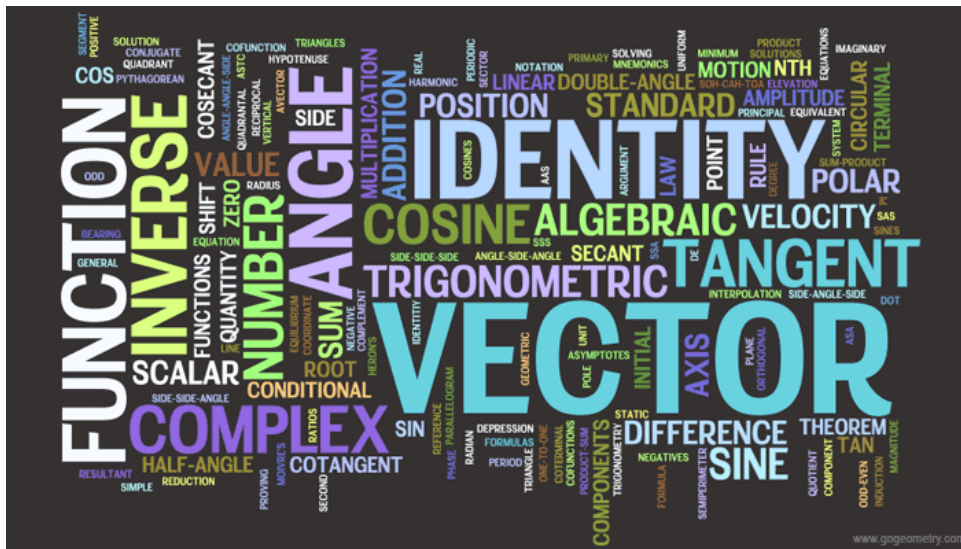




International School Khuzam (ISK)

MATHEMATICS

Grade 6 - 8 Curriculum Book



Intent

- Mathematics is important in everyday life and, with this in mind; the purpose of Mathematics at the RAK Academy is to develop an ability to solve problems; to reason; to think logically and to work systematically and accurately.
- All students are challenged and encouraged to excel in Mathematics. New mathematical concepts are introduced using a 'Concrete, Pictorial and Abstract' approach; enabling all students to experience hands-on learning when discovering new mathematical topics and allow them to have clear models and images to aid their understanding.
- Arithmetic and basic math skills are practised daily to ensure key mathematical concepts are embedded and student can recall this information to see the links between topics in Mathematics.

Implementation

Mathematics at RAK Academy:

- Basic mathematical skills are taught daily, focusing on key mathematical skills including place value, the four operations and fractions.
- Lessons form part of a sequenced and organised scheme of learning which is carefully planned and reviewed.
- A range of reasoning resources are used to challenge all students and give them the opportunity to reason with their understanding of mathematics.
- Lessons and interventions are used to support students to ensure they are ready for their next mathematical challenge in their lesson.
- Students are taught through targeted differentiated small groups and mixed ability whole class lessons.
- Lessons use a concrete, pictorial and abstract approach to guide students through their understanding of mathematical processes.
- Revision and review consolidation lessons are used to revisit previous learning and ensure mathematical skills are embedded.
- Homework is set to develop and review students' learning.
- Where possible, links are made with other subjects across the curriculum.

Impact

As a result of our mathematical teaching at the RAK Academy:

- Students are engaged and challenged.
- Students are confident with their mathematical abilities and able to make links between topics.
- Lessons use a variety of resources to support learning and progress, with different representations of mathematical concepts.
- Learning is tracked and monitored to ensure that all students make good progress in line with their 'should achieve' targets and work towards their aspirational targets.

Grade 6

Lessons per Week
<ul style="list-style-type: none">• There are 5 lessons
Skills Developed
<ul style="list-style-type: none">• Math helps us to have analytical thinking, which develops the ability to investigate and know the truth about the world around us• Promotes logical reasoning to solve quantitative as well as qualitative problems• Helps focus on details critically and communicating ideas• Assess and solve complex problems independently and on a team• Accurately organise, analyse, and interpret data• Mathematics promotes wisdom
Literacy and Numeracy
<ul style="list-style-type: none">• Numeracy is used daily.• Use keywords in all topics with explanation.• Understanding 'mathematical language'.• Read problem solving questions and understanding the context
Assessment
<ul style="list-style-type: none">• Students will be formatively assessed in all mathematics topics throughout KS3. This will take the form of retrieval quizzes and end of unit progress checks• At the end of every year, students will complete a summative assessment on all the topics they have learnt throughout the year, as well as regular testing
Cross Curricular Links
<ul style="list-style-type: none">• Mathematical has links to all subjects especially science and other subjects and topics are included as much as possible.
Special Requirements/Equipment
<ul style="list-style-type: none">• Calculators, mathematical equipment – protractors, compasses and a ruler
Home Learning
<ul style="list-style-type: none">• Students will be given one piece of homework a week which will vary and help developing skills in exam practice and logical reasoning.
Reading List and E-books
<ul style="list-style-type: none">• Pearson ActiveLearn Mathematics
Useful Websites
<ul style="list-style-type: none">• BBC Bitesize https://www.bbc.co.uk/bitesize/subjects/zqhs34j• Corbett Mathematical https://corbettmathematical.com/• Mathematical Genie https://www.mathematicalgenie.co.uk/

Setting (if any)

- Students are taught in sets based on CAT4, GL assessments, Class tests as well as teacher input

Staff

- Nashmia Zubair (Head of Department)
- Ayman Samad (Deputy Head of Department)
- Mubariz Karim
- Balaji Chandrasekar
- Joyce Moses
- Meena Abdulkhader
- Raiso Shirdoon

Grade 7

Lessons per Week
<ul style="list-style-type: none">• There are 5 lessons
Skills Developed
<ul style="list-style-type: none">• Mathematics helps to develop students' analytical thinking and the ability to investigate key concepts related to data.• Promotes logical reasoning to solve quantitative as well as qualitative problems.• Helps focus on details critically and communicating ideas.• Assess and solve complex problems independently and on a team.• Accurately organise, analyse, and interpret data.• Mathematics promotes wisdom and clarity of many global aspects and topics.
Literacy and Numeracy
<ul style="list-style-type: none">• Numeracy is used daily.• Keywords are used in all topics with clear explanations.• Understanding 'mathematical language'.• Problem solving questions are analysed to ensure that the context is understood.
Assessment
<ul style="list-style-type: none">• Students will be formatively assessed in all mathematics topics throughout KS3. This will take the form of retrieval quizzes and end of unit progress checks• At the end of every year, students will complete a summative assessment on all the topics they have learnt throughout the year, as well as regular testing
Cross Curricular Links
<ul style="list-style-type: none">• Mathematical has links to all subjects especially science and other subjects and topics are included as much as possible. For example, in Geography and History, students use their mathematical skills to interpret key information, tables and charts.
Special Requirements/Equipment
<ul style="list-style-type: none">• Calculators, mathematical equipment – protractors, compasses and a ruler
Home Learning
<ul style="list-style-type: none">• Students will be given one piece of homework a week, which will vary and help developing skills in exam practice and logical reasoning.

Reading List and E-books

- Pearson ActiveLearn Mathematics

Useful Websites

- BBC Bitesize <https://www.bbc.co.uk/bitesize/subjects/zqhs34>
- Corbett Mathematical <https://corbettmathematical.com/>
- Mathematical Genie <https://www.mathematicalgenie.co.uk/>

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- Raiso Shirdoon

Grade 8

Lessons per Week
<ul style="list-style-type: none">• There are 5 lessons
Skills Developed
<ul style="list-style-type: none">• Mathematics helps us to have analytical thinking, which develops the ability to investigate and know the truth about the world around us.• Promotes logical reasoning to solve quantitative as well as qualitative problems.• Helps focus on details critically and communicating ideas.• Assess and solve complex problems independently and on a team.• Accurately organise, analyse, and interpret data.• Mathematics promotes wisdom and conceptual development.
Literacy and Numeracy
<ul style="list-style-type: none">• Numeracy is utilised daily.• Use keywords in all topics with explanation.• Understanding 'mathematical language'• Read problem solving questions and understanding the context
Assessment
<ul style="list-style-type: none">• Students will be formatively assessed in all mathematics topics throughout KS3. This will take the form of retrieval quizzes and end of unit progress checks• At the end of every year, students will complete a summative assessment on all the topics they have learnt throughout the year, as well as regular testing
Cross Curricular Links
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Grade 6 to 8 Curriculum Maps

Term	Grade 6 Topics	Grade 7 Topics
Term 1	<p>1.1 Mode, median and range 1.2 Displaying Data 1.3 Grouping data 1.4 Averages and comparing data 1.5 Line graphs and more bar charts</p> <p>2.1 Mental maths 2.2 Addition and Subtraction 2.3 Multiplication 2.4 Division 2.5 Money and time 2.6 Negative numbers 2.7 Factors, multiples and primes 2.8 Square numbers</p> <p>3.1 Functions 3.2 Simplify expressions 1 3.3 Simplify expressions 2 3.4 Writing expressions 3.5 Substituting into formulae 3.6 Writing formulae</p> <p>4.1 Decimals and rounding 4.2 Length, mass, capacity 4.3 Scales and measures 4.4 Working with decimals mentally 4.5 Working with decimals 4.6 Perimeter 4.7 Area 4.8 More units of measure</p>	<p>1.1 Calculations 1.2 Divisibility and division 1.3 Calculating with negatives 1.4 Power and roots 1.5 Powers, roots and brackets. 1.6 More powers, multiples and factors</p> <p>2.1 Area of a triangle 2.2 Area of a parallelogram and a trapezium 2.3 Volume of cubes and cuboids 2.4 2D representations of 3D solids 2.5 Surface area of cubes and cuboids 2.6 Measure</p> <p>3.1 Pie charts 3.2 Using tables 3.3 Stem and leaf diagrams 3.4 Comparing data 3.5 Scatter graphs 3.6 Misleading graphs</p> <p>4.1 Algebraic powers 4.2 Expressions and brackets 4.3 Factorising 4.4 One- Step equations 4.5 Two - step equations 4.6 The balancing method</p>
Term 2	<p>5.1 comparing fractions 5.2 simplifying fractions 5.3 Working with fractions 5.4 Fractions and decimals 5.5 Understanding percentages 5.6 Percentages of amounts</p> <p>6.1 The language of probability 6.2 Calculating probability 6.3 More probability calculations 6.4 Experimental probability 6.5 Expected outcomes</p> <p>7.1 Direct proportion 7.2 Writing ratios 7.3 Using ratios 7.4 Ratios, proportion and fractions 7.5 Proportion and percentages</p>	<p>5.1 Conversion graphs 5.2 Distance-time graphs 5.3 Line graphs 5.4 More line graphs 5.5 Real-life graphs 5.6 Curved graphs</p> <p>6.1 Ordering decimals and rounding 6.2 Place-value calculations 6.3 Calculations with decimals 6.4 Ratio and proportion with decimals</p> <p>7.1 Quadrilaterals 7.2 Alternate angles and proof 7.3 Angles in parallel lines 7.4 Exterior and interior angles 7.5 Solving geometric problems</p> <p>8.1 Ordering fractions 8.2 Adding and subtracting fractions 8.3 Multiplying fractions 8.4 Dividing fractions 8.5 Calculating with mixed numbers</p>

Term	Grade 6 Topics	Grade 7 Topics
Term 3	8.1 Measuring and drawing angles 8.2 Lines, angles and triangles 8.3 Drawing triangles accurately 8.4 Angles in triangles 8.5 Quadrilaterals 9.1 Sequences 9.2 patterns and sequences 9.3 Coordinates and midpoints 9.4 Extending sequences 9.5 Straight line graphs 9.6 Position to term rules 10.1 Congruence and enlargements 10.2 Symmetry 10.3 Reflection 10.4 Rotation 10.5 Translations and combined transformations	9.1 Direct proportion graphs 9.2 Gradients 9.3 Equations of straight line 10.1 Indices 10.2 Calculations and estimates 10.3 More indices 10.4 Standard form 11.1 Solving equations 11.2 Substituting into expressions 11.3 Writing and using formulae 11.4 Using and rearranging formulae 11.5 Index laws and brackets 11.6 Expanding double brackets 12.1 Circumference of a circle 12.2 Area of a circle 12.3 Pythagoras' theorem 12.4 Prisms and cylinders 12.5 Errors and bounds

Term	Grade 8 Topics
Term 1	<u>Unit 1 Number 1</u> <ul style="list-style-type: none"> Working with fractions Order of operations (BIDMAS) Significant figures and decimal places <u>Unit 1 Algebra 1</u> <ul style="list-style-type: none"> Simplifying algebraic expressions Simplifying algebraic expressions with brackets Solving equations <u>Unit 1 Graphs 1</u> <ul style="list-style-type: none"> Gradient of a straight line Plotting straight-line graphs Straight-line conversion graphs <u>Unit 1 Shape & Space 1</u> <ul style="list-style-type: none"> Triangles Quadrilaterals Polygons Constructions Similar triangles <u>Unit 1 Sets</u> <ul style="list-style-type: none"> Set notation Venn diagrams <u>Unit 2 Number 2</u> <ul style="list-style-type: none"> Standard form Percentages Percentage increase and decrease.

Term	Grade 8 Topics
	<p><u>Unit 2 Algebra 2</u></p> <ul style="list-style-type: none"> • Simplifying algebraic fractions • Solving equations with roots and powers • Positive integer indices • Inequalities <p><u>Unit 2 Graphs 2</u></p> <ul style="list-style-type: none"> • Straight line graphs • Sketching straight-line graphs • Simultaneous equations <p><u>Unit 2 Shape & Space 2</u></p> <ul style="list-style-type: none"> • Pythagoras' theorem • Circle theorems
Term 2	<p><u>Unit 2 Handling data 1</u></p> <ul style="list-style-type: none"> • Statistical investigation • Presenting data • Misleading data presentation • Averages for discrete data <p><u>Unit 3 Number 3</u></p> <ul style="list-style-type: none"> • Prime factors • HCF and LCM • Ratio <p><u>Unit 3 Algebra 3</u></p> <ul style="list-style-type: none"> • Simplifying fractions • Equations with fractions • Simultaneous equations <p><u>Unit 3 Graphs 3</u></p> <ul style="list-style-type: none"> • Distance–time graphs • Speed–time graphs <p><u>Unit 3 Shape & Space 3</u></p> <ul style="list-style-type: none"> • Tangent ratio • Calculating sides • Calculating angles <p><u>Unit 3 Handling data 2</u></p> <ul style="list-style-type: none"> • Frequency tables • Discrete data • Continuous data
Term 3	<p><u>Unit 4 Number 4</u></p> <ul style="list-style-type: none"> • Compound percentages • Inverse percentages <p><u>Unit 4 Algebra 4</u></p> <ul style="list-style-type: none"> • Using formulae • Change of subject <p><u>Unit 4 Graphs 4</u></p> <ul style="list-style-type: none"> • Quadratic graphs $y = ax^2+bx+c$ • Solution of $0 = ax^2+ bx+c$ <p><u>Unit 4 Shape & Space 4</u></p> <ul style="list-style-type: none"> • Sine and cosine ratios • Calculating sides & angles

Term	Grade 8 Topics
	<u>Unit 4 Handling data 3</u> <ul style="list-style-type: none">• Measures of dispersion• Quartiles• Cumulative frequency