

DexNotePro: Middle School Maths (Grades 6–8)

Welcome to Middle School Maths

Welcome to **DexNotePro's Middle School Maths Course**, where numbers come alive through patterns, logic, and discovery.

This course will help you build strong foundations in arithmetic, geometry, algebra, and data handling — the skills you'll use for a lifetime of problem-solving.

1. The Power of Numbers

Mathematics starts with understanding how numbers work together.

Topics:

- Natural numbers, integers, and fractions
- Factors and multiples
- Prime and composite numbers
- Operations and BODMAS

Quick Tip:

Remember: *Mathematics is a language*. Each symbol tells a story about relationships.

Try This:

Write the first 20 natural numbers and circle all the primes.
How many are there between 1 and 50?

2. Fractions, Decimals, and Percentages

These three concepts are just different ways to represent the same quantity.

Conversions:

- $\frac{1}{2} = 0.5 = 50\%$
- $\frac{3}{4} = 0.75 = 75\%$

Common Uses:

- Fractions \rightarrow dividing things equally
- Decimals \rightarrow money, measurements
- Percentages \rightarrow statistics and comparisons

Try This:

Convert 0.36 into a fraction and percentage.

Can you find a real-life example of where you've used each?

3. Ratio and Proportion

Ratios compare quantities, and proportions show that two ratios are equal.

Example:

If 2 pencils cost ₹10, how much do 5 pencils cost?

$$\rightarrow 2:10 = 5:x \rightarrow x = 25$$

Try This:

You're mixing colors: 2 parts blue to 3 parts yellow.

If you use 6 parts blue, how many parts yellow do you need?

4. Algebra: The Language of Symbols

Algebra helps you express relationships with letters and variables.

Example:

If each chocolate costs ₹x, 5 chocolates cost 5x.

$$\text{If } 5x = 25 \rightarrow x = 5$$

Try This:

Solve:

1. $3y + 4 = 10$
 2. $2a - 5 = 11$
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5. Geometry and Shapes

Geometry studies size, shape, and position.

Core Concepts:

- **Angles:** acute, right, obtuse, straight
- **Triangles:** scalene, isosceles, equilateral
- **Quadrilaterals:** square, rectangle, parallelogram
- **Circles:** radius, diameter, circumference

Formula Reminder:

Area of a circle = πr^2

Perimeter of a rectangle = $2(l + b)$

Try This:

Draw a triangle where all sides are different. Measure each angle and verify that they add up to 180° .

6. Measurement and Units

We measure everything — length, mass, time, and capacity.

Common Units:

- Length: mm, cm, m, km
- Weight: g, kg
- Capacity: ml, L

Conversions:

1 km = 1000 m, 1 L = 1000 ml

Try This:

Convert 2.5 km into meters.

Estimate how many liters of water you drink daily.

7. Data Handling and Statistics

Data helps us make informed decisions.

Concepts:

- **Tally marks and frequency tables**
- **Bar graphs and pictographs**
- **Mean, median, mode**

Try This:

Collect data on your classmates' favorite fruit.

Create a bar graph and find which fruit is most popular.

8. Perimeter, Area, and Volume

Understanding space is key to practical math.

Formulas:

- Rectangle: $\text{Area} = l \times b$
- Triangle: $\text{Area} = \frac{1}{2} \times \text{base} \times \text{height}$
- Cuboid Volume = $l \times b \times h$
- Cube Volume = a^3

Try This:

Find the volume of a box measuring $5 \text{ cm} \times 4 \text{ cm} \times 3 \text{ cm}$.

9. Understanding Symmetry and Patterns

Symmetry appears everywhere — from butterfly wings to architecture.

Key Types:

- Line symmetry
- Rotational symmetry

Try This:

Draw shapes that have 1, 2, or 4 lines of symmetry.
Which everyday objects show these patterns?

10. Logical Reasoning and Puzzles

Math isn't just numbers — it's reasoning.

Example Puzzle:

If $A = 1$, $B = 2$, ... $Z = 26$, what does MATH add up to?

Try This:

Solve:

1. I'm a number. If you multiply me by 3 and subtract 4, you get 11. What am I?
 2. Continue the pattern: 2, 4, 8, 16, ____, ____
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11. Real-World Applications

Math powers technology, finance, design, and everyday choices.

Examples:

- Percentages in discounts and interest
- Geometry in construction and art

- Data in sports and business

Try This:

Track your daily expenses for a week and find your average spend.

✓ **Congratulations!**

You've completed **DexNotePro: Middle School Maths (Grades 6–8)** 🎉

You're now ready to level up to **High School Maths**.

Head to ishaan7india.github.io/DexNotePro and **mark this course as complete** to unlock the next module.