|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *CEOB Scope and Sequence 2015* Mathematics – Number and Algebra | | | | | | | |
| **PP 0.5** | **Standard F** | **PP F.5** | **Standard 1.0** | **PP 1.5** | **Standard 2.0** | **PP 2.5** | **Standard 3.0** |
| Match individual objects with counting sequences up to and back from 10. | Establish understanding of the language and processes of counting by naming numbers in sequence to and from 20 from any starting point. | Connect number names and numerals with sets of more than 20 elements. | Count to and from 100 by ones from any starting point. | Count forwards and backwards up to hundreds. | Count forwards and backwards up to 1000. | Count to and from thousands. | Count to & from 10 000. |
| Match individual objects with counting sequences up to and back from 20. |
| Connect number names and numerals with quantities to 10. | Connect number names and numerals with quantities up to 20.  Estimate the size of these sets. | Skip count by 2s, 5s and 10s from zero. | Describe patterns with numbers and recognise simple digit patterns in number sequences. | Recognise increasing and decreasing number sequences involving 2s, 3s, 5s and 10s from any starting point. | Identify the conditions required for a number to be odd or even. Explain reasoning. |
|  |  | Describe number sequences resulting from skip counting by  2s, 5s and 10s from 0. |
| Be familiar with zero. | Partition numbers using place value to 100. | Order numbers up to hundreds. | Recognise, model, represent and order numbers to at least 1000. | Recognise, model, represent and order numbers to at least 10,000. |
| Subitise small collections of objects. | Subitise small collections of objects. | Recognise, model, read, write and order numbers to at least 100. | Group collections of objects in ones, tens and hundreds, | Group, partition and rearrange collections up to 1000 in hundreds, tens and ones | Order numbers to and from thousands. | Apply place value to partition, rearrange and regroup numbers to at least 10,000 to assist with calculations and problem solving. |
| Compare, order and make correspondences between collections to 20 initially & explain reasoning. | Locate these numbers on a number line. | Recognise different ways of writing the same number. |  | Apply place value to partition, rearrange and group numbers. |
| Use counting strategies to solve problems that involve comparing, combining and  separating sets. | Use counting strategies to solve problems that involve comparing, combining and separating these sets |  | Carry out simple additions and subtractions, using a range of counting strategies. | Write and solve number sentences involving addition or subtraction. | Perform simple addition and subtraction calculations, using a range of efficient mental and written strategies. | Rearrange and regroup  numbers to help with calculations and solve problems . | Recognise the connection between addition and subtraction. |
| Represent and solve simple addition and subtraction problems, using materials. | Represent and solve simple addition and subtraction problems, using materials. | Use digital technology to produce sequences by constant addition. | Describe, continue and create number patterns formed by repeated addition or subtraction. | Describe, continue & create number patterns resulting from performing addition or subtraction. |
| Sort and classify with reasoning familiar objects. | Investigate simple patterns of objects and their images. | Recall addition facts for single-digit numbers & related subtraction facts. |
| Copy, continue and create patterns with objects and drawings. |  | Explore the connection between addition and subtraction. |  | Develop efficient mental strategies for computation. |
|  |  | Recognise, describe and order Australian coins according to their value. |  | Find the total value of simple collections of Australian notes and coins. |  | Represent money values in various ways and correctly count  out change from simple transactions to the nearest 5c. |
| Order the first, second and third elements of a set. | Order the first 10 elements of a set. | Order the first 20 elements of a set. | Count & order small collections of coins & notes. |  |  |
|  |  |  |  | Represent multiplication as repeated addition, groups & arrays. | Recall multiplication facts for 2, 5 and 10. | Solve problems using efficient mental & written strategies for multiplication. |
|  | Represent practical situations to model sharing. |  |  | Recognise & represent division as grouping into equal sets & solve simple problems. |  | Recall multiplication facts for 2,3,5 & 10 and related division facts. |
| Recognise and describe one half as one of two equal parts of a whole. | Explore simple number  sequences based on multiples. |
|  | Recognise and interpret common uses of halves and quarters. | Divide collections and shapes into halves, quarters and eighths. | Model and represent the unit fractions of halves, thirds, quarters, fifths and eighths and explore language differences associated with fractions. | Model and represent unit fractions for halves, thirds, quarters, fifths and eighths and multiples of these up to one. |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **PP 3. 5** | **Standard 4.0** | **PP 4. 5** | **Standard 5.0** | **PP 5.5** | **Standard 6.0** | **PP 6.5** |
| Count by quarters, halves and thirds including with mixed numbers. | Investigate & use the properties of odd and even numbers. |  | .    Recognise that the place value system goes beyond hundredths. | .  . |  | Use a variety of methods to solve linear equations with whole number solutions.  Use substitution to check solutions. |
| Count to and from tens of thousands. |
| Order numbers to tens of thousands. | Recognise, represent & order numbers to at least tens of thousands. | Represent and order decimals and extend their fluency with the number system to beyond tens of thousands. | Investigate everyday situations that use integers. Locate & represent on a numberline. |
|  | Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and problem solving. | Write number sentences using brackets and order of operations. |
| Use estimation & rounding to check the reasonableness of answers. |
| Recognise that the place value system can be extended to tenths & hundredths. | Recognise that the place value system can be extended to tenths & hundredths. | Multiply & divide by powers of 10. |
| Estimate answers accurately enough for the context. |  | Estimate & round to check the reasonableness of answers. | Multiply decimals by whole numbers. |
| Use equivalent number sentences involving addition and subtraction to find unknown quantities. | Identify unknown quantities in number sentences. | Use equivalent number sentences with multiplication & division to find unknown quantities in number sentences. | Divide by non zero whole numbers where the results are terminating decimals. |
| Use addition and subtraction facts to develop efficient mental strategies for computation. |  | Use number properties for efficient mental calculation. | Solve simple problems involving the four operations using a range of mental & written strategies & including digital technology. | Explore the use of brackets and order of operations to write and evaluate number sentences. | Solve problems that involve all four operations with whole numbers using efficient mental & written strategies. | Investigate index notation and represent whole numbers  as products of powers of prime numbers. |
| Calculate change and round to the nearest five cents. | Solve simple purchasing problems with and without the use of digital technology. | Create a simple financial plan. | Explain plans for simple budgets. | Continue and create sequences involving whole numbers, fractions and decimals according to a given rule. |  | Investigate and calculate 'best buys' and solve problems involving simple ratios, with and without the use of digital technology. |
| Calculate change and round to the nearest five cents. |
| Solve word problems by using number sentences involving multiplication or division where there is no remainder. | Recall multiplication facts to 10 x 10 and related division facts. | Use equivalent number sentences involving multiplication and division to find unknown quantities. | Solve problems involving multiplication & division of large numbers by 1 or 2 digit numbers mentally & written including with remainders. | Represent composite numbers as a product of their prime factors. | Locate fractions and decimals on a number line and connect fractions, decimals and percentages as different representations of the same number. |  |
| Investigate number sequences involving multiples of 3, 4, 6, 7, 8 and 9. | Describe number patterns resulting from multiplication. | Solve problems involving multiplication of large numbers by one- or two-digit numbers, using efficient mental and  written methods and digital technology. | Identify and describe factors, multiples & whole numbers – use to problem solve. | Find a simple fraction of a quantity where the result is a whole number. |
| Continue number sequences involving multiples of single-digit numbers and unit fractions. |
| Choose appropriate mental & written strategies for calculations involving multiplication and division. |
| Locate & represent thirds, halves & quarters on a numberline. | Locate familiar fractions on a number line. |  | Compare & order decimals and unit fractions and locate them on a number line. | Identify the highest common factor (greatest common divisor) and lowest common multiple of two whole numbers. | Solve problems involving the addition and subtraction of related fractions with the same or related denominator. | Solve problems involving addition and subtraction of fractions, including those with unrelated denominators. |
| Make connections between fractions and decimal notation. | Recognise common equivalent fractions in familiar contexts. | Add and subtract fractions with the same denominator. | Find equivalent fractions and use them to order fractions. |
|  | Make connections between fractions and decimal notations up to two decimal places. |  | Describe, create & continue patterns by adding or subtracting fractions and decimals. | Calculate common percentage discounts on sale items, such as 10%, 25% & 50% | Locate fractions and mixed numbers on a number line. |
|  |  | Identify & describe the properties of prime, composite, square and triangular numbers. |  |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | *CEOB Scope and Sequence 2015* Mathematics – Measurement and Geometry | | | | | | | |
|  | **PP 0.5** | **Standard F** | **PP F.5** | **Standard 1.0** | **PP 1.5** | **Standard 2.0** | **PP 2.5** | **Standard 3.0** |
|  |  |  |  |  |  |  |  |  |
| **MEASUREMENT** | Identify measurement attributes of length and mass in practical situations.  . | Identify measurement attributes in practical situations. | Use direct and indirect comparisons to decide which of two objects is longer, heavier or holds more and explain their reasoning. | Use informal units of measurement to order pairs of objects based on length and capacity. | Compare and order familiar objects by their length and relative mass. | Compare & order several shapes and objects based on length, area, volume & capacity using appropriate uniform informal units.  . |  | Measure, order & compare objects using familiar metric units of lengthy, mass & capacity.  . |
| Compare lengths and masses of familiar objects. | Compare lengths, masses and capacities of familiar objects. |  |  | . | Compare masses of objects using balance scales. | Compare the masses of objects, using balance scales. |  |
| Order events in a day and name the days of the week, in order. | Compare & order the duration of events using every day language of time. | Place familiar events in time order. | Describe duration of time using months, weeks, days & hours. | Describe the duration of familiar events in terms of hours, days and weeks. | Use a calendar to identify the date & state the number of days in each month. | Interpret digital and analogue representations of minutes, hours, days, weeks and years. | Investigate the relationship between units of time. |
| Name and order the months and seasons. |
| Match days of the week to familiar events. | Tell time to the half-hour. | Tell .time to the quarter hour | Tell time to the nearest minute. |
| GEOMETRY | Identify simple shapes in the environment. | Identify simple 2D shapes & 3D objects in the environment. | Identify, sort and name familiar three-dimensional objects in the environment. | Describe two-dimensional shapes and three-dimensional objects. | Recognise and classify familiar shapes and objects, using their features. | Describe & draw 2D shapes and specify their features. | Explore the properties  of prisms. | Make models of 3D objects and describe key features. |
|  | Sort shapes by their common and distinctive features. |  | Recognise & classify familiar 2D shapes & 3D objects. |  | Describe the  features of 3D objects. |  | Identify symmetry in natural and constructed environments. |
| Use simple location words. | Use simple statements and gestures to describe location. | Describe movement, and follow and give simple directions. | Use the language of distance and direction to move from place to place. | Give and follow directions to and from a place using everyday language for orientation, relative position, direction and distance. | Explain the effects of one-step slides & flips. | Recognise angles in terms of turns in everyday situations. | Use angle size as  a measure of turn in real situations. |
| Identify and describe ½ & ¼ turns. | Interpret grid maps of their local environment. | Create & interpret simple maps to show position & pathways. |
| Interpret simple maps of familiar locations & identify positions of key features. |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **PP 3.5** | **Standard 4.0** | **PP 4.5** | **Standard 5.0** | **PP 5.5** | **Standard 6.0** | **PP 6.5** |
| **MEASUREMENT** | Use scaled instruments to measure length, angle, area and mass.  . | Use scaled instruments to measure length, angle, area, mass, capacity and temperature. | Investigate units of measurement from historical and  cultural contexts | Use appropriate units of measurement for length, area, volume, capacity and mass | Recognise metric prefixes and convert between common metric units. | Relate decimals to the metric system and choose appropriate units of measurement to perform a calculation. |  |
| Compare areas of regular and irregular shapes using informal units | Estimate areas by counting squares | Calculate perimeter and  area of rectangles using familiar metric units. | Solve problems involving length and area. | Use formulas for the area and perimeter of a square |
| Use square centimetres, square metres, square  kilometres and hectares as units of area. |
| Compare objects using familiar metric units of volume. | Convert between units of metric and other standard non-metric systems of measurement | Make connections between capacity and volume. | Calculate the surface area and volume of a cube |
| Use am and pm notation and identify time between two events | Solve problems involving time duration. |  | Compare 12 & 24 hour time systems & convert between 12 and 24-hour time. | Access print and digital timetables, answer simple questions using a timetable and create simple personal  timetables | Interpret and use a variety of everyday timetables |  |
| Convert between units of time. |
| Use a.m. & p.m. notation. |
| GEOMETRY | Identify and describe symmetry, asymmetry and pattern in natural and made objects. | Create symmetrical patterns, pictures & shapes with and without the use of digital technology. |  | Describe translations, reflections & rotations of 2D shapes and identify line and rotational symmetry. |  | Construct simple prisms and pyramids. | Identify squares, rectangles, rhombuses, parallelograms, kites and trapeziums based on their properties. |
| Compare & describe 2D shapes that result from combining & splitting common shapes. |  | Connect 3D objects with their nets and other 2D  representations. |  | Investigate combinations of translations, reflections & rotations. | Draw different views of prisms, and solids formed from combinations of prisms. |
| Apply enlargement transformation to 2D shapes – explore the properties of the results compared with the original. | Introduce the Cartesian coordinate system using all 4 quadrants. |
| Compare & classify angles in relation to a right angle: equal to, greater than or less than. | Estimate angles between 0 and 360 degrees in both  clockwise and anticlockwise directions | Estimate, measure & compare angles by degrees using a protractor. | Describe acute, obtuse and reflex angles in terms of their relationship to multiples of a right angle | Investigate angles on a straight line, at a point & vertically opposite angles. Solve problems using the properties of angles. | Demonstrate that the angle sum in a triangle is 180 degrees. |
| Construct angles using a protractor. | Investigate angles on a straight line, angles at a point, and vertically opposite angles. | Construct parallel and perpendicular lines |
| Use simple scales, legends & directions to interpret information contained in basic maps. | Describe routes using landmarks | Use a grid reference system to locate  landmarks. | Investigate compass points | Use ordered pairs of integers to represent coordinates of points and locate a point in any one of the four quadrants on the Cartesian plane. |  |
| Compare maps with  aerial photographs or representations created by digital technology. | Describe routes using landmarks & directional language. | Use ordered pairs of whole numbers to represent coordinates of points and locate these points on simple grids and in the first quadrant on the Cartesian plane. |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *CEOB Scope and Sequence 2015* Mathematics – Statistics and Probability | | | | | | | |
| **PP 0.5** | **Standard F** | **PP F.5** | **Standard 1.0** | **PP 1.5** | **Standard 2.0** | **PP 2.50** | **Standard 3.0** |
|  | Sort familiar categorical data into sets. | Sort objects into designated categories on diagrams and create their own visual records by sorting objects or their images. | Describe data displays.  Represent data with objects and drawings. |  | Collect data from relevant questions to create lists, tables and picture graphs. | Make tallies and convert them into one-to-one picture graphs (pictographs) and bar charts. | Carry out simple data investigations for categorical variables. |
| Identify data sources and plan methods of data collection & recording. |
| Answer simple yes/no questions about given categorical data that are sorted. | Make simple true/false or yes/no statements about the data. | Describe outcomes of simple familiar events using 'will happen', 'won't happen' or 'might happen'. | Ask questions to collect  and draw simple data displays | Use tallies and tables to record answers to questions and  summarise the answers by counting. | Gather and interpret data in context. | Recognise variation in measurements and other data. | Collect data. Organise into categories & create displays using lists, tables, picture graphs & column graphs. |
| Identify a question of interest based on 1 categorical variable. | Interpret and compare data displays. |
|  |  |  | Students classify outcomes of simple familiar events involving chance. Describe these using everyday language. | Explain why they think an event is 'certain' or 'impossible'. | Describe outcomes of familiar events using everyday language. | Place events from familiar contexts in order of how likely they are to happen. | Conduct chance experiments, list possible outcomes and recognise variations in results. |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **PP 3.5** | **Standard 4.0** | **PP 4.5** | **Standard 5.0** | **PP 5.5** | **Standard 6.0** | **PP 6.5** |
| Identify questions or issues involving categorical variables, define data sources, and plan and trial  methods of data collection and recording. | Select & trial different methods for data collection including survey questions & recording sheets. | Construct column graphs and picture graphs where one picture can represent many data values from given or collected data, with and without the use of digital technology. | Pose questions to gather data and construct various displays appropriate for the data, with and without the use of digital technology. | Evaluate the effectiveness of different displays in illustrating data features, including variability. | Interpret and compare a variety of data displays, including side by side column graphs for two categorical variables. | Create side-by-side column graphs. |
| Use a variety of methods of data presentation. | Construct data displays from given or collected data, with and without the use of digital technology. |  | Describe and interpret different data sets in context. | Pose questions and collect categorical or numerical data by observation or survey, and distinguish between a sample and a population. | Analyse and evaluate data from secondary sources in digital media and elsewhere. | Interpret secondary data presented in digital media and elsewhere, including consideration of sampling,  misleading displays, bias and purpose. |
| Compare one event to the other as being less, equally or more likely to happen, and justify their reasoning. | List the probabilities of everyday events. | Recognise that probabilities range from 0 to 1 and place  events in order on a number line from 0 to 1 based on their probability. | Construct displays including column graphs, dot plots & tables. | Recognise that probability can be interpreted as an  expected frequency. | Compare observed and expected frequencies of events, including those  where outcomes of trials are generated with the use of digital technology. | Recognise that summarising data by calculating measures  of centre and spread can help make sense of the data. |
| Describe possible everyday events & order their chances of occurring. |
| Identify everyday events where if one event occurs, the other event cannot occur. | Identify events where the chance of one will not be affected by the occurrence of the other. |  | List outcomes of chance experiments with equally likely outcomes and represent probabilities of those outcomes using fractions. | Represent probabilities as simple ratios and fractions. | Specify, list and communicate probabilities  of events using simple ratios, fractions, decimals and percentages. | Determine the median for different data sets. |
|
|  | Evaluate the effectiveness of displays: illustrating data features including variability. |  | Recognise that probabilities range from 0 to 1. | Conduct chance experiments with both small and large numbers of trials, using digital technology. |  | Determine probabilities by symmetry and counting. |