

Described Scale for IBT Mathematics

9	Solve equations in exact surd form. Solve measurement problems in non-standard contexts, involving conversion of units and inverse use of formulae. Use scale factors to calculate flexibly with 2-D shapes and 3-D objects. Compare mean and median values for asymmetric distributions and for grouped data. Calculate probabilities for compound events and simple conditional events when the problems are expressed in words.
8	Simplify surd expressions with an irrational denominator. Convert between litres and cubic metres. Work flexibly with measurement formulae for non-standard shapes or objects, including the use of Pythagoras' Theorem in three dimensions. Use scale factors to enlarge or reduce similar shapes. Calculate percentage change from different data representations. Calculate the probabilities of compound events using tree diagrams.
7	Simplify, calculate and estimate numerical surd expressions. Solve word problems involving fractions and part-to-whole ratios. Calculate percentage error and percentage change. Match a graph to a given linear or quadratic rule. Calculate with speed, distance and time; with ratio scales and maps; and with Pythagoras' Theorem in two dimensions. Calculate angles in figures with parallel lines. Represent data in pie charts. Calculate flexibly with mean, median and mode. Use a grid representation to find the probability of compound events.
6	Find prime factors, lowest common multiples and highest common factors. Perform calculations with fractions, percentages, ratios, squares and square roots. Solve linear equations and word problems with one or two unknowns. Compare times across different time zones. Calculate flexibly with area, surface area, volume and capacity. Describe 3-D objects by their edges, vertices and faces. Interpret maps, using scales and compass points. Calculate angles in triangles and quadrilaterals. Compare the mean and median for data sets. Read values in a two-way table. Calculate probability values from spinners, dice and random draws.
5	Identify properties of prime, composite, square and cube numbers. Solve problems involving all four operations and negative numbers. Add and subtract decimals and fractions. Find decimal equivalents to fractions. Continue patterns involving fractions and decimals. Read scales and convert between metric units. Connect nets with 3-D objects. Relate degrees to the size of turns. Use the Cartesian coordinate system to identify positions of points. Identify probabilities of simple random events. Interpret and compare data presented in different ways.
4	Understand place value of numbers with five digits. Use partitioning to solve addition and subtraction problems. Solve multiplication problems involving large numbers. Solve division problems that result in a remainder. Compare unit fractions and locate them on a number line. Solve problems that require interpreting patterns. Compare different angle sizes. Visualise 3-D models from a different perspective and match a 3-D object to a 2-D view. Investigate the effect of turns. Represent simple probabilities as fractions.
3	Relate multiplication to division, and solve simple problems involving addition, subtraction, multiplication, and division when there is no remainder. Recognise odd and even numbers. Continue simple number patterns. Tell the time to the minute and convert between units of time. Use scaled instruments to measure and compare length, mass, capacity and temperature. Calculate the perimeters and areas of rectangles. Interpret simple plans to locate position of objects. Identify lines of symmetry in pictures and patterns. Order outcomes of simple chance events. Interpret information presented in simple graphs, tally charts and tables.
2	Understand place value of numbers with four digits. Add and subtract two-digit numbers, and demonstrate an understanding of the relationship between addition and subtraction. Represent multiplication as repeated addition. Read time to the quarter-hour on analogue and digital clocks. Identify angles as a measure of turn. Name and describe 2-D shapes. Use the everyday language of position and direction. Find information from basic tables. Use simple language of chance.
1	Understand place value of numbers with three digits. Add and subtract single-digit numbers. Identify very simple patterns involving counting. Read time to the half-hour on analogue and digital clocks. Read values from very basic column graphs.

A student at the top of a band is likely to have demonstrated all of the skills in that band, and all of the skills in the bands below. A student in the middle of a band is likely to have demonstrated half of the skills in that band, and all of the skills in the bands below.