

National Curriculum for  
**MATHEMATICS**  
Grades I – XII  
**2006**



GOVERNMENT OF PAKISTAN  
MINISTRY OF EDUCATION  
ISLAMABAD

## CURRICULUM FOR MATHEMATICS – GRADE V

Contents and Scope	Learning Outcomes /Skills
	All students will be able to

### UNIT 1      NUMBERS AND ARITHMETIC OPERATIONS

1.1 Numbers up to one billion	i)      Read numbers up to 1 000 000 000 (one billion) in numerals and in words.  ii)     Write numbers up to 1 000 000 000 (one billion) in numerals and in words.
1.2 Addition and Subtraction	i)      Add numbers of complexity and of arbitrary size. ii)     Subtract numbers of complexity and of arbitrary size.
1.3 Multiplication and Division	i)      Multiply numbers, up to 6 digits, by 10, 100 and 1000. ii)     Multiply numbers, up to 6 digits, by a 2-digit and 3-digit number. iii)    Divide numbers, up to 6 digits, by a 2-digit and 3-digit number.
	Solve real life problems involving mixed operations of addition, subtraction, multiplication and division.
1.4 Order of Operations: BODMAS Rule	i)      Recognize BODMAS rule, using only parentheses ( ). ii)     Carryout combined operations using BODMAS rule. iii)    Verify distributive laws.

### UNIT 2      HCF AND LCM

2.1 HCF	i)      Find HCF of three numbers, up to 2 digits, using <ul style="list-style-type: none"> <li>• prime factorization method,</li> <li>• division method.</li> </ul>
2.2 LCM	i)      Find LCM of four numbers, up to 2 digits, using

	<ul style="list-style-type: none"> <li>• prime factorization method,</li> <li>• division method.</li> </ul>
	Solve real life problems involving HCF and LCM.

### UNIT 3 FRACTIONS

3.1 Addition and Subtraction	Add and subtract two and more fractions with different denominators.
3.2 Multiplication	<ul style="list-style-type: none"> <li>i) Multiply a fraction by a number and demonstrate with the help of diagrams.</li> <li>ii) Multiply a fraction by another fraction.</li> <li>iii) Multiply two or more fractions involving brackets (proper, improper and mixed fractions).</li> <li>iv) Verify distributive laws.</li> <li>v) Solve real life problems involving multiplication of fractions.</li> </ul>
3.3 Division	<ul style="list-style-type: none"> <li>i) Divide a fraction by a number.</li> <li>ii) Divide a fraction by another fraction (proper, improper and mixed).</li> <li>iii) Solve real life problems involving division of fractions.</li> </ul>
3.4 Use of BODMAS Rule	Simplify expressions involving fractions using BODMAS rule.

### UNIT 4 DECIMALS AND PERCENTAGES

4.1 Decimals	<ul style="list-style-type: none"> <li>i) Add and subtract decimals.</li> <li>ii) Recognize like and unlike decimals.</li> <li>iii) Multiply decimals by 10, 100 and 1000.</li> <li>iv) Divide decimals by 10, 100 and 1000.</li> </ul>
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	<p>v) Multiply a decimal with a whole number.</p> <p>vi) Divide a decimal with a whole number.</p> <p>vii) Multiply a decimal by tenths and hundredths only.</p> <p>viii) Multiply a decimal by a decimal (with three decimal places).</p> <p>ix) Multiply a decimal by a decimal (in the same way as for whole numbers and then put in the decimal point accordingly).</p> <p>x) Divide a decimal by a decimal (by converting decimals to fractions).</p> <p>xi) Divide a decimal by a decimal using direct division by moving decimal positions.</p> <p>xii) Use division to change fractions into decimals.</p> <p>xiii) Simplify decimal expressions involving brackets (applying one or more basic operations).</p> <p>xiv) Round off decimals up to specified number of decimal places.</p> <p>xv) Convert fractions to decimals and vice versa.</p> <p>xvi) Solve real life problems involving decimals.</p>
4.2 Percentages	<p>i) Recognize percentage as a special kind of fraction.</p> <p>ii) Convert percentage to fraction and to decimal and vice versa.</p> <p>iii) Solve real life problems involving percentages.</p>

## UNIT 5 DISTANCE, TIME AND TEMPERATURE

5.1 Distance	<p>i) Convert measures given in</p> <ul style="list-style-type: none"> <li>• kilometers to meters,</li> <li>• meters to centimeters,</li> <li>• centimeters to millimeters,</li> </ul> <p>and vice versa.</p>
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	<ul style="list-style-type: none"> <li>ii) Add and subtract measures of distance.</li> <li>iii) Solve real life problems involving conversion, addition and subtraction of units of distance.</li> </ul>
5.2 Time	<ul style="list-style-type: none"> <li>i) Convert hours to minutes, minutes to seconds and vice versa.</li> <li>ii) Add and subtract units of time with carrying /borrowing.</li> <li>iii) Convert years to months, months to days, weeks to days and vice versa.</li> <li>iv) Solve real life problems involving conversion, addition and subtraction of units of time.</li> </ul>
5.3 Temperature	<ul style="list-style-type: none"> <li>i) Recognize units of temperature in Fahrenheit and Celsius.</li> <li>ii) Solve real life problems involving conversion, addition and subtraction of units of temperature.</li> </ul>

## UNIT 6 UNITARY METHOD

6.1 Unitary Method	<ul style="list-style-type: none"> <li>i) Describe the concept of unitary method.</li> <li>ii) Calculate the value of many objects of the same kind when the value of one of these objects is given.</li> <li>iii) Calculate the value of a number of same type of objects when the value of another of the same type is given (unitary method).</li> </ul>
6.2 Direct and Inverse Proportion	<ul style="list-style-type: none"> <li>i) Define ratio of two numbers.</li> <li>ii) Define and identify direct and inverse proportion.</li> <li>iii) Solve real life problems involving direct and inverse proportion (by unitary method).</li> </ul>

## UNIT 7 GEOMETRY

<p>7.1 Angles</p>	<p>i) Recall an angle and recognize acute, right, obtuse, straight and reflex angle.</p> <p>ii) Use protractor to construct</p> <ul style="list-style-type: none"> <li>• a right angle,</li> <li>• a straight angle,</li> <li>• reflex angles of different measure.</li> </ul> <p>iii) Describe adjacent, complementary and supplementary angles.</p>
<p>7.2 Triangles</p>	<p>i) Define a triangle.</p> <p>ii) Define triangles with respect to their sides (i.e., equilateral, isosceles and scalene triangle).</p> <p>iii) Define triangles with respect to their angles (i.e., acute angled, obtuse angled and right angled triangle).</p> <p>iv) Use compasses and straightedge/ruler to construct equilateral, isosceles and scalene triangles when three sides are given.</p> <p>v) Use protractor and straightedge/ruler to construct equilateral, isosceles and scalene triangles when two angles and included side are given. Measure the lengths of the remaining two sides and one angle of the triangle.</p> <p>vi) Define hypotenuse of a right angled triangle.</p> <p>vii) Use protractor and straightedge/ruler to construct a triangle when two angles and included side are given.</p> <p>viii) Use protractor and straightedge/ruler to construct acute angled, obtuse angled and right angled triangles when one angle and adjacent sides are given.</p>

7.3 Quadrilaterals	<ul style="list-style-type: none"> <li>i) Recognize the kinds of quadrilateral (square, rectangle, parallelogram, rhombus, trapezium and kite).</li> <li>ii) Use protractor, set squares and straightedge/ruler to construct square and rectangle with given side(s).</li> </ul>
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## UNIT 8 PERIMETER AND AREA

8.1 Perimeter and Area	<ul style="list-style-type: none"> <li>i) Recognize region of a closed figure.</li> <li>ii) Differentiate between perimeter and area of a region.</li> <li>iii) Identify the units for measurement of perimeter and area.</li> <li>iv) Write the formulas for perimeter and area of a square and rectangle.</li> <li>v) Apply formulas to find perimeter and area of a square and rectangular region.</li> <li>vi) Solve appropriate problems of perimeter and area.</li> </ul>
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## UNIT 9 INFORMATION HANDLING

9.1 Average	<ul style="list-style-type: none"> <li>i) Define an average (arithmetic mean).</li> <li>ii) Find an average of given numbers.</li> <li>iii) Solve real life problems involving average.</li> </ul>
9.2 Block, Column and Bar Graphs	<ul style="list-style-type: none"> <li>i) Draw block graphs or column graphs.</li> <li>ii) Read a simple bar graph given in horizontal and vertical form.</li> <li>iii) Interpret a simple bar graph given in horizontal and vertical form.</li> <li>iv) Define and organize a given data.</li> </ul>