COVID-19 return to school suggested work program

Contents

In response to the COVID-19 disruptions to school in 2020, this work program provides a suggested sequence of learning for use by F-7 teachers over terms 3 and 4. While it does not meet everything in the Australian Curriculum, the aim is to help teachers prioritise concepts to teach, time to spend on concepts, and ensure that a focus on investigations using the proficiency strands is maintained.

This work program aims to provide:
- 8 weeks of work for each of terms 3 and 4, with 2 weeks provided for consolidation and catching up. All work referenced directly to the Australian Curriculum content descriptors for each year level.
- 3-4 suggested learning tasks each week. For members of the Back-to-Front Maths website, this includes downloadable lessons as well as some investigations, games and extension tasks.
- Members of the Back-to-Front Maths website can also download assessment criteria adapted from the Achievement Standard for each year level.

In addition to the work supplied, it is expected that teachers will implement their own **regular consolidation, review and practice tasks**. Some examples might include:

Foundation to Year 3:

Play number sense games, match representations, make and partition numbers, create arrays and fill in blank number charts. Also organise shapes into groups, play shops and look regularly at times on the clock, the class timetable and calendar, and talk about directions to known locations. Make halves and quarters of various 2D shapes, 3D objects, lengths and groups and play chance and data sorting games. Use non-standard measurements and order lengths, volumes, masses and areas and talk about "how big" attributes are.

Years 4-7:

- Complete mental maths calculations (including asking non-standard questions such as "I start at 8 and end at 56, what happened?" and multi-step questions such as "I ended up with 7, but I had divided by 2 and done something else to get there from my starting number 20 - what could I have done?")
- Practice procedures such as: regular operations, writing numbers in words, digits and expanded notation, ordering numbers and finding factors or multiples of starting numbers
- Discuss unit fractions, including finding unit fractions of numbers, areas, lines, 3D objects and groups (e.g. half of 14, one third of the distance between here and the oval)
- Read and interpret time, itineraries and calendars as used in class
- Discuss geometric properties of lines, angles, shapes and objects using correct terminology
- Compare relative size using various attributes (length, area, mass, volume)
- Discuss relative likelihood using language of chance for current events, and giving the chance a numerical value where appropriate and considering the reliability of the data (e.g. the weather bureau has predicted an 80% chance of rain today – what does that mean?)
- Examine the use of data and statistics in popular media and discuss whether the data is biased, how reliable it is and whether it has been accurately portrayed
- Look for patterns in: numbers, geometric repetitions, dances or songs, games, prices (e.g. 2 for the price of 1) and measurement formulae

Focus concepts: Place value of large numbers or decimal numbers, fractions, money and financial maths, position and direction

Content Descriptors:

Foundation year Australian Curriculum statements*	Year 1 Australian Curriculum statements*	Year 2 Australian Curriculum statements*	Year 3 Australian Curriculum statements*	Year 4 Australian Curriculum statements*	Year 5 Australian Curriculum statements*	Year 6 Australian Curriculum statements*	Year 7 Australian Curriculum statements*
Place Value, Decimal Numbers and Percentages, Fractions, and Money							
ACMNA001: Establish understanding of the language and processes of counting by naming numbers in sequences, initially to and from 20, moving from any starting point **ACMNA002**: Connect number names, numerals and quantities, including zero, initially up to 10 and then beyond **ACMNA004**: Represent practical situations to model addition and sharing	**ACMNA013** Recognise, model, read, write and order numbers to at least 100. Locate these numbers on a number line **ACMNA014** Count collections to 100 by partitioning numbers using place value **ACMNA016** Recognise and describe one-half as one of two equal parts of a whole. **ACMNA017** Recognise, describe and order Australian coins according to their value	**ACMNA027** Recognise, model, represent and order numbers to at least 1000 **ACMNA028** Group, partition and rearrange collections up to 1000 in hundreds, tens and ones to facilitate more efficient counting **ACMNA033** Recognise and interpret common uses of halves, quarters and eighths of shapes and collections **ACMNA034** Count and order small collections of Australian coins and notes according to their value	**ACMNA052** Recognise, model, represent and order numbers to at least 10000 **ACMNA053** Apply place value to partition, rearrange and regroup numbers to at least 10000 to assist calculations and solve problems **ACMNA058** Model and represent unit fractions including 1/2, 1/4, 1/3, 1/5 and their multiples to a complete whole **ACMNA059** Represent money values in multiple ways and count the change required for simple transactions to the nearest five cents	**ACMNA073** Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems **ACMNA079** Recognise that the place value system can be extended to tenths and hundredths. Make connections between fractions and decimal notation **ACMNA077** Investigate equivalent fractions used in contexts **ACMNA080** Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies	**ACMNA104** Recognise that the place value system can be extended beyond hundredths **ACMNA105** Compare, order and represent decimals **ACMNA103** Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator **ACMNA106** Create simple financial plans	**ACMNA131** Make connections between equivalent fractions, decimals and percentages **ACMNA129** Multiply decimals by whole numbers and perform divisions by non-zero whole numbers where the results are terminating decimals, with and without digital technologies **ACMNA126** Solve problems involving addition and subtraction of fractions with the same or related denominators **ACMNA132** Investigate and calculate percentage discounts of 10%, 25% and 50% on sale items, with and without digital technologies	**ACMNA157** Connect fractions, decimals and percentages and carry out simple conversions **ACMNA158** Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies. **ACMNA156** Round decimals to a specified number of decimal places **ACMNA153** Solve problems involving addition and subtraction of fractions, including those with unrelated denominators **ACMNA154** Multiply and divide fractions and decimals using efficient written strategies and digital technologies **ACMNA174** Investigate and calculate 'best buys', with and without digital technologies

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Location, Direction and Movement and Geometry							
ACMMG010: Describe position and movement	**ACMMG023** Give and follow directions to familiar locations	**ACMMG046** Identify and describe half and quarter turns **ACMMG044** Interpret simple maps of familiar locations and identify the relative positions of key features	**ACMMG065** Create and interpret simple grid maps to show position and pathways	**ACMMG090** Use simple scales, legends and directions to interpret information contained in basic maps	**ACMMG113** Use a grid reference system to describe locations. Describe routes using landmarks and directional language	**ACMMG141** Investigate, with and without digital technologies, angles on a straight line, angles at a point and vertically opposite angles. Use results to find unknown angles	**ACMMG166** Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral **ACMMG163** Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal **ACMMG164** Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning

Suggested Teaching Sequence:

Your term at a glance: weeks 5 and 10 are designated for consolidation and catch up
- Weeks 1-2: Place Value (including decimal numbers and operations with decimals for years 4-7)
- Weeks 3-4: Fractions (including percentages). Foundation students work on partitioning and whole-number addition/subtraction instead.
- Weeks 6-7: Money and Financial Maths
- Weeks 8-9: Location and Direction (F-5), and Angle Geometry (6-7)

Weeks 1-2: Place Value

Investigation ideas: choose one from the following
- Create number expanders up to tens (P), hundreds (1), thousands (2, 3)
- Create posters with images of large numbers
- Use the place value charts from the year 3 Journal and Blast book to create visual representations of various large numbers – these have pictures of MAB for numbers up to ten thousand
- Ordinal numbers: Set up a race between students where they have to come in a particular position (e.g. give the fastest person 4th). The winners are the students who come in the correct position, not the person who is the fastest.

Foundation: Consolidate numbers to 10, and build numbers to 20. Use Problem 3: Numbers to 10 and Problem 4: Representing quantities in different ways Number activities in the Foundation section. Consider using Year 1 Problem 6: Teen numbers in the Year 1 Place Value section if appropriate.

Year 1: Build numbers to 100. Focus on building, naming, writing and regrouping two digit numbers. Use the following activities from the Place Value section: Problem 7 Two digit number names, Problem 5 Numbers to 100

Years 2-3: Build numbers to 1000 (yr2) and 10 000 (yr3):
Years 2 and 3 both: Use the follow 5 activities on building 3 digit numbers on this page:
Number names to 999, More than 100, Multiple hundreds, Make numbers bigger or smaller by ones, tens and hundreds, Regroup numbers to 999
Year 3 only: add the following 2 activities from the same page: Introducing the thousands place, Order numbers to 9 999

NB: If you own the book *Fixing Misconceptions in Decimals and Percent*, consider using the diagnostic test then the appropriate lessons from that book for this two-week period rather than the lessons specified below

Investigation with Diagnostic Task for all students:
Use the activity **Visualising Tenths** found on this page to check student understanding of decimal numbers and address misconceptions. It is the 3rd link. Remember as well to link with the connecting idea "of a dollar" as used in the at-home work program in week 7.

Year 4: Introduce tenths (and hundredths if you can). Use all three activities from the Decimal Numbers Sequence on this page along with the investigation above. You should also use these activities from the Fractions section: What different ways can I write tenths? More than ten tenths.

Year 5: Consolidate tenths and hundredths. Use the following activities from the Decimal Numbers sequence on this page: Identify and describe decimal fractions (2 lessons), Summarising our patterns, Ordering decimal numbers, Symmetry of place value, Adjusting decimal numbers

Year 6: Consolidate hundredths, link with division and explore operations with decimals. Start by using these Decimal Numbers section activities: Naming decimal places, Vinculums in common fractions, common and decimal fractions. Follow this with the Operations activities: Adding decimal fractions, Common problems with adding decimals, Subtracting decimal numbers, and Decimals in multiplying (2 lessons if you can).

Year 7: Round and compare decimal numbers, then convert between fractions, decimals and percent. Spend one week using activities from the Decimal Numbers section: Vinculums in common fractions, common and decimal fractions, adjusting decimal numbers. For the second week, apply decimals to Operations with: Decimals in multiplying (2 lessons), Divide by tenths and hundredths and then Decimals in dividing.

Weeks 3-4: Extending and connecting fractions, operations with fractions, percentages   Foundation: Partitioning whole numbers

Lots of practice at making halves, quarters (and eighths) of 3D objects, 2D shapes, groups and lines.
Year 3: extend into making thirds, fifths and tenths.

Investigation idea:
Take an A4 piece of paper and ask students to fold a half. Discuss how they know it is a half (have to be the same size). Cut down the fold so that you have two halves. Stick one on the board. Repeat this process making as many differently shaped halves as possible, always testing that each really is one half of the A4 paper by placing the halves on top of each other. Once you have at least 4 differently shaped halves ask students which half they think is the biggest. Spend the rest of the session overlaying, cutting and reorganising the pieces to show that all of the halves are actually the same. You can use a similar process for quarters.

Foundation: Use this time to build partitioning of numbers, up to 6, 12 or 20 as appropriate. You can find great ideas in Problem 6 and 7 of the downloadable Number activities in the Foundation section. If you have extra time, try to look at Sharing which is problem 8 in the same section.

Years 1: Week 3 focus on making halves, considering the whole, and concentrating on "fair" with Journal Problem 8. Week 4 focus on division with Journal Problem 16: Sharing.

Year 2: Week 3 focus on consolidating halves and quarters with Journal problem 9. Use this same activity sequence to introduce 8ths. If you have extra time, use it to consolidate division with Journal Problem 17: Sharing
Year 3: Journal Problem 7 (Simple Fractions), Journal Problem 5 (Ordering and Comparing fractions), One quarter of a group, Symbol for one quarter, Fraction Names all from Section C: Fractions.

NB: If you own the book *Fixing Misconceptions in Fractions*, consider using the diagnostic test then the appropriate lessons from that book for this two-week period rather than the lessons specified below

Investigation: Exploring related denominators and operations
Arrange a deck of cards into an array (4x13), arranged by colour, suit and then from highest to lowest. Using the cards as stimulus, have children work out what fraction of the cards fit specific conditions and then add that fraction to a number line between 0 and 1. E.g. What fraction are face-cards? What fraction are red? What fraction are clubs? What fraction are even numbers? To play a game of 500 we remove all the 2s and 3s, and also remove the black 4s. What fraction do we remove?
Years 6-7 additional steps:
- Use the cards to add fractions with related denominators: what fractions are clubs OR red? What fractions are face cards OR numbers smaller than 5? What fraction are red face cards OR black numbers?
- Use cards to multiply fractions: What fraction are red AND face cards? What fraction are numbers AND clubs?

Year 4: Focus on fractions greater than one and placing these on a number line. Count by halves, quarters and thirds, including mixed numerals and improper fractions, along a number line. Use the following activities from the Fractions section: Fractions can be written in symbols, Counting common fractions, Adding and subtracting fractions, Represent whole numbers and fractions.

Year 5: Focus on fractions greater than one and placing these on a number line. Focus on making fractions equivalent and comparing the size of them. Spend some time on addition and subtraction. Use the following activities from the Fractions section, along with a recorded webinar on teaching fractions: Represent whole numbers and fractions, Represent fractions in everyday situations, Identify equivalent common fractions, Ordering different types of fractions, Adding and subtracting fractions.

Year 6: Focus on comparing fractions, connecting fractions with percentages, and addition and subtraction with related denominators. Use the following activities from the Fractions section: Adding fractions with related denominators, Adding fractions, Visually adding fractions, Adding and Subtracting fractions, Percentage as parts per 100, Percentage, fractions and decimals. Percentage will be reviewed in the Financial Maths section in weeks 6-7.

Year 7: Focus on operations with fractions and then on forming connections to percentage if you have extra time. Use the following activities from the Fractions section: Visually adding fractions, Written method for adding fractions, Multiply common fractions using pictures, Divide common fractions using pictures, Multiplying and dividing fractions using written patterns, Percentage of and percentage off, Using key percentages to solve problems. Percentage off will be reviewed in the Financial Maths section in weeks 6-7.

Week 5: Catch up

Weeks 6-7: Money and Financial Maths

Investigation idea:

Visit your school canteen to see what they sell and what each item costs. Make price tags that show pictures of coins as well as the amount of money written in dollars and cents. Alternatively, set up a class store to play shops with. You could also use print-outs of Australian coins for "earning" an amount by doing different jobs (e.g. turning in homework on time, keeping their desk clean, helping to clean up after activities, practicing maths facts). Make sure that if you are using this system the amounts are always fair and always applied equally to each child who completes the task rather than being used as a rewards system. The child can use their earnings to purchase something that is meaningful for them (e.g. use of the art equipment one lunch time for them and a friend, 30 minutes of quiet reading time, choice of a maths game during maths time…)

Foundation: although money is not in the content descriptors for Foundation, the context of a shop can be used to explore small numbers. You can set up a shop and price everything in whole dollars, with price tags showing how many $1 coins each item costs. Use the shop as a way of making amounts to 10, sorting objects by price, and adding and subtracting small amounts. Alternatively, you can choose to spend this two-week period reviewing measurement concepts or look at time. Both are available in the Measurement and Geometry activities at this link.

Year 1: Focus on recognising and describing Australian coins, as well as ordering them by value. Use the following activities from the Money section: Problem 17 Money and Problem 18 Purchase.

Year 2: Focus on counting and ordering small collections of Australian coins, as well as ordering them by value. In addition to forming small collections, counting and ordering them, use the following activity from the Money section: Problem 18 Money Equivalent Values.

Year 3: Focus on representing money values in multiple ways, counting change, and comparing amounts of money. Use all five activities from the Money section. The last activity, *Money*, could take several lessons.

Investigation idea:

Visit your school canteen to see what they sell and what each item costs. Calculate what you would have to spend to buy lunch every day for a week, then what that would cost over a term or a year. For year 6/7s, consider an investigation on saving money for an end-of-primary school celebration (e.g. buying an outfit, having a party). Remember to build in extra time for percentage of and off as well.

Year 4: Focus on solving problems involving purchasing and change, including rounding amounts to the nearest 5 cents. There are 7 activities in the Money section, so consider cutting one out if you run short of time. The problem, *Saving Money*, is a particularly good one for an investigation.

Year 5: Focus on creating simple financial plans. There are only 3 activities in the Money section, however the task on *Saving and Borrowing Money* is likely to take more than one lesson. Use the Investigation *Pocket Money Plans*. If you have additional time, consider reviewing the conversion between fractions and decimals using the connection "of a dollar" as stimulus.

Year 6: Focus on percentage discounts (particularly 10%, 25% and 50%). There are only 5 activities in the Money section, allowing you more time to focus on percentage. Make sure that you include the task *Percentage of and Percentage off* from the Fractions section. The investigation *Tuckshop audit*, found on the main Year 6 page in the Investigations section is also a great one for exploring money and financial plans.

Year 7: Focus on investigating 'best buys', including percentage discounts (particularly 10%, 25% and 50%). There are only 4 activities in the Money section, allowing you more time to focus on percentage. Add in *Percentage off* from the Fractions section. The investigation *Holiday* Plans and the moderation task *Saving for a* holiday, found on the main Year 7 page are great for exploring financial plans.

Weeks 8-9: Location, Position and Direction   Years 6-7: Angle Geometry

Investigation idea:
Create a map of the playground at school. Give directions to different locations as a "treasure hunt".

Foundation: focus on describing position and movement. This includes vocabulary such as: between, near, next to, in front of, behind, forward and toward. Use Problem 15: Positions in space, Problem 16: Movement in space available in the Measurement and Geometry activities at this link.

Year 1: focus on giving directions. Make sure that you include both distance (e.g. number of steps) and direction (turning towards or away from, what you are facing, clockwise, anticlockwise, forward, under/over). Use Problem 35 Position and Problem 36 Directions on the Location, Direction and Movement page.

Year 2: focus on giving directions and using simple maps. Make sure that you include both distance (e.g. number of steps) and direction (quarter and half turns, clockwise, anticlockwise, forward, under/over). Use Problem 35 Position and Problem 36 Directions on the Location, Direction and Movement page.

Year 3: focus on using simple grid maps that include position and pathways. Make sure that you include a simple scale as well as distance (e.g. metres) and direction (quarter and half turns, clockwise, anticlockwise, forward, under/over). Use all three tasks on the Location, Direction and Movement page.

Years 4-5: Location, Position and Direction   Years 6-7: Angle Geometry

Investigation idea:
Create a map of the school or part of the school (such as the playground). Use a grid references. Use accurate measurements and a scale. Put on a north point or orient the map towards north. Give directions to different locations as a "treasure hunt".

Year 4: focus on using grid maps with scales and legends, including to give directions. Make sure that you include both distance (e.g. metres) and direction (compass points). Use all four tasks on the Location, Direction and Movement page. This is also a good opportunity to review units of length as well as angles.

Year 5: focus on using grid references on maps with scales and legends, including to give directions. Make sure that you include both distance (e.g. metres) and direction (compass points). Use all six tasks on the Location, Direction and Movement page. If you have extra time, use the concept of scale to explore length, or the compass points to consider angles.

Year 6: Investigate angles formed when straight line segments cross or are parallel. Make sure that you include angles along a straight line, those that meet at a point and vertically opposite angles. Revise internal angles within quadrilaterals and triangles. Use the Geometry activities: Using a protractor, Fractions of full turns, Conventions for labelling shapes, angles and lines, Internal angles of a triangle, Angles and lengths in climbing frames. You may also wish to adapt the Year 7 Investigation *Slide Safety*, particularly to make use of the pages on angles meeting at a point and along a line (available at the bottom of the general Year 7 page).

Year 7: Investigate angles formed when straight line segments cross or are parallel. Make sure that you include corresponding, alternate and cointerior lines formed when a transversal crosses parallel line segments. Investigate the internal angles of triangles and other polygons, and investigate conditions for two lines to be parallel. Use the Geometry activities: Parallel and perpendicular, Internal angles of quadrilaterals and triangles, Pentagons, hexagons and octagons, Angles and lengths in swing sets and slides and at least the pages on angles in the Investigation *Slide Safety* (available at the bottom of the general Year 7 page).

Week 10: Catch up

Term 4:

Focus concepts: Number concepts, Patterns and Functions, Geometry, Transformations and Tessellations

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Number patterns and algebra							
ACMNA005: Sort and classify familiar objects and explain the basis for these classifications. Copy, continue and create **patterns** with objects and drawings

ACMNA289: Compare, order and make correspondences between collections, initially to 20, and explain reasoning | **ACMNA018** Investigate and describe number patterns formed by skip counting and patterns with objects

ACMNA012 Develop confidence with number sequences to and from 100 by ones from any starting point. Skip count by twos, fives and tens starting from zero | **ACMNA035** Describe patterns with numbers and identify missing elements | **ACMNA060** Describe, continue, and create number patterns resulting from performing addition or subtraction | **ACMNA083** Use equivalent number sentences involving addition and subtraction to find unknown quantities

ACMNA081 Explore and describe number patterns resulting from performing multiplication | **ACMNA107** Describe, continue and create patterns with fractions, decimals and whole numbers resulting from addition and subtraction

ACMNA121 Use equivalent number sentences involving multiplication and division to find unknown quantities | **ACMNA133** Continue and create sequences involving whole numbers, fractions and decimals. Describe the rule used to create the sequence

ACMNA134 Explore the use of brackets and order of operations to write number sentences | **ACMNA175** Introduce the concept of variables as a way of representing numbers using letters

ACMNA176 Create algebraic expressions and evaluate them by substituting a given value for each variable

ACMNA177 Extend and apply the laws and properties of arithmetic to algebraic terms and expressions

ACMNA178 Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point

ACMNA179 Solve simple linear equations

ACMNA180 Investigate, interpret and analyse graphs from authentic data |

Geometry

ACMMG010: Describe position and movement ACMMG009: Sort, describe and name familiar two-dimensional shapes and three-dimensional objects in the environment	ACMMG022 Recognise and classify familiar two-dimensional shapes and three-dimensional objects using obvious features	ACMMG045 Investigate the effect of one-step slides and flips with and without digital technologies ACMMG046 Identify and describe half and quarter turns ACMMG042 Describe and draw two-dimensional shapes, with and without digital technologies ACMMG043 Describe the features of three-dimensional objects	ACMMG066 Identify symmetry in the environment ACMMG063 Make models of three-dimensional objects and describe key features ACMMG064 Identify angles as measures of turn and compare angle sizes in everyday situations	ACMMG091 Create symmetrical patterns, pictures and shapes with and without digital technologies ACMMG088 Compare and describe two dimensional shapes that result from combining and splitting common shapes, with and without the use of digital technologies ACMMG089 Compare angles and classify them as equal to, greater than or less than a right angle	ACMMG114 Describe translations, reflections and rotations of two-dimensional shapes. Identify line and rotational symmetries ACMMG115 Apply the enlargement transformation to familiar two dimensional shapes and explore the properties of the resulting image compared with the original ACMMG111 Connect three-dimensional objects with their nets and other two-dimensional representations ACMMG112 Estimate, measure and compare angles using degrees. Construct angles using a protractor	ACMMG142 Investigate combinations of translations, reflections and rotations, with and without the use of digital technologies ACMMG140 Construct simple prisms and pyramids ACMMG141 Investigate, with and without digital technologies, angles on a straight line, angles at a point and vertically opposite angles. Use results to find unknown angles	ACMMG181 Describe translations, reflections in an axis, and rotations of multiples of 90° on the Cartesian plane using coordinates. Identify line and rotational symmetries ACMMG161 Draw different views of prisms and solids formed from combinations of prisms ACMMG165 Classify triangles according to their side and angle properties and describe quadrilaterals

Suggested Teaching Sequence:

Your term at a glance: weeks 5 and 10 are designated for consolidation and catch up
- Weeks 1-4: Patterns, skip counting, number laws, order of operations and algebra. F-3 have some additional time for operations. Foundation teachers are provided with options for other topics.
- Weeks 6-9: Geometry and measurement of shapes and objects

Weeks 1-4: Patterns and functions

Investigation ideas:
- Create dance steps using repeating patterns and sequences. These can also include games where one action provokes a repetition (e.g. when the leader claps two times all the followers clap two times) or provokes a different action (e.g. 2 claps means the followers spin around). You could also use this to prepare for an end of year concert item.
- Create beading patterns using different shapes, colours and patterns of beads. NB this should not be AB patterns as they are not very useful for maths progress – go for patterns with 3 instead (AAB, ABC…)
- Play "What is missing": The teacher creates a repeating or growing pattern using coloured counters. The students cover their eyes and the teacher removes part of the pattern (can be a whole repeating segment, or the end of one and start of another for added complexity). The students have to make what is missing.

Foundation teachers: Focus on patterns with numbers and objects as well as similarities and differences. Use the following Number activities on the Foundation page: Problem 5 Reasoning with the number sequence, Problem 9 Language of order and sequence, ordinal numbers, and Problem 10 Sorting. Add in following activity on the Year 1 Number Patterns and Algebra page: Problem 19 Repeating patterns.

Year 1: Focus on investigating and describing patterns (including skip counting and patterns with objects). Use the following activities on the Year 1 Number Patterns and Algebra page: Problem 19 Repeating patterns, Problem 20 Growing patterns, Problem 21 Functions. Add in from the Number and Place Value page: Problem 4 Counting in twos and fives.

Year 2: Focus on investigating and describing patterns with numbers and identifying missing elements (including skip counting). Use the following activities on the Year 2 Number Patterns and Algebra page: Problem 19 Balancing and equivalence, Problem 20 Growing patterns, Problem 21 Function. Add in from the Number and Place Value page: Problem 4 Counting patterns. Spend your remaining time consolidating operations, particularly subtraction.

Year 3: Focus on describing, continuing and creating number patterns with addition and subtraction. Use the following activities on the Number Patterns and Algebra page: Growing and repeating patterns with matchsticks, Counting patterns (JP 12), Growing and repeating patterns (JP18), Growing patterns with numbers and skip counting, Inverse operations (JP 14), What number am I thinking of, Reversing a change, Balance and equivalence (JP 15), Balancing equations. Spend your remaining time consolidating operations, particularly subtraction with regrouping.

Investigation ideas:
- Design a plan to save money over the remaining weeks of the year (e.g. for Christmas gifts for your family, dress for graduation, birthday present for a friend, end of year class party…). How much do you already have? How can you earn the money you need each week? Graph the balance as a linear function. Years 6 and 7 can include borrowing money initially and paying it back.
- Excursion cost as an equation: fixed cost (bus) plus cost per child (lunch, entry fee…)
- Grow seedlings under different conditions and track growth over time. Graph results and write equations. Use "Growth Patterns in Plants" from this page as an example.

Please note: Year 6 and 7 classes might want to spread the following tasks out over 5 weeks rather than 4.

Year 4: Focus on equivalence in number sentences with unknowns that use addition and subtraction. Add in number patterns that result from multiplying. Use the following activities from the Number Patterns and Algebra page:
- Week 1: Trading counters (JP 13), Trading and equivalence, What number am I thinking of
- Week 2: Growing and repeating patterns with numbers, Identify a rule for number patterns, Create a pattern based on a rule
- Week 3: Continue number patterns, Simple equations with double digit numbers, Guess and check method
- Week 4: Balance and equivalence (JP 16), All combinations of + and -, and from the Measurement activities use Postage costs (JP 22)

Year 5: Focus on equivalence in number sentences with unknowns that use multiplication and division. Add in number patterns with fractions, decimals and whole numbers resulting from addition and subtraction. Use the following activities from the Number Patterns and Algebra page:
- Week 1: Counter Patterns (JP 17), Counting common fractions, Counting on and back by 0.01, Identify a rule for number patterns
- Week 2: Create a number pattern based on a rule, Writing rules from number patterns, Display patterns with graphs
- Week 3: Unbalanced scales (JP 16), Inverse operations reverse a rule, Use backtracking to solve problems
- Week 4: From the Operations page use: Multiplication is associative, Is division associative?, Distributive law

Year 6: Focus on using rules to continue, create and describe number sequences. Introduce order of operations, including using brackets, and explore the use of this in writing equations. Use the following activities from the Number Patterns and Algebra page:
- Week 1: Function machine (JP 14), Introducing function machines, Two operations with function machines, Graphing ordered pairs
- Week 2: Identify pattern rules, Identify the relationship between quantities, Solve problems: backtracking, Identify the position of any term
- Week 3: From the Operations page use: Distributive law, Order of operations, Introducing brackets
- Week 4: From the Operations page use: Interpreting equations with operations, Applying order of operations, Writing and evaluating expressions

Year 7: Focus on introducing variables, creating equations and using substitution and simple linear equations. Explore how the laws of arithmetic extend to algebraic equations (associative, commutative and distributive properties). Use the following activities from the Number Patterns and Algebra page:

	• Week 1: Function machine (JP 14), Two operations with function machines, Graphing ordered pairs, Relationships between quantities
	• Week 2: Letters instead of numbers, Identify the relationship between quantities, Identify the position of any term, Solve problems: backtracking
	• Week 3: Trends in tables and graphs, Graphing negative relationships, Graphing with all four quadrants
	• Week 4: From the Operations page use: Interpreting equations with operations, Order of operations and technology (JP 12), Writing and evaluating expressions, Applying order of operations (if you have time)

Weeks 6-9: Geometry, angles and transformations

Investigation ideas:	Investigation:
Foundation – 7: Create mosaics or wrapping paper from tiling shapes. Preferably have the students attempt to replicate the shapes for tiling, and talk about flipping, sliding and turning as you complete the task. **Foundation:** Use the following activities on the Foundation page in the Measurement section: • If you did not previously complete Problem 19: Lines or Problem 20: Shape in the at-home program then use these first, • Followed with Problem 10: Sorting, Problem 17: Direction, Problem 18: Pathways as appropriate. **Year 1:** Focus on classifying 2D shapes and 3D objects using obvious features. If you did not previously complete the at-home program work on Shape, then go to the Geometry page and use Problem 31 2D Shapes and Problem 32 3D Shapes. If you have extra time, go to the to the Symmetry page and work on Problem 33 Flip, slide and turn, and Problem 34 Symmetry. Alternatively, use your remaining time to review the concepts from this year. **Year 2:** Focus on describing and drawing 2D shapes, as well as describing features of 3D objects. Add in investigating one-step slides and flips. If you did not previously complete the at-home program work on Shape, then go to the Geometry page and use Problem 31 2D Shapes and Problem 32 3D Shapes. Next, go to the to the Symmetry page and work on Problem 33 Flip, slide and turn, and if you have additional time work on Problem 34 Symmetry. Alternatively, use your remaining time to review the concepts from this year. **Year 3:** Focus on making models of 3D objects and describing their features. You will also need to add in identifying symmetry, as well as identifying angles as measures of turn. If you did not previously complete the at-home program work on Shape, then go to the Geometry page and use the developmental sequence for 3D shapes as well as the sequence for angles. While it is not in the Australian curriculum at year 3, using activities on 2D shapes is advisable if you have time. Next, go to the to the Symmetry page and work on: Symmetry, and Symmetry of 2D shapes. Consider adding in the other tasks if you have time. The Patterns task is on tessellations, which can form good wrapping paper.	• Design a climbing frame for a playground. Build a model of the frame from straws that have pipe cleaners threaded through them to create a structure. Examine the 3D objects, 2D shapes, lines and angles created. **Year 4:** Focus on combining and splitting common 2D shapes and comparing and describing the results. Add in creating symmetrical patterns, pictures and shapes, as well as comparing and classifying angles. • If you did not previously complete the at-home program work on Shape which had a specific focus on angles, then go to the Geometry page and use the following activities: Create angles, Properties of angles in 2D shapes, Is our classroom square (JP 33). • Next, use: Construct a range of 2D shapes, Construct and experiment with shapes, 2D shapes within 3D shapes, and 2D shapes within 2D shapes. • Finally, go to the Symmetry, Transformations and Tessellations page and add in the first 4 tasks. The tessellations tasks are also great for creating wrapping paper, which is a good way to end the year. **Year 5:** Focus on connecting 3D objects with nets and 2D representations, describing transformation of 2D shapes (reflect, translate, rotate), identifying symmetry, and working with a protractor. • If you did not previously complete the at-home program work on Shape which had a specific focus on angles, then go to the Geometry page and use the following activities: Properties of angles, Lines and angles in 2D shapes, and Angles in tessellating patterns (JP 34). • Next, use: Properties of 3D shapes, Classify 3D shapes into families, Draw 3D shapes in various ways, 3D shapes have nets, and Predicting the shape from the net • Finally, go to the Symmetry, Transformations and Tessellations page and add in the first 5 tasks. The tessellations tasks are also great for creating wrapping paper, which is a good way to end the year. **Year 6:** Focus on constructing simple prisms and pyramids, and add in performing combinations of translations, reflections and rotations. We have completed the necessary tasks on geometric reasoning in Term 3, and the Cartesian coordinate system in the Patterns and Algebra block at the start of term 4. • Go to the Geometry page and use the following activities: Sketching 3D shapes, 3D shapes have nets, Nets for boxes (JP 21), Predicting the shape from the net. • Next, use the investigation idea above for climbing frames, focusing on constructing pyramids and prisms. Consider using technology as well if you have time. • Finally, go to the Symmetry, Transformations and Tessellations page and complete the first 3 tasks. The final task on designing a Logo can be used to fill out time if you have any extra. **Year 7:** Focus on drawing different views of 3D objects formed from combinations of prisms. While we did complete the necessary tasks on geometric reasoning in Term 3, consider revising this concept here. Only if those concepts are well understood, look at transformations on the Cartesian plane, and examine rotation and line symmetry. • Go to the Geometry page and use the following activities: Using compasses and rulers to make shapes, Nets and surface area for triangular prisms (JP 21), Predicting the shape from the net, Nets and shapes (JP 32). • Next, use the investigation idea above for climbing frames, focusing on constructing 3D objects from combinations of prisms. This is also a good opportunity to examine the angles formed. • Check that students still understand the work you did on angles in Term 3. • Finally, go to the Symmetry, Transformations and Tessellations page and add in the tasks on Transforming shapes on a plane, and Tessellations with two shapes (JP 34).

Please find below the achievement standards for each year level. The black lettering shows anything covered between the at-home work program, the recommended investigation on Breakfast foods provided at the end of term 2, and this six-month return to school work program. The greyed-out parts have not been a focus between these programs, so they are up to you to demonstrate. Your work on Interleaving in the at-home program as well as the consolidation work recommended in this work-program should meet most of the greyed-out parts.

For anyone with website membership to Back-to-Front Maths, remember that there is a criteria sheet with A-E grading on your Year Level page in the Lessons Bank.

Foundation:

By the end of the Foundation year, students make connections between number names, numerals and quantities up to 10. They compare objects using mass, length and capacity. Students connect events and the days of the week. They explain the order and duration of events. They use appropriate language to describe location. Students count to and from 20 and order small collections. They group objects based on common characteristics and sort shapes and objects. Students answer simple questions to collect information and make simple inferences.

Year 1:

By the end of Year 1, students describe number sequences resulting from skip counting by 2s, 5s and 10s. They identify representations of one half. They recognise Australian coins according to their value. Students explain time durations. They describe two-dimensional shapes and three-dimensional objects. Students describe data displays. Students count to and from 100 and locate numbers on a number line. They carry out simple additions and subtractions using counting strategies. They partition numbers using place value. They continue simple patterns involving numbers and objects. Students order objects based on lengths and capacities using informal units. They tell time to the half-hour. They use the language of direction to move from place to place. Students classify outcomes of simple familiar events. They collect data by asking questions, draw simple data displays and make simple inferences.

Year 2:

By the end of Year 2, students recognise increasing and decreasing number sequences involving 2s, 3s and 5s. They represent multiplication and division by grouping into sets. They associate collections of Australian coins with their value. Students identify the missing element in a number sequence. Students recognise the features of three-dimensional objects. They interpret simple maps of familiar locations. They explain the effects of one-step transformations. Students make sense of collected information. Students count to and from 1000. They perform simple addition and subtraction calculations using a range of strategies. They divide collections and shapes into halves, quarters and eighths. Students order shapes and objects using informal units. They tell time to the quarter-hour and use a calendar to identify the date and the months included in seasons. They draw two-dimensional shapes. They describe outcomes for everyday events. Students collect, organise and represent data to make simple inferences.

Year 3:

By the end of Year 3, students recognise the connection between addition and subtraction and solve problems using efficient strategies for multiplication. They model and represent unit fractions. They represent money values in various ways. Students identify symmetry in the environment. They match positions on maps with given information. Students recognise angles in real situations. They interpret and compare data displays. Students count to and from 10 000. They classify numbers as either odd or even. They recall addition and multiplication facts for single-digit numbers. Students correctly count out change from financial transactions. They continue number patterns involving addition and subtraction. Students use metric units for length, mass and capacity. They tell time to the nearest minute. Students make models of three-dimensional objects. Students conduct chance experiments and list possible outcomes. They conduct simple data investigations for categorical variables.

Year 4:

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They identify and explain strategies for finding unknown quantities in number sentences. They describe number patterns resulting from multiplication. Students compare areas of regular and irregular shapes using informal units. They solve problems involving time duration. They interpret information contained in maps. Students identify dependent and independent events. They describe different methods for data collection and representation, and evaluate their effectiveness.

Students use the properties of odd and even numbers. They recall multiplication facts to 10 x 10 and related division facts. Students locate familiar fractions on a number line. They continue number sequences involving multiples of single digit numbers. Students use scaled instruments to measure temperatures, lengths, shapes and objects. They convert between units of time. Students create symmetrical shapes and patterns. They classify angles in relation to a right angle. Students list the probabilities of everyday events. They construct data displays from given or collected data.

Year 5:

By the end of Year 5, students solve simple problems involving the four operations using a range of strategies. They check the reasonableness of answers using estimation and rounding. Students identify and describe factors and multiples. They identify and explain strategies for finding unknown quantities in number sentences involving the four operations. They explain plans for simple budgets. Students connect three-dimensional objects with their two-dimensional representations. They describe transformations of two-dimensional shapes and identify line and rotational symmetry. Students interpret different data sets.

Students order decimals and unit fractions and locate them on number lines. They add and subtract fractions with the same denominator. Students continue patterns by adding and subtracting fractions and decimals. They use appropriate units of measurement for length, area, volume, capacity and mass, and calculate perimeter and area of rectangles. They convert between 12- and 24-hour time. Students use a grid reference system to locate landmarks. They measure and construct different angles. Students list outcomes of chance experiments with equally likely outcomes and assign probabilities between 0 and 1. Students pose questions to gather data, and construct data displays appropriate for the data.

Year 6:

By the end of Year 6, students recognise the properties of prime, composite, square and triangular numbers. They describe the use of integers in everyday contexts. They solve problems involving all four operations with whole numbers. Students connect fractions, decimals and percentages as different representations of the same number. They solve problems involving the addition and subtraction of related fractions. Students make connections between the powers of 10 and the multiplication and division of decimals. They describe rules used in sequences involving whole numbers, fractions and decimals. Students connect decimal representations to the metric system and choose appropriate units of measurement to perform a calculation. They make connections between capacity and volume. They solve problems involving length and area. They interpret timetables. Students describe combinations of transformations. They solve problems using the properties of angles. Students compare observed and expected frequencies. They interpret and compare a variety of data displays including those displays for two categorical variables. They interpret secondary data displayed in the media.

Students locate fractions and integers on a number line. They calculate a simple fraction of a quantity. They add, subtract and multiply decimals and divide decimals where the result is rational. Students calculate common percentage discounts on sale items. They write correct number sentences using brackets and order of operations. Students locate an ordered pair in any one of the four quadrants on the Cartesian plane. They construct simple prisms and pyramids. Students describe probabilities using simple fractions, decimals and percentages.

Year 7:

By the end of Year 7, students solve problems involving the comparison, addition and subtraction of integers. They make the connections between whole numbers and index notation and the relationship between perfect squares and square roots. They solve problems involving percentages and all four operations with fractions and decimals. They compare the cost of items to make financial decisions. Students represent numbers using variables. They connect the laws and properties for numbers to algebra. They interpret simple linear representations and model authentic information. Students describe different views of three-dimensional objects. They represent transformations in the Cartesian plane. They solve simple numerical problems involving angles formed by a transversal crossing two lines. Students identify issues involving the collection of continuous data. They describe the relationship between the median and mean in data displays.

Students use fractions, decimals and percentages, and their equivalences. They express one quantity as a fraction or percentage of another. Students solve simple linear equations and evaluate algebraic expressions after numerical substitution. They assign ordered pairs to given points on the Cartesian plane. Students use formulas for the area and perimeter of rectangles and calculate volumes of rectangular prisms. Students classify triangles and quadrilaterals. They name the types of angles formed by a transversal crossing parallel line. Students determine the sample space for simple experiments with equally likely outcomes and assign probabilities to those outcomes. They calculate mean, mode, median and range for data sets. They construct stem-and-leaf plots and dot-plots.