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## Mathematics, Class-VIII

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# PREFACE

Year after year CBSE has been introducing changes in the curriculum of various classes. We, at Oswaal Books, closely follow every change made by the Board and endeavor to equip every student with the latest study material to prepare for the Term Examinations.

The latest offering from us are these Worksheets. These aim at providing comprehensive practice material for every chapter to ensure that every concept is revised in totality. These are prepared by experienced teachers who have translated their expertise into making these worksheets a wholesome study package. Every worksheet contains a mix of questions, for which the maximum marks and time are mentioned to create an exam oriented study material.

Our worksheets strictly follow the NCERT curriculum and include the following:

- Chapter-wise pullout worksheets with space for writing answers
- Synopsis of the important points from every chapter
- Wide variety of questions based on Summative & Formative Assessment
- Sample Question papers for Term 1 & Term 2

We feel happy to add these to our existing portfolio of Question Banks and Sample Question Papers. We hope that with our **Worksheets**, every student will discover a more interactive way of studying and thereby excelling in his examinations. We welcome any suggestions that come our way for improvisation.

We wish you good luck for the forthcoming academic year!!

*–Editor*

# Mathematics Syllabus Class-VIII

**Number System** **(50 hrs)**

***(i) Rational Numbers:***

- Properties of rational numbers. (including identities).
- Using general form of expression to describe properties
- Consolidation of operations on rational numbers.
- Representation of rational numbers on the number line
- Between any two rational numbers there lies another rational number (Making children see that if we take two rational numbers then unlike for whole numbers, in this case you can keep finding more and more numbers that lie between them.)
- Word problem (higher logic, two operations, including ideas like area)

***(ii) Powers***

- Integers as exponents.
- Laws of exponents with integral powers

***(iii) Squares, Square roots, Cubes, Cube roots.***

- Square and Square roots
- Square roots using factor method and division method for numbers containing (a) no more than total 4 digits and (b) no more than 2 decimal places
- Cubes and cubes roots (only factor method for numbers containing at most 3 digits)
- Estimating square roots and cube roots. Learning the process of moving nearer to the required number.

***(iv) Playing with numbers***

- Writing and understanding a 2 and 3 digit number in generalized form (100a + 10b + c , where a, b, c can be only digit 0-9) and engaging with various puzzles concerning this. (Like finding the missing numerals represented by alphabets in sums involving any of the four operations.) Children to solve and create problems and puzzles.
- Number puzzles and games
- Deducing the divisibility test rules of 2, 3, 5, 9, 10 for a two or three-digit number expressed in the general form.

**Algebra** **(20 hrs)**

***(i) Algebraic Expressions***

- Multiplication and division of algebraic exp.(Coefficient should be integers)
- Some common errors (e.g. $2 + x \neq 2x$, $7x + y \neq 7xy$ )
- Identities $(a \pm b)^2 = a^2 \pm 2ab + b^2$, $a^2 - b^2 = (a - b)(a + b)$
- Factorisation (simple cases only) as examples the following types
- $a(x + y)$, $(x \pm y)^2$, $a^2 - b^2$, $(x + a).(x + b)$
- Solving linear equations in one variable in contextual problems involving multiplication and division (word problems) (avoid complex coefficient in the equations)

***Ratio and Proportion*** ***(25 hrs)***

- Slightly advanced problems involving applications on percentages, profit & loss, overhead expenses, Discount, tax.
- Difference between simple and compound interest (compounded yearly up to 3 years or half-yearly up to 3 steps only), Arriving at the formula for compound interest through patterns and using it for simple problems. Direct variation – Simple and direct word problems Inverse variation – Simple and direct word problems.

- Time & work problems– Simple and direct word problems

**Geometry** **(40 hrs)**

***(i) Understanding shapes:***

- Properties of quadrilaterals – Sum of angles of a quadrilateral is equal to 3600 (By verification)
- Properties of parallelogram (By verification)

(i) Opposite sides of a parallelogram are equal,

(ii) Opposite angles of a parallelogram are equal,

(iii) Diagonals of a parallelogram bisect each other. [Why (iv), (v) and (vi) follow from (ii)]

(iv) Diagonals of a rectangle are equal and bisect each other.

(v) Diagonals of a rhombus bisect each other at right angles.

(vi) Diagonals of a square are equal and bisect each other at right angles.

***(ii) Representing 3-D in 2-D***

- Identify and Match pictures with objects [more complicated e.g. nested, joint 2-D and 3-D shapes (not more than 2)].
- Drawing 2-D representation of 3-D objects (Continued and extended)
- Counting vertices, edges & faces & verifying Euler's relation for 3-D figures with flat faces (cubes, cuboids, tetrahedrons, prisms and pyramids)

***(iii) Construction:***

***Construction of Quadrilaterals:***

- Given four sides and one diagonal
- Three sides and two diagonals. Three sides and two included angles. Two adjacent sides and three angles.

**Mensuration** **(15 hrs)**

(i) Area of a trapezium and a polygon.

(ii) Concept of volume, measurement of volume using a basic unit, volume of a cube, cuboid and cylinder

(iii) Volume and capacity (measurement of capacity)

(iv) Surface area of a cube, cuboid, cylinder.

**Data handling** **(15 hrs)**

(i) Reading bar-graphs, ungrouped data, arranging it into groups, representation of grouped data through bar-graphs, constructing and interpreting bar-graphs.

(ii) Simple Pie charts with reasonable data numbers

(iii) Consolidating and generalising the notion of chance in events like tossing coins, dice etc. Relating it to chance in life events. Visual representation of frequency outcomes of repeated throws of the same kind of coins or dice. Throwing a large number of identical dice/coins together and aggregating the result of the throws to get large number of individual events. Observing the aggregating numbers over a large number of repeated events. Comparing with the data for a coin. Observing strings of throws, notion of randomness

**Introduction to graphs** **(15 hrs)**

***PRELIMINARIES:***

(i) Axes (Same units), Cartesian Plane

(ii) Plotting points for different kind of situations (perimeter vs length for squares, area as a function of side of a square, plotting of multiples of different numbers, simple interest vs number of years etc.)

(iii) Reading off from the graphs Reading of linear graphs Reading of distance vs time graph

# 1 RATIONAL NUMBERS

## WORKSHEET-1

| Name ..... | Class..... | Roll No..... | Time 45 mts. | Max. Marks 14 | Marks Obtained |
|---|---|---|---|---|---|

**1.** What should be added to $-\frac{3}{4}$ to get '– 1' ? 1

(A) $\frac{1}{4}$ (B) $-\frac{1}{4}$

(C) 1 (D) $-\frac{3}{4}$ ☐

**2.** Is 1 the multiplicative identity for integer's and whole numbers ? 1

**Ans.** .....

**3.** Write the additive inverse of $-\frac{5}{9}$. 1

**Ans.** .....

**4.** Find using distributivity :

$$\left[\frac{7}{5}\times\left(\frac{-3}{12}\right)\right]+\left[\frac{7}{5}\times\frac{5}{12}\right]$$ 2

**Ans.** .....

.....

.....

.....

**5.** Multiply $\frac{6}{13}$ by the reciprocal of $-\frac{7}{16}$. 2

**Ans.** .....

.....

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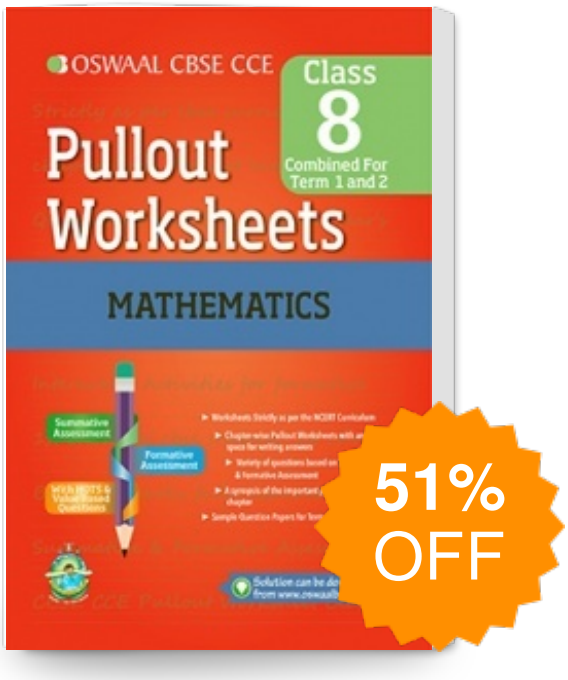
**SUMMATIVE-ASSESSMENT**

# Oswaal CBSE CCE Pullout Worksheets Mathematics for Class 8 (Term 1 And 2)

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