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**Subject Knowledge Audit in Maths**

**Pre course tasks:**

**Task 1:** Look at the new (2015 onwards) programmes of study for both KS2, KS3, KS4 in Maths so that you are familiar with them

**Task 2:** Complete the GCSE foundation and higher tier paper in blue pen. In red pen answer it as you think a student would do. In green pen write down any misconceptions you think students are likely to make.

**Purpose of the audit**

During your PGCE training with Cheshire East SCITT you will need to identify your strengths and weaknesses within your own Subject Knowledge. When the course begins, the audit will also be used to informal planning for further development of “key gap areas” of subject knowledge, which alongside your subject specialist will identify areas of the curriculum about which you have less security of knowledge and need revision.

Please complete the audit as accurately and completely as possible using the codes below:

**Knowledge**

1 no secure knowledge

2 basic knowledge that can be applied to the solution of problems

3 secure knowledge that can be used to explain others

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| 1 no secure knowledge  2 basic knowledge that can be applied to the solution of problems  3 secure knowledge that can be used to explain others | | | | | | | | |
|  |  | **Knowledge (1,2,3) Review Dates** | | | | | |  |
| **Number** | **Maths topic** | **Oct** | **Dec** | **Feb** | **Mar** | **May** | **Jun** | **Evidence** |
| **Number** |  |  |  |  |  |  |  |
| **Integers, powers and square/cube roots** |  |  |  |  |  |  |  |
| **Fractions, decimals and percentages** |  |  |  |  |  |  |  |
| **Ratio and proportion** |  |  |  |  |  |  |  |
| **Estimation , approximation and bounds of error** |  |  |  |  |  |  |  |
| **Fractional and negative indices, Index laws, reciprocals** |  |  |  |  |  |  |  |
| **Standard form, Scientific notation** |  |  |  |  |  |  |  |
| **Rational and irrational numbers** |  |  |  |  |  |  |  |
| **Use of significant figures and decimal places** |  |  |  |  |  |  |  |
| **Numerical surds** |  |  |  |  |  |  |  |
| **Complex numbers** |  |  |  |  |  |  |  |
| **Logical proof** |  |  |  |  |  |  |  |
| **Number theory** |  |  |  |  |  |  |  |
| **Set theory/Venn diagrams** |  |  |  |  |  |  |  |
| **Computability** |  |  |  |  |  |  |  |
| **Algebra** | **Algebraic Manipulation, Functions, Equations** |  |  |  |  |  |  |  |
| **Linear Equations, Simultaneous Linear Equations** |  |  |  |  |  |  |  |
| **Inequalities** |  |  |  |  |  |  |  |
| **Numerical methods** |  |  |  |  |  |  |  |
| **Arithmetic sequences** |  |  |  |  |  |  |  |
| **Graphs, Domains and Ranges** |  |  |  |  |  |  |  |
| **Quadratics, higher polynomials, simultaneous quadratics** |  |  |  |  |  |  |  |
| **Transformation of functions and their graphs** |  |  |  |  |  |  |  |
| **Indices and logarithms** |  |  |  |  |  |  |  |
| **Curve Sketching** |  |  |  |  |  |  |  |
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|  | **Maths Topic** | **Oct** | **Dec** | **Feb** | **Mar** | **May** | **Jun** | **Evidence** |
| **Shape and Space** | **Angles, parallel lines, triangles, quadrilaterals** |  |  |  |  |  |  |  |
| **Pythagoras Theorem** |  |  |  |  |  |  |  |
| **Circle theorems** |  |  |  |  |  |  |  |
| **Transformations** |  |  |  |  |  |  |  |
| **Measurement** |  |  |  |  |  |  |  |
| **Constructions** |  |  |  |  |  |  |  |
| **Areas, volume, perimeters and surface area** |  |  |  |  |  |  |  |
| **Loci** |  |  |  |  |  |  |  |
| **Congruence and similarity** |  |  |  |  |  |  |  |
| **Trigonometry, graphs of trigonometric functions** |  |  |  |  |  |  |  |
| **Vectors** |  |  |  |  |  |  |  |
| **Matrices** |  |  |  |  |  |  |  |
| **Statistics** | **The statistical process - planning, collecting, processing, interpreting** |  |  |  |  |  |  |  |
| **Data- collection methods** |  |  |  |  |  |  |  |
| **Statistical tables and charts** |  |  |  |  |  |  |  |
| **Averages( mean, mode and median)** |  |  |  |  |  |  |  |
| **Scatter graphs and correlation** |  |  |  |  |  |  |  |
| **Sampling** |  |  |  |  |  |  |  |
| **Interquartile range, moving averages, standard deviation** |  |  |  |  |  |  |  |
| **Probability** | **Practical probability, estimates of probability, probability scale, effects of sample size** |  |  |  |  |  |  |  |
| **Theoretical probabilities for one and two events, sample space diagrams** |  |  |  |  |  |  |  |
| **Independent and mutually - exclusive events** |  |  |  |  |  |  |  |
| **Tree diagrams** |  |  |  |  |  |  |  |
| **Combinations and permutations** |  |  |  |  |  |  |  |
| **Mechanics** | **Use and manipulation of formula** |  |  |  |  |  |  |  |
| **Dynamics of a particle** |  |  |  |  |  |  |  |
| **Moments of Forces** |  |  |  |  |  |  |  |
| **Momentum** |  |  |  |  |  |  |  |
| **Equilibrium of forces** |  |  |  |  |  |  |  |

**Maths - Useful reading/resources**

Section 1: General

Becoming a successful teacher of Maths – Howard Tanner

Issues in Maths teaching – Peter Gates

Learning to teach in a secondary School – Susan Capel

Learning to teach Maths in Secondary Schools – Sue Johnston – Wilder

Thinking Mathematically – J Mason

Developing thinking in Geometry – Sue Johnston- Wilder

Developing Thinking in Algebra – John Mason

**Resources**

Mathsbox.org

Teachitmaths

Resourceaholic.com

Newintegralmaths.org

Nrich

Mathsalicious.com

Donsteward.blogspot.co.uk

Solve My Maths