Scope of the Mathlympics Competition

Topics will include arithmetic, number theory, combinatorics, logic, geometry, measurement, and algebra.

Topic	Brief description
Arithmetic	Addition, subtraction, multiplication, division, manipulations of whole numbers, fractions, decimals, percentages and square root. *Example:* *If 48 is added to one-third of a number, the answer is triple the number. What is the number?*
Number Theory	Divisibility, prime numbers, exponential numbers (eg. 2^2, 2^3), number patterns and sequences. *Example:* *The greatest number of Mondays which can occur in 45 days is ___.*
Combinatorics	Finding largest, smallest or optimal number of objects satisfying certain criteria, deciding when the criteria can be met. Example: *Vicky has four cubes of different colours – green, red, blue and yellow.* *The number of different ways they can be stacked one upon the other is ____.*
Logic	Inferring relationships between objects given a set of clues. Example: Mary, John and Pete have red, brown, and blonde hair, and are 13, 14, and 15 years old. Using the following clues determine the hair colour, and age of each child. 1. The youngest has blonde hair. 2. John is older than Pete. 3. John does not have red hair and Pete does not have blonde hair.
Geometry	Size, shape (angles, symmetry) and relative position of figures and properties of space. *Example:* *Zul has a wire 23 cm long. He wants to bend the wire to form triangles which have 3 different sizes. The number of triangles that can be formed with sides of whole number units is _____.*

Measurement	Magnitude of some attribute of measures of an object relative to standard measurements. Includes Rate and Speed. *Example:* *A fence is 18 metres long. The fence posts are 3 metres apart.* *How many posts are there in the fence?*
Algebra	Using symbols as "place holders" to denote constants and variables, and the rules governing mathematical expressions and equations involving these symbols. *Example:* *You are in a queue at the water-cooler. You are the xth person from the front and the yth person from the back. How many people are there in the queue?*