Number and Algebra
Students solve simple purchasing problems with and without the use of digital technology. **SEM 2**
Students continue number sequences involving multiples of single-digit numbers **and unit fractions,** and locate them on a number line. **SEM 2**

What is it that we want our students to know, understand, do and communicate KUDCO?					
Year Level: Four	**Semester:** Two	**Subject:** Mathematics	**Team Members:** Renee Johnson, Adriana Jankulovski, Erin Austin, Brad Morin		
Essential Learning What is the essential learning? Describe in student friendly vocabulary.	**Example-Rigor** What does proficient student work look like? Provide an example and/or description.	**Prior Skills Needed** What prior knowledge, skills and/or vocabulary are needed for a student to master this essential learning?	**Common Assessments** What assessment/s will be used to measure student mastery?	**When taught?** When will this essential learning be taught?	**Extension Skills** What will we do when students have already learned this essential learning? https://docs.google.com/document/d/1MRgDULcmpED_BORTFUsm1RNx-FmqswF8ib3sN6Ou5M4/edit
ONGOING FROM SEM 1 *(Multiplication Facts)* I can recall multiplication facts up to 10 x 10 and the related division facts. **Learning Targets:** I can use: digital technologies to check my answers estimate to check that my answers are reasonable.	I can recall division facts using related multiplication facts. I can recall multiplication facts up to 10X10 with fluency. I can use **mental & concrete strategies** for multiplication: Repeated addition Nearest Known Facts (working forward and backwards and estimating) E.g. I can work out 9x7 by: 7x10 = 70 so 70-7 = 63. Double doubles (5x4 = 5x2 (x2) = 20) *x3: double plus one* *x4: double the double* *x6: multiply by 3 then double* *x7: learn them* *x8: double the double, double* *x9: multiply by 10 and subtract the number* I can use **fact families (**three for free).	❑ Know what the multiplication symbol represents. ❑ Know my doubles for single digit numbers. ❑ Can create and read simple arrays correctly. ❑ Can skip count by single digit numbers	Pretest, CFA's and Post Test	ALL SEMESTER 1	❑ Know my 12x12 multiplication facts fluently (instant recall). ❑ Can extend multiplication facts (for example 4 x 7 = 28 so 4 x 7 tens = 28 tens) by applying the rule of zero

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	I understand **Part, Part, Whole** in relation to multiplication. ●				

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(Division & Multiplication- 2 by 1) I can solve multiplication and division problems using efficient written and mental strategies. **Learning Targets:** I can use: digital technologies to check my answers estimate to check that my answers are reasonable	I can use fact families (three for free) (adriana moved this from essential learning) I can represent multiplication and division as part, part, whole and whole, part, part. I can explain and demonstrate various strategies for multiplication, which may include: - Split strategy - Expanded form - Grid method - Partitioning I can explain and demonstrate various strategies for division, which may include: - Split strategy (2 easy to work with numbers) - Halving (with even numbers) - Partitioning (place value) I know how to use calculators to check my answers. I can estimate and compare to check my answers. I know that 70/10=7 so I know that 60/10 needs to be less.	I can use repeated addition and repeated subtraction. I understand that division is the inverse operation of multiplication. I can halve numbers. Eg. 24/12 = 12. I can use arrays to partition the whole. **Guaranteed vocabulary**: • Equivalent (multiplication and division 3x7 3 groups of 7 is equivalent to 1 group of 21)	Pretest, CFA's and Post Test to be determined in Term 3 (Prior to week 5).	Term 2: Weeks 1-4	What happens when you divide a number and it does not divide evenly? (Remainders) Can record the remainder in different ways, as a whole number 1, as a fraction ¼ and as a decimal .25. I can identify factors and products of numbers.

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Fractions: Number Lines I can count by quarters, halves and thirds (including mixed numbers) on a number line.	I can count to one and beyond by halves I can count to one and beyond by quarters I can count to one and beyond by thirds **NICE TO KNOW:** I can represent fractions larger than one as an improper fraction and a mixed number. Eg. 5/4, 1 ¼	I can identify quarters, halves and thirds on an area model. I understand what the numerator and denominator represent in a fraction (eg. The numerator tells how many parts we are talking about, the denominator says how many parts the whole is divided into.) **Guaranteed vocabulary:** ● Mixed Numbers	CFA Pre-Test for extension students. Post - Test from previous Equivalent Fraction unit to be used as pre-assessment data. Post - Test Think board (Area, Length, Quantity) reasoning to explain. Van De Walle Envision (Selected pieces modified by the team). Fractions of shapes on a grid Fractions on a line Fractions of a group	Term 3: Wk 3-5 (Major)	I can apply the Essential Learning to other unit fractions (e.g. fifths, sixths, eighths and tenths.) I can provide examples when each model would be used in real life. - eg. Fraction of an area (grid, shape, array) - Fraction of a length (eg. Use a number line to show ⅕ of 25km). - Fraction of a quantity (10 horses. ⅘ are brown. How many are brown?) .
Fractions: Equivalency I can recognise common equivalent fractions in familiar contexts.	I know the larger the denominator is, the smaller the fraction piece. (i.e. ⅕ of a pizza is smaller than ½ of the same pizza) I can identify common equivalent fractions within families: ½, = 2/4 = 4/8 ¼= 2/8= 4/16 ⅓= 2/6= 3/9 I know two fractions are equivalent if they represent the same amount or quantity.	I know that a fraction is when a whole has been partitioned into equal-sized portions. I understand what the numerator and denominator represent in a fraction (eg. The numerator tells how many parts we are talking about, the denominator says how many parts the whole is divided into.) **Guaranteed vocabulary:**		Term 3: Wk 6-8 (Major)	I can apply the Essential Learning to other unit fractions to identify equivalent fractions (e.g. fifths, ninths, tenths and twelfths). I can explain the difference between these pairs of fractions (equivalent vs nonequivalent).

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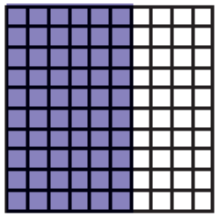
	I can use visuals, symbols and words to explain my understanding.	• Equivalent			
Fractions: Place Value (Decimals) I can make connections between fractions and decimal notation to hundredths.	I can represent this understanding as: Visuals: Area Model Symbols: Decimals and fractions Words: An explanation  I can name decimal places as tenths and hundredths. I know the larger the denominator is, the smaller the fraction piece. (i.e. ⅛ of a pizza is smaller than ½ of the same pizza). I understand that the place value system can be extended to the tenths and hundredths (base 10 system). I understand that a the digits after a decimal point is a part less than one.	I can recognise a decimal number. I know what a decimal point looks like. I understand that the place value system is base ten. **Guaranteed Vocabulary:** • Decimals • Tenths • Hundredths	CFAs Anecdotal notes https://extranet.education.unimelb.edu.au/SME/TNMY/Decimals/Decimals/tests/competst.htm	Term 4: Wk 3-5 (Major)	I can use the halving strategy to find fractions decimals eg. ½ /2 = ¼ eg. 0.5 / 2 = 0.25 I can rename decimals as tenths and/ or hundredths. Eg. 63/100 = 6 tenths and 3 hundredths
***Teach after decimals unit** **Money** I can solve purchasing problems with and without the use of digital technology.	I know why we round to the nearest 5c when using cash. (E.g why 74c rounds to 75c, 72c rounds to 70c, 78c rounds to 80c) calculate money problems using simple decimals (dollars & cents) round numbers to the nearest 5 cent. calculate change and total cost to the nearest five cents.	I can read monetary amounts and explain their values. I can explain that cents are part of a dollar. e.g) There are 100 cents in 1 dollar. I know that a total can be created using a variety of notes and coins. E.g. $10 can be created using two $5 notes.	Worded problem. Buy products, how much was it and how much change. (given an amount of money and a number of products they have to buy) - differentiate amounts given	Term 4: Wk 6-7 (Major)	Creating a budget or a plan to spend a certain amount of money. I can justify the role of the decimal point in monetary values. I can carry out calculations in another currency. I know that different countries

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		(Vocab. Cents, dollar, total cost, change,value, running total, shopkeeper method, notes, coins, currency)			have different currencies.
(Scaled instruments) I can use scaled instruments to measure: - **Length** - **Mass** - **Capacity** - **Temperature**	I can measure: - Length - Mass - Capacity - Temperature I can select the appropriate instruments to measure a specific unit. eg. ruler = length thermometer = temperature Protractor = angles I can read the graduated scale on a variety of measuring instruments	I can name different units of measurement: Eg. mm, cm, m, km, g, kg, ml, L. I know the order of: mm, cm, m, km, g, kg, ml, L, I can estimate using appropriate informal measuring units. eg. hands, feet, blocks, unifix groups	Hands on activities incorporating the use of scaled instruments. Example pre-CFA: Find the length of various distances within the classroom using a 30cm ruler and a 1m ruler.	Term 1: Weeks 5-7	I can convert between units of measurement and I can provide examples of how they are related. I can explain how I estimated my measurement. I can explain how units of measurement are linked. I can estimate: - Length - Mass - Capacity - Temperature
(Area) I can use informal and formal means to measure area	Formal: Rulers and formula for regular shapes Informal: Compare the areas of regular and irregular shapes. Use MAB I know what regular and irregular shapes are	I can identify face of a shape I can identify the length and width of a shape.		Term 1: Weeks 5-7	Area, formula irregular shapes.
(Angles) I can use scaled instruments to measure angles	I can estimate angle size in relation to a right angle. I can measure angles using a protractor I can classify an angle based on my measurement I can read the graduated scale on a	I can name some different angles I know how many degrees in a right angle I can classify angles as greater than and less than a right angle.	Hands on activities incorporating the use of scaled instruments.	Term 1: Weeks 5-7	

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	protractor				
(Location and Transformation) I can create symmetrical, simple and composite shapes and patterns (with and without the use of digital technology)	I can identify horizontal, vertical and diagonal lines of symmetry. I can identify multiple lines of symmetry. I can create symmetrical and asymmetrical <u>shapes</u> with and without technology. I can create symmetrical and asymmetrical <u>patterns</u> with and without technology (e.g. tessellation) I can describe properties (length, angles, straight vs curved lines, repeating vs non-repeating patterns) of a shape that make it symmetrical or asymmetrical. Elaboration: using stimulus materials such as the motifs in Central Asian textiles, Tibetan artefacts, Indian lotus designs and symmetry in Yolngu or Central and Western Desert art	I can explain if an image or object is symmetrical or not. I know what 2D shapes are and their basic properties. **<u>Vocabulary:</u>** ● Composite	CFAs Anecdotal Notes	Term 4: Wk 3-4 (Minor)	I can identify rotational symmetry. I can create images with/visualise rotational symmetry.
(Time) I can convert between units of time and solve problems involving time duration.	**I can:** ❏ ... calculate elapsed time from a starting point eg. I began an activity at 11:00am. It finished at 3pm. How long did it take? (11:15am to 3:00pm) ❏ ... count on by hours and minutes (to a multiple of 5) eg. 3 o'clock to 3:15 = 15 minutes ❏ ... convert between units of time. eg. seconds in a minute, minutes in an hour, hours in a day and then build on this.	**I can:** ❏ … tell time to the nearest minute on an analogue clock. ❏ … tell the time to the nearest 5 minutes ❏ ...recognise quarter past, half past, quarter to and o'clock. … recognise the features of an analogue clock. e.g) the long hand = minutes, the shorthand = hours Vocabulary :	Anecdotal notes Pre-Test Post- Test CFAs	Term 4: Wk 5-6 (Minor)	**I can:** ❏ …. read timetables

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	❑ ... use am and pm notation	• Convert • Time duration			
(Mapping) I can interpret information contained in maps.	I can interpret information on a map such as **scales**, keys, compass points, grid references, **legends** and major features. I can identify where I am on a map. I can navigate between two locations on a map.	I can identify some of the basic features of a map (e.g. key, compass, points of interest, symbols). I know my left and right.	CFA- Show how you get from point A to point B on a map. CFA-Provide map, students to follow directions to a certain location and to work out the distance travelled.	Term 1 Week 9	I can transfer my knowledge between maps e.g. world maps, atlases, globes, melways, google maps, gps.
(Data Representation and Interpretation 1) I can select and trial methods of data collection and representation. **Learning Targets:** I can: - Collect and organise my data - Construct data displays: tables, column graphs, picture graphs. - Select and justify choice of data representation.	I can present my data using an appropriate display e.g. column, bar, dot, line graphs, table (drawn, Excel, ICT program). I can choose an appropriate/ effective data collection method and display depending on the data to be represented. I can collect data using a variety of methods (table, survey, tally, ICT, observations) ensuring results are correctly recorded.	I can include some of the basic features on a data graph. I understand that data can be collected in different ways (numbers,tally marks, words) I know what a tally mark represents.	Create graphs given the key and scales. Anecdotal Notes CFAs	Term 4: Wk 1-2 (Major)	Justifying/critiquing my choice of graph for my data. I can create different data displays using the same data
(Data Representation and Interpretation 2) I can evaluate the effectiveness of different data collection methods and displays. **Learning Targets:**	I understand that different graphs can provide different information about the same data. I understand that different data collection methods can alter the results you obtain. (e.g. giving only 4 options when asking a population 'Who is your favourite footy team?')	I know different data collection methods (tally, table, survey, observations). I can read simple bar/column/pictographs without the use of digital technology.	Anecdotal notes CFAs (Students choose and create best display for given data).	Term 4: Wk 1-2 (Minor)	Evaluating my PPDAC process (Where did I go wrong? What did I do well? Should I have used a different graph? Is my data reliable/valid? How and why do I know this?)

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I can: - draw conclusions from data displays	I can draw conclusions based on my data and how it affects choices. I can interpret given data. I can interpret keys and scales from data displays (e.g. where symbols represent more than one data value).				
(Chance) I can identify dependent and independent events.	I can describe possible everyday events and order their chances of occurring I can identify everyday events where one cannot happen if the other happens I can identify events where the chance of one will not be affected by the occurrence of the other	I can identify possible outcomes of a chance experiment. **Guaranteed Vocabulary:** ● Probability ● Dependent events ● Independent events	Anecdotal notes	Term 4: Wk 7-8 (Minor)	I can create my own chance and probability experiments and explain how I've set up outcomes to either be likely, unlikely, independent etc.

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