

4. 4. 2 Measures, Shape and Space Dimension (Key Stage 4)

Unit	Learning objectives	Suggested time ratio
Learning Geometry through an Intuitive Approach		
Qualitative Treatment of Locus	<ul style="list-style-type: none"> describe verbally or sketch the locus of points moving under a condition or conditions appreciate different conditions which can give rise to the same type of locus 	6
Learning Geometry through a Deductive Approach		
Basic Properties of Circles	<ul style="list-style-type: none"> <u>understand and use the basic properties of chords and arcs of a circle</u> <u>understand and use the angle properties of a circle</u> <u>understand and use the basic properties of cyclic quadrilateral and tangent to a circle</u> <u>appreciate the intuitive and inductive ways of recognizing the properties of circles and see the importance of deductive approach</u> <u>perform geometric proofs related with circles</u> <u>appreciate the structure of Euclidean Geometry such as definitions, axioms and postulates etc. and its deductive approach in handling geometric problems</u> 	39
Learning Geometry through an Analytic Approach		
Coordinate Treatment of Simple Locus Problems	<ul style="list-style-type: none"> explore and visualize straight line as loci of moving points and describe the loci with equations recognize the characteristics of equation form that represents a straight line understand and apply the point-slope form to find the equations of straight lines from various given conditions describe the properties of the line from a given linear equation <u>explore and visualize circles as loci of moving points</u> <u>find the equation of circles from given conditions</u> **explore other forms of equations for straight lines 	14

Note: The objectives with asterisk (**) are exemplars of **enrichment topics**.

The objectives underlined are considered as **non-foundation** part of the syllabus.

Unit	Learning objectives	Suggested time ratio
Trigonometry		
More about Trigonometry	<ul style="list-style-type: none"> • <u>understand the sine, cosine and tangent functions, their graphs</u> • <u>use graphs to explore properties of trigonometric functions including periodicity etc.</u> • <u>use graphs of the functions to find roots of an equation such as $\sin \theta = \text{constant}$, where $0^\circ \leq \theta \leq 360^\circ$</u> • <u>recognize the limitation of Pythagoras' Theorem in solving triangles</u> • <u>understand and use sine and cosine formulas to solve triangles</u> • <u>understand and use the formula $\frac{1}{2}ab\sin C$ and Heron's formula for areas of triangles</u> • <u>investigate and find the angle between 2 intersecting lines, between a line and a plane, between 2 intersecting planes</u> • <u>apply trigonometric knowledge in solving 2-dimensional and 3-dimensional problems</u> 	29

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