4 Find the perimeter of the given

figure.

Q 5 Find the perimeter of a rectangle whose length and breadth are 150 cm and 1 m respectively.

Q 6 An athlete takes 10 rounds of a rectangular park, 50 m long and 25 m wide. Find the total distance covered by him.

Q 7 Find the distance travelled by Shaina if she takes three rounds of a square park of side 70 m.

Q 8 Find the perimeter of a regular pentagon with each side measuring 3 cm.

Q 9 The lid of a rectangular box of sides 40 m by 10 m is to be sealed all round with tape. What is the length of the tape required?

Q 10 Find the perimeter of a triangle with sides measuring 10 cm, 14 cm and 15 cm.

Q 11 Find the perimeter of a regular hexagon with each side measuring 8 m.

Q 12 Find the perimeter of a regular hexagon with each side measuring 8 m.

Q 13 Two sides of a triangle are 12 cm and 14 cm. The perimeter of the triangle is 36 cm. What is its third side?

Q 14 Find the cost of fencing a square park of side 25 m at the rate of Rs 20 per meter.

Q 15 Pinky runs around a square field of side 75 m, Bob runs around a rectangular field with length 160 m and breadth 105 m. Who covers more distance and by how much?

Q 16 Find the cost of fencing a rectangular park of length 250 m and breadth 175 m at the rate of Rs 12 per meter.
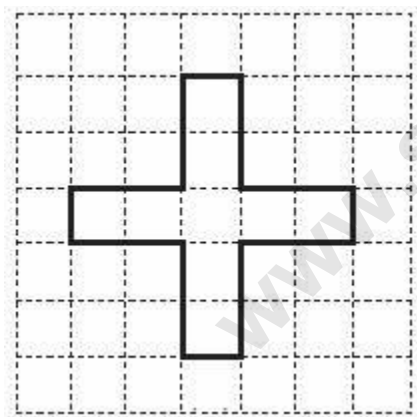
Q 17 Find the side of the square whose perimeter   is 20 m.

Q 18 The perimeter of a regular hexagon is 18 cm. How long is its one side?

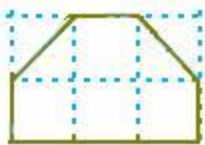Q 19 Find the area of the figure by counting square.
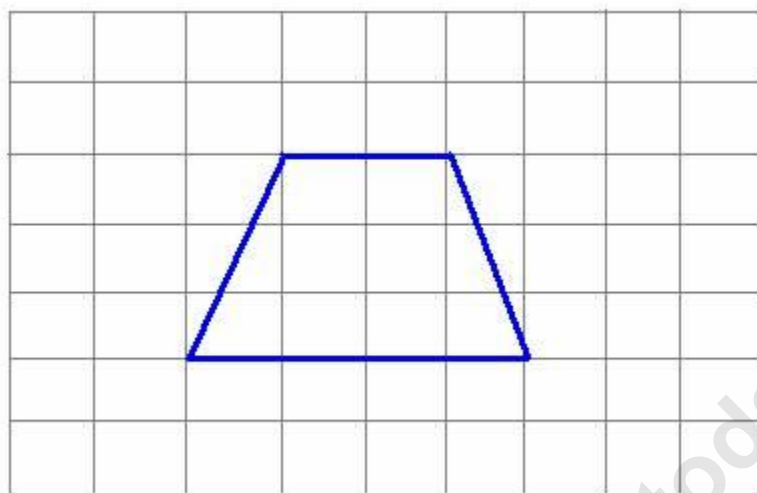
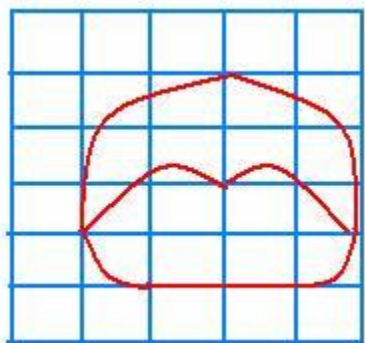Q 20 Find the area of the figure by counting square.

Q 21 By counting squares, estimate the area of the given figure:

Q 22 Find the area of the figure by counting square.

Q 23 Find the area of the figure by counting square.

Q 24 Find the area of a rectangle whose length and breadth are 12 cm and 4 cm respectively.

Q 25 Find the area of a rectangle whose length and breadth are 12 cm and 4 cm respectively.

Q 26 Find the area of a square plot of side 8 m.

Q 27 The area of a rectangular piece of cardboard is 36 sq cm and its length is 9 cm. What is the width of the cardboard?

Q 28 Bob wants to cover the floor of a room 3 m wide and 4 m long by squared tiles. If each square tile is of side 0.5 m, then find the number of tiles required to cover the floor of the room.

Q 29 Find the area in square meter of a piece of cloth 1m 25 cm wide and 2 m long.

Q 30 What is the cost of tiling a rectangular plot of land 500 m long and 200 m wide at the rate of Rs 8 per hundred sq m.?
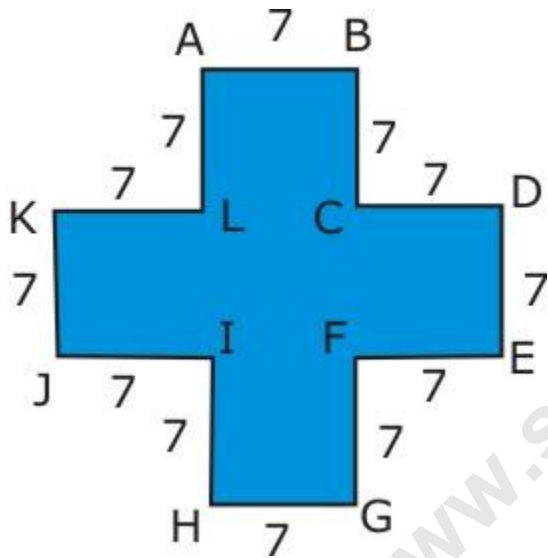
Q 31 A room is 4 m long and 3 m 50 cm wide. How many square meters of carpet is needed to cover the floor of the room.

Q 32 The area of a rectangular garden 50 m long is 300 sq m. Find the width of the garden.

Q 33 By splitting the figure into rectangles, find their areas:
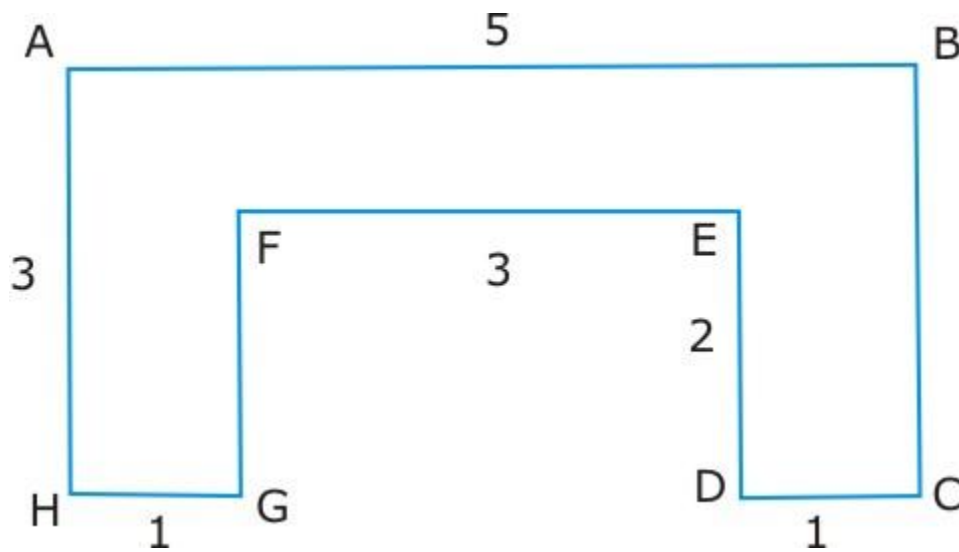
Q 34 By splitting the figure into rectangles, find their areas:

11.   <u>Algebra</u>

Q 1 Cadets are marching in a parade. There are 7 cadets in a row. How will you write the total number of Cadets in terms of the n number of rows?

Mark (1)

Q 2 The length of a rectangular hall is 3 metres less than 4 times the breadth of the hall. What is the length if the breadth is b metres?

Mark (1)

Q 3 Write the following in exponential form :

 $x \times x \times x$ ... 15 times

Mark (1)

Q 4 Anna is k years old now. How old was he 2 years before?

Mark (1)

Q 5 Write an expression for '7 multiplied by y and 2 subtracted from the product'.

Mark (1)

Q 6 Give an expression for '4 subtracted from - n'.

Mark (1)

Q 7 Give expression for the following :p multiplied by 13

Mark (1)

Q 8 Raj and Sunny are brothers. Sunny is 3 years younger than Raj. Suppose Raj's age is y years. Express Sunny's age in terms of y.

Mark (1)

Q 9 Fill in the blank : $a \times (b + c) = a \times$ ___ $+ a \times$ ___

Mark (1)

Q 10 Fill in the blank: $4 + 5 = 5 +$ __

Mark (1)

Q 11 Check whether x = 80 is a solution of the equation x+30 =50 or not.

Mark (1)

Q 12 What do we mean by the solution of an equation?

Mark (1)

Q 13 Solve p + 2 = 3.

Mark (1)

Q 14 Solve $\frac{5}{4}x = 25$.

Mark (1)

Q 15 If a car's average speed is 50 km per hour. Express the distance covered by the car in terms of the time for which it took to reach Delhi from Agra?

Mark (1)

Q 16 What is the coefficient of x in $6xy^2$?

Mark (1)

Q 17 Find the number which gives 78 when added to 24.

Marks (2)

Q 18 Find the solution of the given equation x - 4 = - 9

Marks (2)

Q 19 A rectangular box has height h cm. Its length is 5 times the height and breadth is 20 cm less than its length. Express the length and the breadth of the box in terms of the height.

Marks (2)

Q 20 Write the expression for each case:

   (a) a times b.

   (b) Eight times of a number p is x less than a number y.

Marks (2)

Q 21 What is trial and error method for geting the solution of an equation?

Marks (2)

Q 22 Evaluate : $y^4 + 2y^3 - y^2 + y - 4$ when y = -1.

Marks (2)

Q 23 If P = 3a + 2b - c and Q = -7a + 4b + 8c then find P + Q and Q + P. Are they same?

Marks (2)

Q 24 Complete the following table:

Q	0	5	8
Q - 4			

Marks (2)

Q 25 What is the value of the expression $x^2 + y$ if x = 13 and y = 4?

Marks (2)

Q 26 Mangoes are to be transferred from larger boxes to smaller boxes. When a large box is emptied, the mangoes from it fill two smaller boxes and still 9 mangoes remain outside. If the total number of mangoes in a small box is taken to be r, what is the total number of mangoes in the larger box?

Marks (3)

Q 27 The diameter of a circle is a line which joins two points on the circle and also passes through the centre of the circle. In the adjoining figure AB is a diameter of the circle and C is the centre. Express the diameter of the circle (d) in terms of its radius (r).

Marks (3)

Q 28 State in words the meaning of the following algebraic expressions:

(i) $a + b$

(ii) $-3q$

(iii) $2n - 1$

Marks (3)

Q 29 Solve the equation : $7 + 3(x + 2) = 28$

Marks (3)

Q 30 If $x = 2$, $y = 5$ and $z = 6$, find the value of $2x^2y - 6xy + xyz$

Marks (3)

Q 31 Identify monomials, binomials and trinomials from the following :

(a) $-8xy$.

(b) $x + z^2$

(c) 9

(d) $a + b + c^3$

(e) $p - r + q$

(f) $x - 1$

Marks (3)

Q 32 Simplify : $(7 \times 10) - (5 \times 10) - 45 + p$

Marks (3)

Q 33 Complete the table

n	1	2	3	4	5	6
5n						

Marks (3)

Q 34 Give expressions for the following cases :

a. 8 subtracted from -p.

b. q added to the sum of p and 4.

c. 5 more than thrice a number.

d. Quotient of y divided by 4 is added to z.

e. 5 times y from which 3 is subtracted.

Marks (4)

Q 35 Subtract the sum of $x + y^2$ and $x^2 + 2xy$ from $x^2 + y^2 + xy + y$.

Marks (4)

Q 36 Complete the entries of the fourth column of the table:

S.No	Equation	Value of variable	Equation satisfied(Yes/No)
1.	$10y = 50$	$y = 10$	
2.	$10y = 70$	$y = 7$	
3.	$5p = 65$	$p = 65$	
4.	$5p = 15$	$p = 5$	
5.	$q - 6 = 24$	$q = 30$	
6.	$q - 6 = 18$	$q = 24$	
7.	$m + 4 = 1$	$m = 3$	
8.	$m + 6 = 1$	$m = -5$	

Marks (4)

Q 37 Change the following statements using expressions into statements in ordinary language.

(i) A notebook costs ₹p. A book costs ₹3p.

(ii) Tony puts q marbles on the table. He has 8q marbles in his box.

(iii) Our class has n students. The school has 20n students.

(iv) Jagdeep is x years old. His uncle is 4x years old and his aunt

is (4x -3) years old.

Marks (4)

Q 38 Give expressions in the following cases:

a) 11 added to 2m

b) 5 times y to which 3 is added

c) y multiplied by 5 and the result subtracted from 16

d) y multiplied by 5 and 5 added to the result

Marks (4)

Q 39 Take Sarita's present age to be y years and answer the following:

(i) What will be her age 5 years from now?

(ii) What was her age 3 years back?

(iii) Sarita's grandfather is 6 times her age. What is the age of her grandfather?

(iv) Her grandmother is 2 years younger than grandfather. What is grandmother's age?

Marks (4)

Q 40 Pick out the solution from the values given in the bracket next to each question.

(a)   5 m=60 (5,10, 12,15)

(b) n+12 =20 (8,12,15, 20)

<div align="center">Marks (4)</div>

Q 41 Meena, Beena and Leena are climbing the steps to a hill top. Meena is at step 's', Beena is 8 steps ahead and Leena 7 steps behind Meena. Locate the position of Beena and Meena on the hill. The total number of steps to the hill top is 10 less than 4 times where Meena has reached. Express the total number of steps using s.

<div align="center">Marks (4)</div>

Q 42 State which of the following are equations with a variable. In the case of equations with a variable, identify the variable.

a. x+20=70

b. $8 \times 3=24$

c. 2x>30

d. n-4=100

e. 2b=80

f. 3y=15

g. y/8<50

h. 3y=343

<div align="center">Marks (4)</div>

Q 43 In a class, the number of boys is twice the number of girls. If the strength of the class is 63, what is the number of boys in the class?

<div align="center">Marks (5)</div>

<div align="center">Most Important Questions</div>

Q 1 If there are 50 marbles in a box, how will you write the total number of marbles in terms of the number of boxes?

Q 2 The side of an equilateral triangle is shown by l. Express perimeter of the equilateral triangle using l.

Q 3 Complete the following table:

n	1	2	3	4	5	6
5n						

Q 4 a x (b + c) = a x ……… + a x ………..

Q 5 4 + 5 = 5 + …………..

Q 6 12 x 10 = ……. x 12

Q 7 Find the value of 6 x (4 + 5).

Q 8 Find the value of 8 x (7 - 2).

Q 9 Find the value of p in the given equation : 28 = p + 4

Q 10 A cuboidal box box has height h cm. Its length is 5 times the height and

 breadth is 20 cm less than its length. Express the length and the breadth of the box in terms of the height.

Q 11 The length of a rectangular hall is 3 meters less than 4 times the breadth of the hall. What is the length if

the breadth is b meters?

Q 12 Raj and Sunny are brothers. Sunny is 3 years younger than Raj.

 Express Sunny's age in terms of y, Raj's age being y years.

Q 13 Give expressions for the following cases:

a)   8 subtracted from -p.

b)   q added to the sum of p and 4.

c)   5 more than thrice a number.

d)   Quotient of y by 4 is added to z.

Q 14 Anna is k years old now. How old was he 2 years before?

Q 15 State in words the meaning of the following algebraic expressions:

(i)   a + b

(ii)   -3q

(iii) 2n - 1

Q 16 Give expression for the following: p multiplied by 13.

Q 17 Write the expression for each case:

(a) a times b.

(b)   Eight times a number p is x less than a number y.

Q 18 If P = 3a + 2b - c and Q = -7a + 4b + 8c then find P+Q and Q+P. Are they   same?

Q 19 Complete the table:

Q	0	5	8
Q - 4			

Q 20 Express

1. Eight less than the product of five times a number.

2. The quotient of fifteen and twice a number.

3. The sum of triple a number and seventeen.

4. Three more than five times a number.

Q 21 Complete the entries of the fourth column of the table:

S.No	Equation	Value of variable	Equation satisfied(Yes/No)

1.	$10y = 50$	$y = 10$	
2.	$10y = 70$	$y = 7$	
3.	$5p = 65$	$p = 65$	
4.	$5p = 15$	$p = 5$	
5.	$q - 6 = 24$	$q = 30$	
6.	$q - 6 = 18$	$q = 24$	
7.	$m + 4 = 1$	$m = 3$	
8.	$m + 6 = 1$	$m = -5$	

12.   Ratio and Proportion

Q 1 Find the ratio of 20 minutes to 3 hours.

Mark (1)

Q 2 Express 150 : 600 in the lowest form.

Mark (1)

Q 3 Find the ratio of 2 mm to 1 m.

Mark (1)

Q 4 Reduce the ratio in lowest form 121 : 1331

Mark (1)

Q 5 If the cost of 1 kg of tea is Rs 50, find the cost of 6 kg of tea.

Mark (1)

Q 6 Ahmed walks at a speed of 5 km per hour while Ali walks at the rate of 10 km per hour. Find the ratio of speed of Ahmed to the speed of Ali.

Mark (1)

Q 7 Rahul can solve a puzzle in 2 hours while Suraj can solve the same puzzle in 3 hours. Find the ratio of time taken by Rahul to the time taken by Suraj to solve the puzzle.

Mark (1)

Q 8 Are 36, 48, 42 and 56 in proportion?

Mark (1)

Q 9 In a school of 1800 students, 600 are girls. Find the ratio of boys to the total number of students.

Marks (2)

Q 10 If 40, x, x, 40 are in proportion, then find the value of x.

Marks (2)

Q 11 If we divide Rs 20 between Jatin and Arnav in the ratio 3 : 2, how much will each of them get?

Marks (2)

Q 12 If 10 bananas costs Rs 20, find the cost of 7 bananas.

Marks (2)

Q 13 Are the ratios 30 : 45 and 60 : 100 equal?

Marks (2)

Q 14 Are 18, 30, 30 and 50 in proportion?

Marks (2)

Q 15 If the cost of 3 dozens pens is ₹72, what will be the cost of 2 dozens such pens?

Marks (2)

Q 16 A company manufactures 1000 bulbs per month on an average. It was found out that 50 bulbs were defective in a certain month. Find out the ratio of defective bulbs to the number of bulbs produced.

Marks (2)

Q 17 Compare the given ratios.12 : 24 and 32 : 64.

Marks (2)

Q 18 Are the two ratios 13 : 39 and 7 : 21 equal?

Marks (2)

Q 19 Express the ratio in lowest form.   39 : 117

Marks (2)

Q 20 The length, breadth and height of a building is 200 m, 175 m and 150 m respectively. Find the ratio of

(i) length: breadth

(ii) length: height

Marks (2)

Q 21 Arrange the following ratios in descending order.7 : 63, 12 : 54, 12 : 27

Marks (3)

Q 22 Seema's income is Rs 20,000 and her saving is Rs 4750 per month. Find the ratio of her expenditure to her income.

Marks (3)

Q 23 Radha's height is 150 cm and Radhika is 20 cm taller than Radha. Find the ratio of the height of Radha to the height of Radhika.

Marks (3)

Q 24 A car travels 240 km in 16 litres of petrol. How many litres of petrol is required to cover 1500 km?

Marks (3)

Q 25 If the first, second and third terms of a proportion are 18, 6 and 25 respectively, then find the fourth term.

Marks (3)

Q 26 In a office of 25 people, 11 people like reading, 5 people like singing and 9 people like dancing. Find the ratio of

(a) people who like dancing to people who like singing.

(b) people who like dancing to people who like reading.

(c) people who like reading to total people in the office.

Marks (3)

Q 27 The pocket money of A, B and C are Rs 600, Rs 500 and Rs 550, respectively. Find

(a) the ratio of pocket money of A to that of B.

(b) the ratio of pocket money of A to that of C.

(c) the ratio of pocket money of B to that of C.

Marks (3)

Q 28 Ramesh completes his work in 3 days if he works for 5 hours daily. How many days will he take to complete the same work if he works for 3 hours daily?

Marks (3)

Q 29 Arrange the following ratios in ascending form.

3 : 7, 5 : 9 and 1 : 3

Marks (3)

Q 30 8 packets of matchboxes contain 640 matchsticks. How many matchboxes will contain 800 matchsticks?

Marks (3)

Q 31 The length and breadth of a rectangular field are in the ratio of 4 : 5. If the length of the field is 20 m, find the breadth.

Marks (3)

Q 32 If sugar costs Rs 3 per 100 gm and salt costs Rs 5 per 500 gm, find the ratio of the cost of sugar to the cost of salt.

Marks (4)

Q 33 The length and breadth of a rectangular field are 40 m and 10 m respectively. If the side of a square is 20 m, then find the ratio of their perimeters.

Marks (4)

Q 34 There are 60 persons in an office. If the number of females is 35 and the remaining are males, then find the ratio of:

(a) the number of males to the number of females.

(b) the number of females to the total persons.

Marks (4)

Q 35 There are 2000 students in a school. 800 students opted basketball, 850 students opted cricket and remaining opted table tennis. If a student can opt only one game, find the ratio of –

(a) number of students who opted basketball to the number of students who opted table tennis.

(b) number of students who opted cricket to the number
   of students opted basketball.

Marks (4)

Q 36 If the cost of 10 oranges is ₹50, then what will be the cost of 17 oranges?

Marks (4)

Q 37   A bus covered 150 km distance in 1½ hours.

(a) How much time is required to cover 250 km with the same speed?

(b) Find the distance covered in 4 hours with the same speed.

Marks (4)

Q 38 After investing an amount in ratio of 2:7, Raj and Kavita got a profit of ₹5400. Find their share in profit.

Marks (4)

Most Important Questions

Q 1 Find the ratio of 12 : 21 in its simplest form.

Q 2 Find the ratio of 150 : 200 in its simplest form.

Q 3   Express the ratio $\frac{1}{9} : \frac{1}{6}$ in simplest form.

Q 4   Express the ratio $\frac{2}{3} : \frac{5}{6}$ in simplest form.

Q 5 Find the ratio of 6 hours to a day.

Q 6 Find the ratio of 36 minutes to 2 hours.

Q 7 In a school of 1500 students, 900 are girls. Find the ratio of boys to all the students.

Q 8 Seema's income is Rs. 2000 and her savings are Rs. 175 per month. Find the ratio of her expenditure to her income.

Q 9 Find the ratio of 2mm to 1m.

Q 10 Express the ratio in simplest form

39 : 117

Q 11 Ram can solve a problem in 2 hours while Shyam can solve the same problem in 3 hours. Find the ratio of both.

Q 12 The boys and girls in a school are in the ratio 8 : 3. If the number of girls is 405, how many boys are there in the school?

Q 13 Ahmed walks at a speed of 5 km per hour while Ali walks at the rate of 10 km per hour . Find the ratio of their speeds.

Q 14 The length, breadth and height of a building is 200 m, 175m and 150 m respectively. Find the ratio of

(i) Length : breadth.

(ii) Length : height.

Q 15 Determine whether the given ratios are equal.

30: 45 and 60: 100?

Q 16 Are the two ratios given below equal?

13: 39 and 7: 21.

Q 17 Determine whether the following numbers are in proportion

18, 30, 30, 50.

Q 18 Are 20, 25, 12 and 15 in proportion?

Q 19 If 40, x, x, 40 are in proportion, then find the value of x.

Q 20 Find the fourth term of the proportion whose first, second and third terms are 4, 9 and 32 respectively.

Q 21 Find the third term of the proportion whose first, second and fourth terms are 6, 15 and 25 respectively.

Q 22 If the first, second and third terms of a proportion are 18, 6 and 25 respectively, then find the fourth term.

Q 23 If 10 bananas cost Rs. 20, what will be the cost of 7 bananas?

Q 24 If sugar costs Rs 7 per 100 gm and salt costs Rs 5 per 500 gm, then find the ratio of the price of sugar to salt.

Q 25 8 pens cost Rs 144. How much the cost of 14 pens?

Q 26 A car can cover a distance 0f 648 Kms. in 108 litres of petrol. How much petrol will be required by the car to cover a distance of 1746 Kms.?

Q 27 In an office of 25 people, 11 people like reading, 5 people like singing and 9 people like dancing. Find the ratio of

(a) People who like dancing to people who like singing.

(b) People who like dancing to people who like reading.

(c) People who like reading to the total people.

Q 28 The length and breadth of a rectangular field are in the ratio of 4: 5. Find the breadth if the length of the field is 20m.

13.   Symmetry

Q 1 Indicate the line of symmetry in the following figure.

Mark (1)

Q 2 Draw the mirror image of the following:
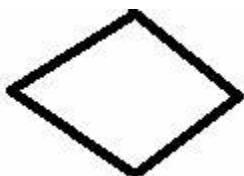
Mark (1)

Q 3 Give any two examples of symmetrical objects from the everyday life.

Mark (1)

Q 4 Check whether the given figure is symmetrical or not?
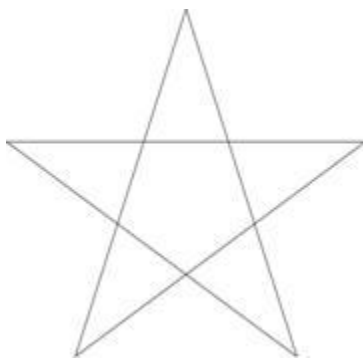
Mark (1)

Q 5 Complete the following figure such that the dotted line is the line of symmetry.
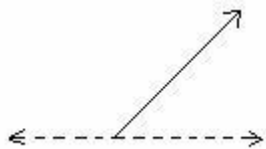
Mark (1)

Q 6 Name the line that divides the figure into two identical halves.

Mark (1)

Q 7 How many lines of symmetry does the following figure have?
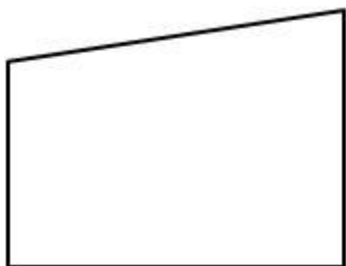
Mark (1)

Q 8 True or False: A figure can have only one line of symmetry.

Mark (1)

Q 9 Identify the number of line of symmetry in the following figure.

Mark (1)

Q 10 Can you draw a triangle which has exactly one line of symmetry?

Mark (1)

Q 11 Complete the following figure such that the dotted line is the line of symmetry.

Mark (1)

Q 12 When a figure is said to have a line symmetry?

Mark (1)

Q 13 Draw a figure whose mirror image is identical to the figure itself.

Mark (1)

Q 14 Is the following figure symmetrical?
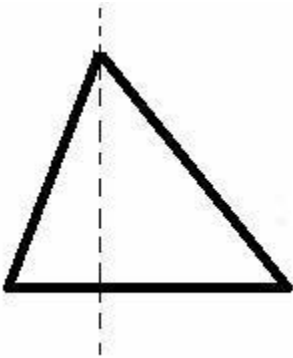
Mark (1)

Q 15 For the figure, which one is the mirror line l_1 or l_2?
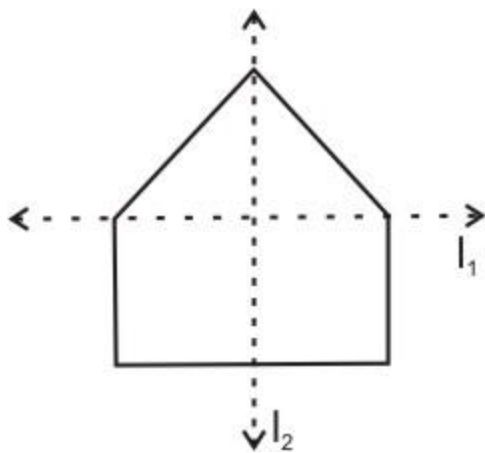
Mark (1)

Q 16 Draw a line of symmetry for the following figure.
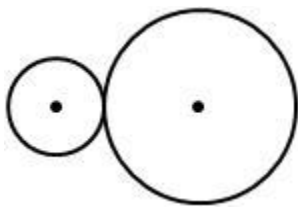
Mark (1)

Q 17 Draw the line(s) of symmetry in the following figure.
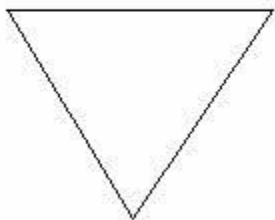
Mark (1)

Q 18 Is the figure symmetrical? If yes, find its axis of symmetry.

Marks (2)

Q 19 Determine whether the following figures are symmetrical or not.

Figure 1:
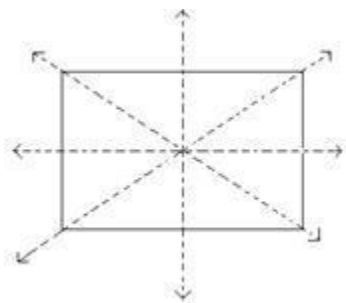
Figure 2:
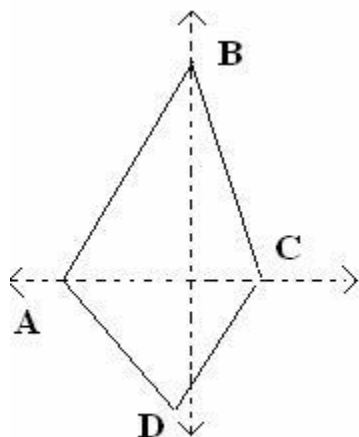
Marks (2)

Q 20 Following letters of the English alphabet are symmetrical about a line. Identify a line of symmetry in each

case.

(a) A

(b) W

(c) Y

(d) B

Marks (2)

Q 21 What is reflection symmetry?

Marks (2)

Q 22 How many lines of symmetry does the following figure have?
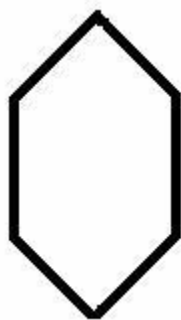
Marks (2)

Q 23 Give some of the applications of symmetry in everyday life.

Marks (2)

Q 24 Complete the following figure along the line of symmetry.
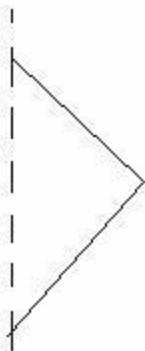
Marks (2)

Q 25 Find out if the figure is symmetrical or not?
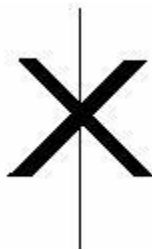
Marks (2)

Q 26 Consider a $\triangle$ ABC in which AB = AC = 5 cm and BC = 6 cm. How many lines of symmetry does the triangle have?

Marks (2)

Q 27 True or False: A regular hexagon has 6 lines of symmetry.

Marks (2)

Q 28 Is the following figure symmetrical?
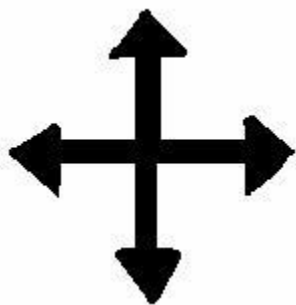
Marks (3)

Q 29 Draw the mirror images of the following figures:

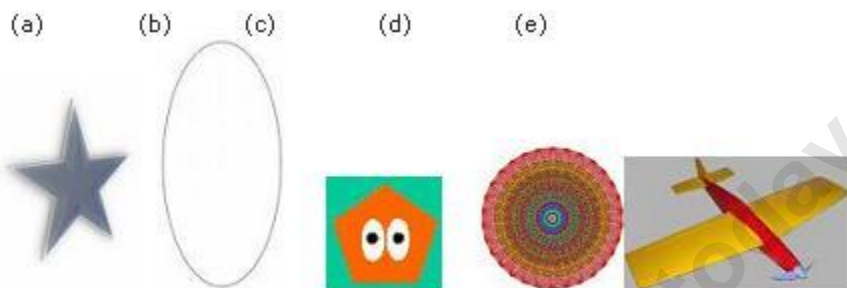(a)   (b)   (c)   (d)

Marks (4)

Q 30 Complete the table:

Shape	Rough Figure	No. of lines of symmetry
Equilateral Triangle		
Square		
Rectangle		
Circle		

Marks (4)

Most Important Questions

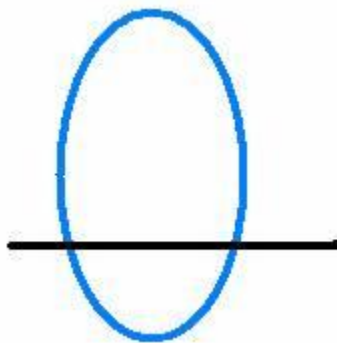Q 1 List any four symmetrical objects from your home or class.

Q 2 Identify the shapes given below. Check whether they are symmetric or not. Draw the line of symmetry as well.
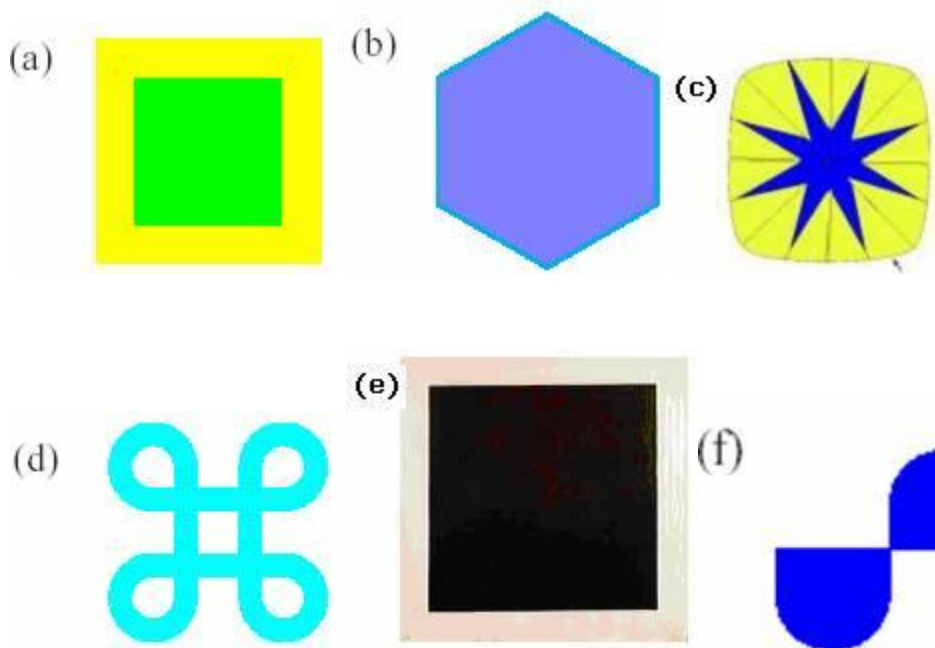

Q 3 In the figure, x is the line of symmetry. Complete the diagram to make it symmetric.
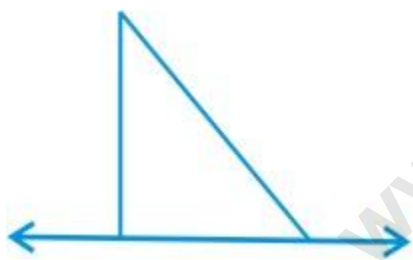
Q 4 In the figure, *l* is the line of symmetry. Complete the diagram so that it becomes symmetric.

Q 5 Find the number of lines of symmetry for each of the following shapes:

Q 6 Make the figure and write the number of lines of symmetry for the following figures:-

(i)   Equilateral triangle

(ii)   Square

(iii)   Rectangle

(iv)   Isosceles triangle

(v)   Rhombus

(vi)   Circle

Q 7 Can you draw a triangle which has

(a) Exactly one line of symmetry?

(b) Exactly two lines of symmetry?

(c) Exactly three lines of symmetry?

(d) No line of symmetry?

  Sketch a rough figure in each case.

Q 8 Consider the letters of English alphabets, A to Z. List among them the letters which have

(a) Vertical lines of symmetry (like I)

(b) Horizontal lines of symmetry (like C)
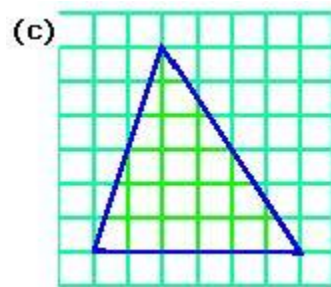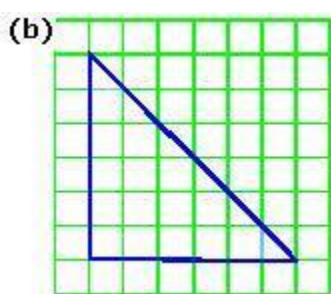
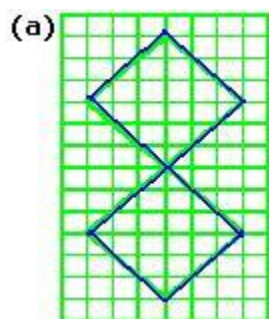(c) No lines of symmetry (like R)

Q 9 Here are figures of a few folded sheets and designs drawn about the fold. In each case, draw a rough

diagram of the complete figure that would be seen when the design is cut off.
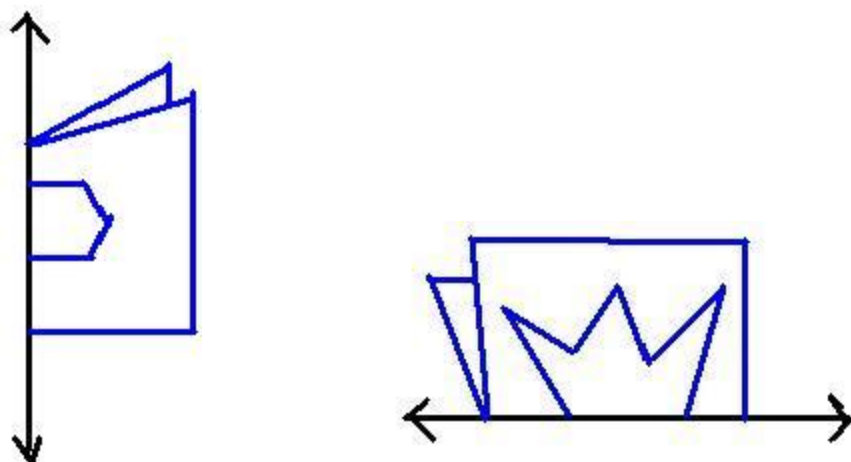
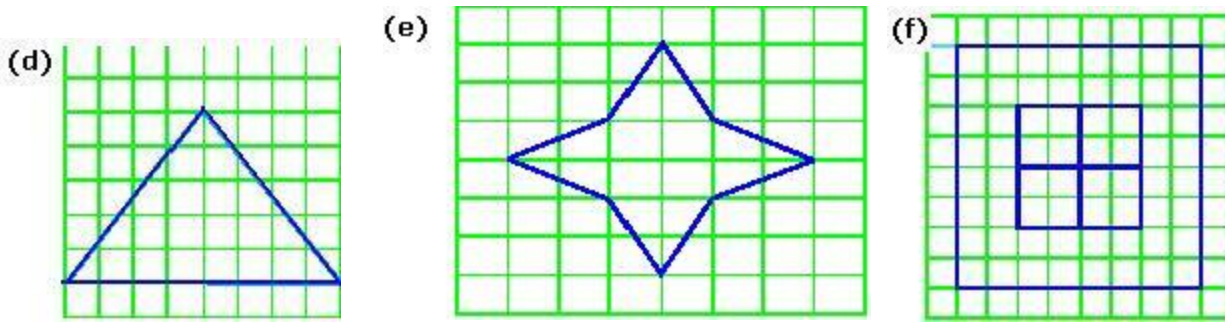Q 10 Copy the following on a squared paper. A square paper is what you would have used in your arithmetic notebook in earlier classes. Then complete them such that the dotted line is the line of symmetry.
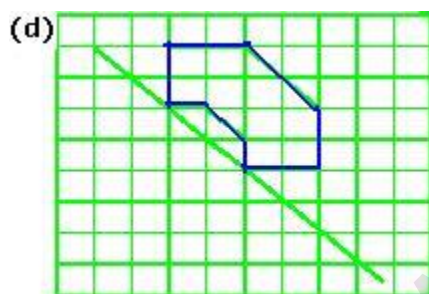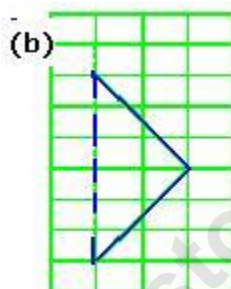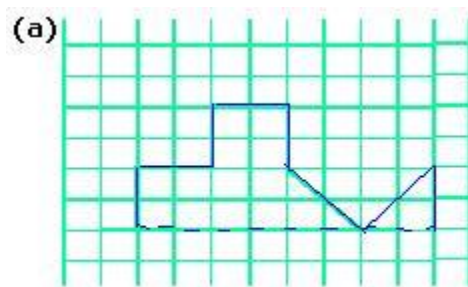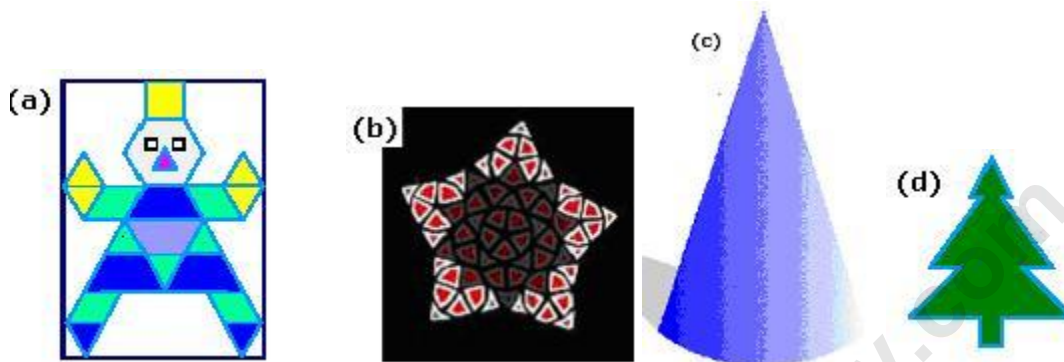

Q 11 Trace each figure and draw the lines of symmetry, if any:

(d)

(e)

(f)

Q 12 Find the number of lines of symmetry in each of the following shapes. How will you check your answers?

(a)

(b)

(c)

(d)

14.   Practical Geometry

Q 1 How many circles, you can draw, passing through a given point ?

Mark (1)

Q 2 The diameter of a circle is 18 cm. What is its radius ?

Mark (1)

Q 3 A chord of a circle is a line segment with its end points on the _____.

Mark (1)

Q 4 A radius of a circle is a line segment with one end at the _____ and the other end on the _____ .

Mark (1)

Q 5 Fill in the blank : The longest chord of the circle is called the _____

Mark (1)

Q 6 Fill in the blank : A diameter of a circle is a chord that passes through the _____

Mark (1)

Q 7 Fill in the blank: A chord of a circle divides the circle into two parts, then each part is called a_____ of the circle.

Mark (1)

Q 8 Fill in the blank : Circles which have the same centre and different radii are called _____ circles.

Mark (1)

Q 9 Draw any circle and mark points A, B and C such that

(a)   A is on the circle.

(b)   B is in the interior of the circle.

(c)   C is in the exterior of the circle.

Mark (1)

Q 10 What is the use of 'set-squares'.

Mark (1)

Q 11 Draw a circle of radius 4.3 cm with centre O.

Marks (2)

Q 12 Draw two circles with the same centre and different radii.

Marks (2)

Q 13 Draw two circles of equal radii with centres A and B such that each one passes through the centre of the

other.Let them intersect at C and D. Check whether $\overline{AB}$ and $\overline{CD}$ are at right angles or not.
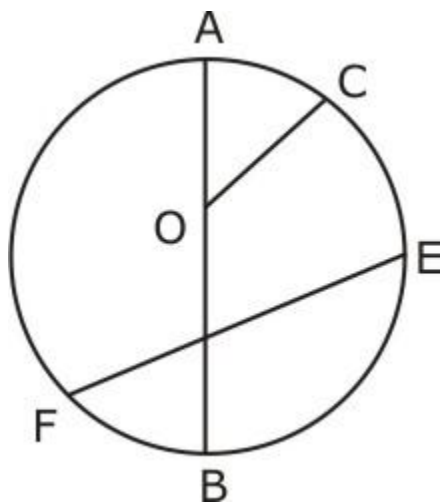
Marks (2)

Q 14 Draw a line segment of length 3.9 cm using a ruler.

Marks (2)

Q 15 Write the angles of 'set-squares'.

Marks (2)

Q 16 Refer to the figure given below and answer the following :

(a) Name any diameter of the circle.

(b) Name any radius of the circle.

(c) Name the chord of the circle except diameter.

(d) What is the centre of the given circle?

Marks (2)

Q 17 Draw two concentric circles with centre O. Mark a point

(a) P which lies in the exterior of both the circles,

(b) Q which lies in the exterior of the inner circle and interior of the outer circle,

(c)   R which lies in the interior of both the circles.

Marks (2)

Q 18 Draw a circle with diameter 8.8 cm.

Marks (2)

Q 19 Construct $\overline{\mathbf{AB}}$ of length 7.9 cm. From this, cut off $\overline{\mathbf{AC}}$ of length 3.6 cm. Measure $\overline{\mathbf{BC}}$.

Marks (3)

Q 20 Draw any line segment $\overline{\mathbf{CD}}$. Without measuring $\overline{\mathbf{CD}}$, construct a copy of $\overline{\mathbf{CD}}$.

Marks (3)

Q 21 Draw a line segment of length 6.2 cm and construct its perpendicular bisector.

Marks (3)

Q 22 Draw a circle with $\overline{\mathbf{AB}}$ of length 5.2 cm as diameter.

Marks (3)

Q 23 Draw an angle of measure 63° with the help of a protactor. Find its angular bisector.

Marks (3)

Q 24 Construct with ruler and compasses an angle of measure 60°.

Marks (3)

Q 25 Construct an angle of 15° with help of a compass and a ruler. Write the steps of construction.

Marks (4)

Q 26 Draw a line segment measuring 5 cm and its perpendicular bisector. Write the steps of construction.

Marks (4)

Q 27 Draw a line segment measuring 7 cm and its perpendicular bisector. Write the steps of construction.

Marks (4)

Q 28 Construct an angle of 120° with help of a compass and a ruler. Write the steps of construction.

Marks (4)

Q 29 Construct an angle of 105° with help of a compass and a ruler. Write the steps of construction.

Marks (4)

Q 30 Draw any line segment $\overline{AB}$. Take any point P not on it. Through P, draw a perpendicular to $\overline{AB}$.

Marks (5)

Q 31 Draw a line segment of length 12.8 cm. Using compasses, divide it into four equal parts.

Marks (5)

Q 32 Construct an angle of measure 90° using ruler and compasses.

Marks (5)

Most Important Questions

Q 1 Name all the mathematical instruments to construct shapes.

Q 2 What is the use of compasses.

Q 3 What is the protractor.

Q 4 Draw a circle of radius 4 cm with centre O.

Q 5 Draw a circle of radius 5 cm.

Q 6 Draw two circles with the same centre and different radii.

Q 7 Draw a line segment AB of length 6.5 cm using a ruler and compasses.

Q 8 Draw a line segment $\overline{AB}$ of length 8 cm. From this, cut off $\overline{AC}$ of length 3.6 cm. Measure $\overline{BC}$.

Q 9 A radius of a circle is a line segment with one end at _____ and the other end _____ .

Q 10 Draw any line segment $\overline{CD}$. Without measuring $\overline{CD}$, construct a copy of $\overline{CD}$.

Q 11 The diameter of a circle is 18 cm. What is its radius?

Q 12 What is perpendicular.

Q 13 Draw any line segment $\overline{AB}$. Mark any point P on it. Through P, draw a perpendicular to $\overline{AB}$ with the help of ruler and compasses.

Q 14 Draw any line segment $\overline{AB}$. Take any point P outside it. Through P, draw a perpendicular to $\overline{AB}$.

Q 15 Construct an angle of 120° using ruler and compasses.

Q 16 Using a protractor draw are angle of measure 70°. With this angle as given, construct an angle measure of 35°.

Q 17 Draw an angle of measure 50°. Make a copy of it using ruler and compasses.

Q 18 Draw a 30° angle. Bisect it. Measure each of the angles so obtained.

Q 19 Draw a line segment of length 10.5 cm and construct its perpendicular bisector.

Q 20 Draw an angle of measure 64 with the help of a protractor. Find its angular bisector.