**MATHEMATICS WEEKLY/UNIT PLANNER**

**Level:** Gr 3/4     **Term:**3 **2018       Weeks: 1-5**

**Teachers:** Sinead, Fran and Marg

**Dimension:** Number

**Specific Focus for Unit:** Multiplication and Division

|  |  |
| --- | --- |
| **Victorian Curriculum Content Descriptions**[**http://victoriancurriculum.vcaa.vic.edu.au/mathematics/introduction/rationale-and-aims**](http://victoriancurriculum.vcaa.vic.edu.au/mathematics/introduction/rationale-and-aims) | **Key Concepts**[**https://drive.google.com/file/d/0B3ydL4IWBSAbbk5laWtLOEprYXc/edit**](https://drive.google.com/file/d/0B3ydL4IWBSAbbk5laWtLOEprYXc/edit) |
| **Yr 2: -**Recognise and represent multiplication as repeated addition, groups and arrays-Recognise and represent division as grouping into equal sets and solve simple problems using these representations-Apply repetition in arithmetic operations, including multiplication as repeated addition and division as repeated subtraction**Yr 3: -**Recall multiplication facts of two, three, five and ten and related division facts-Represent and solve problems involving multiplication using efficient mental and written strategies and appropriate digital technologies**Yr 4:-** Investigate number sequences involving multiples of 3, 4, 6, 7, 8, and 9-Recall multiplication facts up to 10 × 10 and related division facts-Develop efficient mental and written strategies and use appropriate digital technologies for multiplication and for division where there is no remainder-Explore and describe number patterns resulting from performing multiplication-Solve word problems by using number sentences involving multiplication or division where there is no remainder-Define a simple class of problems and use an effective algorithm that involves a short sequence of steps and decisions to solve them**Yr 5: -**Solve problems involving multiplication of large numbers by one- or two-digit numbers using efficient mental, written strategies and appropriate digital technologies-Solve problems involving division by a one digit number, including those that result in a remainder-Use efficient mental and written strategies and apply appropriate digital technologies to solve problems-Use equivalent number sentences involving multiplication and division to find unknown quantities | **Commutative Property (for revision)**The order in which two numbers are multiplied does not affect the product- eg. 3 x 6 gives the same product as 6 x 3**Role of Zero – Null Factor Property (for revision)**Recognising that the product will always be zero when a number is multiplied by zero – eg. 5 x 0 = 0**Identity Property (for revision)**Recognising that when a number is multiplied by one, the quantity does not change – eg. 5 x 1 = 5**Concept of Equal Groups** Recognising that the number in each group is the same**Distributive Property**Factors can be split into parts, multiplied separately and then added to each other– eg.  14 x 7 = (10 + 4) x 7                 = (10 x 7) + (4 x 7)**Relationship to Division**Recognising the inverse relationship between multiplication and division – eg. 3 x 4 = 12 and 12 ÷ 4 = 3 |

**Reporting statements:  *Year 3:*** Recall multiplication facts of two, three, five and ten and related division facts

***Year 4***: Solve multiplication and division problems using strategies including times table facts up to 10x10

|  |  |  |
| --- | --- | --- |
| **Pre-Assessment**  | **Insights** | **Learning Intentions**  |
| **Task:** | Brag tags were a successful strategy for many students in grade 3 last year (current grade 4s)NO idea about division for most students. Division symbol unknown.Going to need lots of worded problems for both multiplication and division. | **We can learn our times tables and investigate number sequences.**I will be successful if:I can identify the repeating sequence of numbers when counting by 3s, 4s. 5s, 6s, 7s, 8s, 9s, 10s. (Extension 11s, 12s).I can earn my times table ‘brag tags’.**We are learning various methods of multiplying and dividing numbers.**I will be successful if:I can use arrays to make discoveries about numbers.I can use horizontal and vertical methods of solving problems.I can use the ‘distributive’ property to solve a problem.**We are learning how multiplication and division are related.**I will be successful if:I can show how division is the ‘inverse’ of multiplication.I can solve division problems.I can use an array to show 2 multiplication and 2 division problems.**We are learning the commutative, null factor and identity properties of multiplications.**I will be successful if:I can prove that swapping the numbers around does not change the product (the answer). eg. 3 x 6 gives the same product as 6 x 3 (Commutative property)I can identify rules that work when multiplying by 0 and 1.  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SESSION NUMBER****KEY IDEA****LEARNING INTENTION** **& SUCCESS CRITERIA** | **TOOL SESSION** A short, sharp task relating to fluency in mental computation or the focus of the lesson.**WHOLE CLASS FOCUS**Sets the scene/context for what students do in the independent session. | **INVESTIGATION SESSION**Extended opportunity for students to work in pairs, small groups or individually. A time for teacher to probe children’s thinking or work with a small group for part of the time. | **REFLECTION**Focused teacher questions and summary to draw out the mathematics and assist chn to make link/s. | **TEACHER ASSESSMENT**We are looking for... |
| **Session 1** **LEARNING INTENTION****We are revising what we know about multiplication** I will be successful if…I can produce a video lesson on Multiplication or Division. | **TOOL SESSION**None yet ‘til ‘Tables at Tables’ is set up**WHOLE CLASS FOCUS**Introduction to learning intentions of unit.**Tuning into Mulitplication**What’s happening when we multiply?Use ‘Cats on Mats’ powerpoint to model using student insights | **INVESTIGATION** **Task:  See Saw Lesson** Working individually or in pairs, students make and post a See Saw video ‘lesson’ on Multiplication. * Spark ideas – what needs to go into the video?
* Prepare a script
* Rehearse
* Do you need maths equipment to demonstrate?
* Record

 **Extending Prompts**: Make lesson on Division **Enabling Prompts:**Watch others before making your own.  | **REFLECTION**Give students time to watch others’ videos and critique with warm and cool feedback through See Saw comments ‘I liked…’‘Even better if…’‘Your video showed me…’‘Did you think of…’ | **ASSESSMENT** Videos should provide good information about students’ understanding  |
| **Administer Pre Assessments** |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Session 2** **LEARNING INTENTION****We can learn our times tables and investigate number sequences.**I will be successful if:I can identify the repeating sequence of numbers when counting by 3s, 4s. 5s, 6s, 7s, 8s, 9s, 10s. (Extension 11s, 12s)I can earn my times table ‘brag tags’ | **TOOL SESSION**None yet ‘til ‘Tables at Tables’ is set up**WHOLE CLASS FOCUS**Why do we need to learn our times tables?How many facts do we have to learn? (144 – 156 if you count the 0s) How can we cut this number down – You Tube: <https://www.youtube.com/watch?v=pSb40J9pcck>“How Many Times Tables do you Really Have to Learn?”Do this exercise with class on chart. | **INVESTIGATION** Setting up ‘Tables at Tables” procedures using Brag Tags‘Tables at Tables’ mini booksMatific assigned activities – multiplication and division | **REFLECTION**Keep a class chart of who is learning which tables.Use reflection starters: | **ASSESSMENT** Encourage students to create videos for See Saw explaining the short cuts and tips for learning different tables. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Session 3** **LEARNING INTENTION****We are learning various methods of multiplying and dividing numbers.**I will be successful if:I can use arrays to make discoveries about numbers.I can use horizontal and vertical methods of solving problems. | **TOOL SESSION**‘Tables at Tables’ **WHOLE CLASS FOCUS****Exploring Arrays** What are arrays and why do we use them for multiplication and division?Powerpoint– ‘Real Life Arrays’Model the horizontal and vertical methods of recording multiplication. | **INVESTIGATION** **Task:  Investigating Arrays, Numbers and Multiplication** Students are given a number to investigate using a variety of arrays. Students make as many type of arrays as possible and record the x algorithm using horizontal and vertical methods.Numbers: 12 16 18 36 100 24 20 48 60**Task:  Multiplication Arrays**In pairs, students roll 2 dice and colour the area on the grid indicated by the dice. Eg: if a player rolls a 4 & 6 they colour in any (4x6 ) rectangle.  Students write down their multiplication fact inside the squares they have blocked. Keep playing until one player cannot fit an array. The last student to make a full array wins. | **REFLECTION**(20 mins before lesson end)How have you been successful?(Revisit success criteria)What might someone find difficult?Who’d like a study buddy to help them finish?Keep working for 10 more minutes then we’ll correct together | **ASSESSMENT** Collect student samples to check.Are algorithms correct? |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Session 4** **LEARNING INTENTION****We are learning various methods of multiplying and dividing numbers.**I will be successful if:I can use arrays to make discoveries about numbers.I can use horizontal and vertical methods of solving problems. | **TOOL SESSION**‘Tables at Tables’ **WHOLE CLASS FOCUS****What is Division?**You Tube clips: - choose from: <https://www.youtube.com/watch?v=gT0HFbA1Mow>Basic Division for Kids | It's AumSum Time<https://www.youtube.com/watch?v=rGMecZ_aERo>Division for Kids | Basic Math Learning Video<https://www.youtube.com/watch?v=gjqxhtjyfC4>Learn Division for Kids - 2nd and 3rd Grade Math Video<https://www.youtube.com/watch?v=ndfeFjoperg>Introduction to Division | Basic Math Learning Video for Kids<https://www.youtube.com/watch?v=p3EgNTr4i1M> Basic Division<https://www.youtube.com/watch?v=BFhUXNoRpQE> Math Basics: Division[www.youtube.com/watch?v=J0lsX2d7y08](https://www.youtube.com/watch?v=J0lsX2d7y08) Division Song- My Dog Division | **INVESTIGATION** **Worksheet:  Division Problems** | **REFLECTION**Correcting worksheet together | **ASSESSMENT** Collect student samples to check. Are algorithms correct? |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Session 5** **LEARNING INTENTION****We are learning various methods of multiplying and dividing numbers.**I will be successful if:I can use arrays to make discoveries about numbers.I can use horizontal and vertical methods of solving problems. | **TOOL SESSION**‘Tables at Tables’ **WHOLE CLASS FOCUS****Exploring Arrays -Division** Powerpoint– ‘Real Life Arrays’Use the arrays as a way of explaining division. | **INVESTIGATION** **Task:  Investigating Arrays and Division** Students make an array and record the division algorithms.Eg. Cut out an array of 6 squaresI can make 6 ÷ 2 = 3and 6 ÷3 = 2Sample numbers: 8 10 15 16, 18, 21 64 24 30 48 60**Extending Prompts**: Can you make different looking arrays for these numbers? 64 24 48. | **REFLECTION**Return to success criteria and make a self assessment. Is there more to do next time? | **ASSESSMENT** Check |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Session 6** **LEARNING INTENTION****We are learning the commutative, null factor and identity properties of multiplications.**I will be successful if:I can prove that swapping the numbers around does not change the product (the answer). eg. 3 x 6 gives the same product as 6 x 3 (Commutative property)I can identify rules that work when multiplying by 0 and 1.  | **TOOL SESSION**‘Tables at Tables’ **WHOLE CLASS FOCUS****Product**Looking at ‘Mathspeak’ chart. Ensure student understand ‘product’ You Tube clip<https://www.youtube.com/watch?v=3SrN2RdWv1Y>‘Multiplication Vocabulary’ | **INVESTIGATION** **Investigating the Commutative Property.**Can you prove that this is true or false?‘Swapping the numbers in a multiplication does not change the product.’**Investigating the Null Factor and Identity Properties**What rules can you construct that will always work when multiplying by 0 and by 1. Prove it. | **REFLECTION**(20 mins before lesson end)How have you been successful?(Revisit success criteria)What might someone find difficult?Who’d like a study buddy to help them finish?Keep working for 10 more minutes then we’ll correct together | **ASSESSMENT** Check the conclusions students have come to and use ‘Thinking About our Maths’ questions to prompt answers |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Session 7****LEARNING INTENTION****We are learning various methods of multiplying and dividing numbers.**I will be successful if:I can use horizontal and vertical methods of solving problems. | **TOOL SESSION**‘Tables at Tables’ **WHOLE CLASS FOCUS****Introduction**: Working through problems on whiteboard.  | **INVESTIGATION** **Task:  Drill sheets****Extending Prompts:** Use Mathantics videos to take them to the next step**Enabling Prompts:**Working through with **teacher** | **REFLECTION** | **ASSESSMENT** Check |
| A, B, M, Ja, C, S, K1. Watch the video: <http://www.mathantics.com/section/lesson-video/multi-digit-multiplication-pt1>
2. Open the worksheet: <http://www.mathantics.com/section/exercises/multi-digit-multiplication-pt1>
3. Copy the problems onto a piece of grid paper and answer. If you have any difficulty – watch the explanation video: <http://www.mathantics.com/section/examples-video/multi-digit-multiplication-pt1> This will also be a good way to correct your work
 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **We are learning various methods of multiplying and dividing numbers.**I will be successful if:I can use horizontal and vertical methods of solving problems. | **TOOL SESSION**‘Tables at Tables’ **WHOLE CLASS FOCUS****Introduction**: Working through problems on whiteboard.  | **INVESTIGATION** **Task:  Drill sheets****Extending Prompts:** Use Mathantics videos to take them to the next step**Enabling Prompts:**Working through with **teacher** | **REFLECTION** | **ASSESSMENT** Check |

|  |  |  |
| --- | --- | --- |
| **Session 8****LEARNING INTENTION****We can learn our times tables and investigate number sequences.**I will be successful if:I can identify the repeating sequence of numbers when counting by 3s, 4s. 5s, 6s, 7s, 8s, 9s, 10s. (Extension 11s, 12s).I can earn my times table ‘brag tags’.**We are learning various methods of multiplying and dividing numbers.**I will be successful if:I can use arrays to make discoveries about numbers.I can use horizontal and vertical methods of solving problems.I can use the ‘distributive’ property to solve a problem.**We are learning how multiplication and division are related.**I will be successful if:I can show how division is the ‘inverse’ of multiplication.I can solve division problems.I can use an array to show 2 multiplication and 2 division problems.**We are learning the commutative, null factor and identity properties of multiplications.**I will be successful if:I can prove that swapping the numbers around does not change the product (the answer). eg. 3 x 6 gives the same product as 6 x 3 (Commutative property)I can identify rules that work when multiplying by 0 and 1.  | **TOOL SESSION**‘Tables at Tables’ **WHOLE CLASS FOCUS****Review:**Looking at the learning intentions and revisiting what we did to achieve these learning intentions.**Review:**Working through the initial assessment tasks again to see what we’ve learned and what we still need to work on. Celebration of brag tags.Stand up all those who have their 2x tag (take a photo)Repeat with all others.  |  |