

Subject Content

- Number
- Algebra
- Ratio, Proportion, Rates of Change
- Geometry and Measures
- Probability and Statistics

Grades that will be examined:

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

You will find some formulas and information in this insert.

It will be very helpful to learn it all, off-by-heart for your exam.

Area of a circle =  $\pi r^2$   
 Circumference of a circle =  $2\pi r$



Grade 1

Place Value . . . . . 1  
 Ordering Integers . . . . . 2  
 Ordering Decimals . . . . . 3  
 Reading Scales . . . . . 4  
 Simple Mathematical Notation . . . . . 5  
 Interpreting Real-Life Tables . . . . . 6  
 Introduction to Algebraic Conventions . . . . . 7  
 Coordinates . . . . . 8  
 Simple Geometric Definitions . . . . . 9  
 Polygons . . . . . 10  
 Symmetries . . . . . 11  
 Tessellations and Congruent Shapes . . . . . 12  
 Names of Angles . . . . . 13  
 The Probability Scale . . . . . 14  
 Tally Charts and Bar Charts . . . . . 15  
 Pictograms . . . . . 16

Addition/Subtraction

$(+ +)$  becomes + eg.  $5 - (-3) = 5 + 3$   
 $(- -)$  becomes +  
 $(+ -)$  becomes - eg.  $5 + (-3) = 5 - 3$   
 $(- +)$  becomes -

Multiplication/Division

$(+) \times (+)$  becomes + eg.  $(-5) \times (-3) = 15$   
 $(-) \times (-)$  becomes +  
 $(+) \times (-)$  becomes - eg.  $(-5) \times 3 = -15$   
 $(-) \times (+)$  becomes -

Grade 3

Multiplying Decimals . . . . . 66  
 Dividing Decimals . . . . . 67  
 Four Rules of Negatives . . . . . 68  
 Listing Strategies . . . . . 69  
 Comparing Fractions . . . . . 70  
 Adding and Subtracting Fractions . . . . . 71  
 Finding a Fraction of an Amount . . . . . 72  
 Multiplying Fractions . . . . . 73  
 Dividing Fractions . . . . . 74  
 BODMAS/BIDMAS . . . . . 75  
 Reciprocals . . . . . 76  
 Calculator Questions . . . . . 77  
 Product of Primes . . . . . 78  
 Highest Common Factor (HCF) . . . . . 79  
 Lowest Common Multiple (LCM) . . . . . 80  
 Squares, Cubes and Roots . . . . . 81  
 Working with Indices . . . . . 82  
 Standard Form . . . . . 83  
 Decimals and Fractions . . . . . 84  
 Fractions, Percentages, Decimals . . . . . 85  
 Percentage of an Amount (Calc.) . . . . . 86  
 Percentage of an Amount (Non-Calc.) . . . . . 87  
 Change to a Percentage (Calc.) . . . . . 88  
 Change to a Percentage (Non-Calc.) . . . . . 89  
 Rounding to Significant Figures . . . . . 90  
 Estimating Answers . . . . . 91  
 Using Place Value . . . . . 92  
 Expanding Brackets . . . . . 93  
 Simple Factorisation . . . . . 94  
 Substitution . . . . . 95  
 Straight Line Graphs . . . . . 96  
 The Gradient of a Line . . . . . 97  
 Drawing Quadratic Graphs . . . . . 98  
 Sketching Functions . . . . . 99  
 Solving Equations Using Flowcharts . . . . . 100  
 Subject of a Formula Using Flowcharts . . . . . 101  
 Generate a Sequence from  $n$ th Term . . . . . 102  
 Finding the  $n$ th Term . . . . . 103  
 Special Sequences . . . . . 104  
 Exchanging Money . . . . . 105  
 Sharing Using Ratio . . . . . 106  
 Ratios, Fractions and Graphs . . . . . 107  
 Increase/Decrease by a Percentage . . . . . 108  
 Percentage Change . . . . . 109  
 Reverse Percentage Problems . . . . . 110  
 Simple Interest . . . . . 111  
 Metric Conversions . . . . . 112  
 Problems on Coordinate Axes . . . . . 113  
 Surface Area of a Prism . . . . . 114  
 Volume of a Cuboid . . . . . 115  
 Circle Definitions . . . . . 116  
 Area of a Circle . . . . . 117  
 Circumference of a Circle . . . . . 118  
 Volume of a Prism . . . . . 119  
 Angles and Parallel Lines . . . . . 120  
 Angles in a Triangle . . . . . 121  
 Properties of Special Triangles . . . . . 122  
 Angle Sum of Polygons . . . . . 123  
 Bearings . . . . . 124  
 Experimental Probabilities . . . . . 125  
 Possibility Spaces . . . . . 126  
 Venn Diagrams . . . . . 127  
 Pie Charts . . . . . 128  
 Scatter Diagrams . . . . . 129  
 Averages From a Table . . . . . 130

THIS MATHSWATCH DISC COVERS EVERY TOPIC ON THE 2015 SYLLABUS

Grades that will be examined: Grades that can be obtained:

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

The Maths Grade 1 to 9 syllabus is split into 5 areas and 240 videos.

- Number - 65 videos
- Algebra - 64 videos
- Ratio and Proportion - 17 videos
- Geometry and Measures - 66 videos
- Probability and Statistics - 28 videos

How long will it take to revise?

The timings of our videos are:

- 0 to 5 mins . . . . . 103 videos
- 5 to 10 mins . . . . . 110 videos
- 10 to 15 mins . . . . . 22 videos
- 15 to 20 mins . . . . . 4 videos
- 20 to 25 mins . . . . . 1 video

Grade 2

Adding Integers and Decimals . . . . . 17  
 Subtracting Integers and Decimals . . . . . 18  
 Multiplying Integers . . . . . 19  
 Dividing Integers . . . . . 20  
 Inverse Operations . . . . . 21  
 Money Questions . . . . . 22  
 Negatives in Real Life . . . . . 23  
 Introduction to Fractions . . . . . 24  
 Equivalent Fractions . . . . . 25  
 Simplifying Fractions . . . . . 26  
 Half-Way Values . . . . . 27  
 Factors, Multiples and Primes . . . . . 28  
 Introduction to Powers/Indices . . . . . 29  
 Multiply and Divide by Powers of 10 . . . . . 30  
 Rounding to the Nearest 10, 100 etc . . . . . 31  
 Rounding to Decimal Places . . . . . 32  
 Simplifying - Addition and Subtraction . . . . . 33  
 Simplifying - Multiplication . . . . . 34  
 Simplifying - Division . . . . . 35  
 Function Machines . . . . . 36  
 Generating a Sequence - Term to Term . . . . . 37  
 Introduction to Ratio . . . . . 38  
 Using Ratio for Recipe Questions . . . . . 39  
 Introduction to Percentages . . . . . 40  
 Value for Money . . . . . 41  
 Introduction to Proportion . . . . . 42  
 Properties of Solids . . . . . 43  
 Nets . . . . . 44  
 Angles on a Line and at a Point . . . . . 45  
 Measuring and Drawing Angles . . . . . 46  
 Drawing a Triangle Using a Protractor . . . . . 47  
 Reflections . . . . . 48  
 Rotations . . . . . 49  
 Translations . . . . . 50  
 Plans and Elevations . . . . . 51  
 Perimeters . . . . . 52  
 Area of a Rectangle . . . . . 53  
 Area of a Triangle . . . . . 54  
 Area of a Parallelogram . . . . . 55  
 Area of a Trapezium . . . . . 56  
 Frequency Trees . . . . . 57  
 Listing Outcomes . . . . . 58  
 Calculating Probabilities . . . . . 59  
 Mutually Exclusive Events . . . . . 60  
 Two-Way Tables . . . . . 61  
 Averages and the Range . . . . . 62  
 Data - Discrete and Continuous . . . . . 63  
 Vertical Line Charts . . . . . 64  
 Frequency Tables and Diagrams . . . . . 65

Area of a triangle =  $\frac{b \times h}{2}$

Area of trapezium =  $\frac{1}{2}(a + b)h$

Prime Numbers

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, . . .  
 Each prime number has exactly two factors.

Grade 4

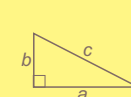
Index Notation . . . . . 131  
 Introduction to Bounds . . . . . 132  
 Midpoint of a Line on a Graph . . . . . 133  
 Expanding and Simplifying Brackets . . . . . 134  
 Solving Equations . . . . . 135  
 Rearranging Simple Formulae . . . . . 136  
 Forming Formulae and Equations . . . . . 137  
 Inequalities on a Number Line . . . . . 138  
 Solving Linear Inequalities . . . . . 139  
 Simultaneous Equations Graphically . . . . . 140  
 Fibonacci Sequences . . . . . 141  
 Compound Units . . . . . 142  
 Distance-Time Graphs . . . . . 143  
 Similar Shapes . . . . . 144  
 Bisecting an Angle . . . . . 145  
 Constructing Perpendiculars . . . . . 146  
 Drawing a Triangle Using Compasses . . . . . 147  
 Enlargements . . . . . 148  
 Tangents, Arcs, Sectors and Segments . . . . . 149  
 Pythagoras' Theorem . . . . . 150  
 Simple Tree Diagrams . . . . . 151  
 Sampling Populations . . . . . 152  
 Time Series . . . . . 153

The Laws of Indices

$x^a \times x^b = x^{a+b}$   
 $x^a \div x^b = x^{a-b}$   
 $(x^a)^b = x^{ab}$   
 $x^{-a} = \frac{1}{x^a}$

Pythagoras

$a^2 + b^2 = c^2$



Grade 5

Negative Indices . . . . . 154  
 Error Intervals . . . . . 155  
 Mathematical Reasoning . . . . . 156  
 Factorising and Solving Quadratics . . . . . 157  
 The Difference of Two Squares . . . . . 158  
 Finding the Equation of a Straight Line . . . . . 159  
 Roots and Turning Points of Quadratics . . . . . 160  
 Cubic and Reciprocal Graphs . . . . . 161  
 Simultaneous Equations Algebraically . . . . . 162  
 Geometric Progressions . . . . . 163  
 Compound Interest and Depreciation . . . . . 164  
 Loci . . . . . 165  
 Congruent Triangles . . . . . 166  
 Sectors of a Circle . . . . . 167  
 Trigonometry . . . . . 168  
 Spheres . . . . . 169  
 Pyramids . . . . . 170  
 Cones . . . . . 171  
 Frustums . . . . . 172  
 Exact Trigonometric Values . . . . . 173  
 Introduction to Vectors . . . . . 174  
 Harder Tree Diagrams . . . . . 175  
 Stratified Sampling . . . . . 176

Trigonometry



Grade 6

Recurring Decimals to Fractions . . . . . 177  
 Product of Three Binomials . . . . . 178  
 Iteration - Trial and Improvement . . . . . 179  
 Iterative Processes . . . . . 180  
 Enlargement - Negative Scale Factor . . . . . 181  
 Combinations of Transformations . . . . . 182  
 Circle Theorems . . . . . 183  
 Proof of Circle Theorems . . . . . 184  
 Probability Using Venn Diagrams . . . . . 185  
 Cumulative Frequency . . . . . 186  
 Boxplots . . . . . 187

Grade 7

Fractional Indices . . . . . 188  
 Recurring Decimals - Proof . . . . . 189  
 Rearranging Difficult Formulae . . . . . 190  
 Solving Quadratics with the Formula . . . . . 191  
 Factorising Hard Quadratics . . . . . 192  
 Algebraic Proof . . . . . 193  
 Exponential Functions . . . . . 194  
 Trigonometric Graphs . . . . . 195  
 Transformation of Functions . . . . . 196  
 Equation of a Circle . . . . . 197  
 Regions . . . . . 198  
 Direct and Inverse Proportion . . . . . 199  
 Similarity - Area and Volume . . . . . 200  
 The Sine Rule . . . . . 201  
 The Cosine Rule . . . . . 202  
 Area of a Triangle Using Sine . . . . . 203  
 And and Or Probability Questions . . . . . 204  
 Histograms . . . . . 205

Grades 8 and 9

Upper and Lower Bounds . . . . . 206  
 Surds . . . . . 207  
 Perpendicular Lines . . . . . 208  
 Completing the Square . . . . . 209  
 Algebraic Fractions . . . . . 210  
 Simultaneous Eqns with a Quadratic . . . . . 211  
 Solving Quadratic Inequalities . . . . . 212  
 Finding the  $n$ th Term of a Quadratic . . . . . 213  
 Inverse Functions . . . . . 214  
 Composite Functions . . . . . 215  
 Velocity-Time Graphs . . . . . 216  
 Pythagoras in 3D . . . . . 217  
 Trigonometry in 3D . . . . . 218  
 Vectors . . . . . 219

<u>Fractional Indices</u> $x^{\frac{a}{b}} = (\sqrt[b]{x})^a$	<u>Surds</u> $\sqrt{a} \times \sqrt{a} = a$ $\sqrt{a \times b} = \sqrt{a} \times \sqrt{b}$
<u>Quadratic Formula</u> $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$
<u>Sine Rule</u> $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$	<u>Histograms</u> frequency density = $\frac{\text{frequency}}{\text{class width}}$
<u>Cosine Rule</u> $a^2 = b^2 + c^2 - 2bc \cos A$	