Year 11 Spring 2

Unit Overview: Revision and Communication							
Half- Term:	AUT 1	AUT 2	SPR 1	**SPR 2**	SUM 1	SUM 2	**No of Lessons:**	24

Key Focus for Unit:

Weeks 1 and 2: Transforming & Constructing
Students revise and extend their learning from Key Stage 3, exploring all the transformations and constructions, relating these to symmetry and properties of shapes when appropriate. There is an emphasis on describing as well as performing transformations as using the language promotes deeper thinking and understanding. Higher tier students extend their learning to explore the idea of invariance and look at trigonometric graphs as a vehicle for exploring graph transformations.

Weeks 3 and 4: Listing & Describing
This block is another vehicle for revision as the examinations draw closer. Students look at organisation information, with Higher tier students extending this to include the product rule for counting. Links are made to probability and other aspects of Data Handling such as describing and comparing distributions and scatter diagrams. Plans and elevations are also revised. You can adapt the exact content to suit the needs of your class.

Weeks 5 and 6: Show that
This is another block designed to be adapted to suit the needs of your class. Examples of communication in various areas of mathematics are provided in order to highlight gaps in knowledge that need addressing in the run up to the examinations. "Show that" is used to encourage students to communicate in a clear mathematical fashion, and this skill should be transferred to their writing of solutions to any type of question.

Key:

MASTERY – The skills and knowledge we want all our students to master and recall quickly.
SECURE – The skills and knowledge that we will need to return to regularly and interleave in order for our middle and lower attaining students to secure mastery or for which they might struggle.
DEVELOPING – The skills and knowledge that we will use to stretch and challenge our most abled students.

Transforming and Constructing:	**Listing and Describing:**	**Show that:**
• Perform and describe line symmetry and reflection (R)	• Work with organised lists	• "Show that" with number
• Perform and describe rotation/rotational symmetry (R)	• Sample spaces and probability (R)	• "Show that" with algebra
• Perform and describe translations of shapes (R)	• Use the product rule for counting (H)	• "Show that" with shape
• Perform and describe enlargements of shapes (R)	• Complete and use Venn diagrams (R)	• "Show that" with angles
• Perform and describe negative enlargements of shapes (H) (R)	• Construct and interpret plans and elevations (R)	• "Show that" with data
• Identify transformations of shapes (R)	• Use data to compare distributions (R)	• "Show that" with vectors (H)
• Perform and describe a series of transformations of shapes	• Interpreting scatter diagrams (R)	• "Show that" with congruent triangles
• Identify invariant points and lines (H)		• Formal proof with congruent triangles (H)
• Perform standard constructions using ruler and protractor or ruler and compasses (R)		
• Solve loci problems		
• Understand and use trigonometrical graphs (H)		

- Sketch and identify translations of the graph of a given function (H)
- Sketch and identify reflections of the graph of a given function (H)

Scaffolded Guidance:
- Use tracing papers to support students when doing reflection and rotation

Stretch Guidance:
- Explore invariant points and lines
- Explore transformation of Sine and cosine function

Scaffolded Guidance:
- Use examples the students can relate
- Use models where possible

Stretch Guidance:
- Explore Venn diagram with three over lapping circles
- Link Venn diagram with Tree Diagram.
- Calculate conditional probability

Scaffolded Guidance:
- Start with basic examples
- Eg Prove that the product of two even numbers is always even

Stretch Guidance:

- Explore proofs in a variety of mathematical context

Key Knowledge and Big Ideas:
*What **Powerful Knowledge** and **Big Ideas** are explored in this Unit?*
*How have these progressed from previous learning? What **gaps in knowledge** have you identified from **baselining** and how are the being closed?*

BIG IDEAS:
Number, Geometry, Algebra, Ratio and proportion and rates of change, Probability and Statistics

Powerful Knowledge:
- Carry out the four transformations
- Describe the four transformations
- Describe combined transformations
- Construct a line bisector
- Construct an angle bisector
- Construct a triangle
- Solve Loci problems
- Complete and use a Venn diagram
- Construct a Frequency Tree and Two-way table
- Use the product rule for counting
- Construct and interpret plans and elevations
- Use data to compare distributions
- Interpreting scatter diagrams

Previous Learning:
- Reflection, translation, rotation and enlargement
- Straight line graph
- Frequency diagrams
- Scatter graph
- Constructing Venn diagram
- Calculating probability

Gaps in Knowledge and Misconceptions:

- Students don't appreciate that for translation the orientation stays the same
- That the angles with change under enlargement
- That enlargement means to get bigger
- Students think that the denominator always have to be out of the 'Total'
- Students think that listing a few examples constitute a proof

Unit Assessment:
How will this unit be assessed?
What is the frequency of assessments – baselines etc?

How will this unit be assessed?

- Topic test
- Exam Practice Questions
- Targeted Questions
- GCSE Exam In may

Topics Covered in assessment
- Full GCSE practice papers

Retrieval Practice:
- T/F Retrieval starter
- Homework tasks
- Formula Quiz
- Timetable Quiz

Key Retrieval Topics (Interleaving):

- Finding the scale factor from A to B and vice versa
- Describing a rotation in two different ways
- Identifying outliers and the effect it has on the correlation
- Link Venn diagram to LCM and HCF

Key Skills Explored	Vocabulary Selected for DVI	Links to Previous Unit
- Enlarging a given shape about a given point including fractional and negative SF - Rotate a given shape about - Describe the single transformation that takes shape A to B and vice versa - Construct a line bisector - Construct an angle bisector - Construct a triangle - Solve Loci problems - Complete and use a Venn diagram - Construct a Frequency Tree and Two-way table - Use the product rule for counting - Construct and interpret plans and elevations - Interpreting scatter diagrams including drawing line of best out - Identify Outliers - Interpolate/Extrapolate	- Translate - Vector - Transformation - Reflection - Rotation - Enlargement - Similarity - Congruence - Bisector - Loci - Construct - Elevation - Plan View - Side Elevation - Front Elevation 'Show That' - Line of best fit - Outlier - Interpolate/Extrapolate - Negative & Positive Correlation	- Link congruence to reflection, translation and Rotation - Link similarity to enlargement - Link frequency tree with two way tables - Look at the similarities between a frequency tree and a probability tree diagram - Link Venn diagram to LCM and HCF

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Links to Careers/Employability	How does this unit prepare students for the next unit?
- Engineering - Scientist - Accounting - Teaching - Banking - Coding - Medical science and nursing	Preparation for GCSEs and further education/employment