

Artefact 1 addresses the following focus areas:

- 3.1 Set learning goals that provide achievable challenges for students of varying abilities and characteristics (content highlighted in blue)
- 3.2 Plan lesson sequences using knowledge of student learning, content and effective teaching strategies (content highlighted in blue)
- 3.3 Include a range of teaching strategies (content highlighted in green)
- 3.4 Demonstrate knowledge of a range of resources, including ICT, that engage students in their learning (content highlighted in yellow)

MATHEMATICS UNIT PLANNER

Topic: Multiplication and Division		Year Level: 4	Term: 4	Week: 7-10	Date:
Students background to learning <ul style="list-style-type: none"> • 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. • 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. 		Key AusVELS Focus / Standard Content strand(s): Number and Algebra Sub-strand(s): Number and place value Level descriptions: Year 4 Develop efficient mental and written strategies and use appropriate digital technologies for multiplication and for division where there is no remainder			
Key probing questions <ul style="list-style-type: none"> • How did you work that out? • What strategy did you use to work that problem out? • Can you show me how you worked it out on paper? • Can you show me another way of working out the 		Key equipment / resources: <ul style="list-style-type: none"> • Interactive whiteboard • Students math books • Cards • Whiteboard. • Little whiteboard for T.F.G. 		Assessment strategies <ul style="list-style-type: none"> • Open tasks • Observation • Checklists • Work samples 	

Comment [JV1]: 3.2 Plan lesson sequences using knowledge of student learning, content and effective teaching strategies

Before planning my lessons I had to consider students prior knowledge so I am able to build on that knowledge. I spoke with my mentor and also had a look at the Curriculum to see what students learnt last year.

Comment [JV2]: 3.4 Select and use resources
These are the resources I used in this unit of work.

problem? • Can you draw me that problem in your book?					
MATHEMATICAL FOCUS	'TUNING IN' (5 - 10 minutes)	WHOLE GROUP FOCUS (15 - 20 minutes)	ACTIVITIES AND TEACHER FOCUS GROUP (20- 30 minutes)	CONCLUSION (5 - 10 minutes).	ASSESSMENT STRATEGIES
Session 1 • Students will be completing a multiplication and division – pre – assessment. • This will help the teacher identify what students know and help them plan lessons.	Buzz • Choose a number between 2 and 9. The first student says 1, the next student says 2, and so on. • Instead of saying a multiple of the selected number, the student says "buzz." • If a player forgets to say buzz or says it at the wrong time, he or she is out.	Students will complete their mind map on multiplication and division. *This is a pre-assessment	Teacher will teach student that multiplication and division are the reverse of each other. Eg: 2×8 • $8 \times 2 = 16$ • $16 / 8 = 2$ • $16 / 2 = 8$ Activity: Three for free: Students will have to get into pairs. Students will have to pick up two cards at a time and tell their partner the three facts. Eg: 8 and 9 $8 \times 9 = 72$ - $9 \times 8 = 72$ - $72 / 8 = 9$ - $72 / 9 = 8$	Share time. Students have an opportunity to share what they know about multiplication. - Students will share strategies that help them solve multiplication equations.	Assessment criteria: - Students understand what multiplication is and can identify appropriate strategies to help solve multiplication equations. - Students understand what division is, students can identify appropriate strategies to help them solve division equations. Students work –sample. - Teacher will look at what students

Comment [JV3]: 3.1 Establish challenging learning goals. Teachers need to establish challenging learning goals that are measurable and that cater for students within the classroom.

Comment [JV4]: 3.3 Use teaching strategies Plan fun and engaging activities/games that are related to what the students will be learning about. This helps get students motivated and engaged into the lesson.

Comment [JV6]: 3.3 teaching strategies Providing students with an opportunity to reflect on the lesson it vital. Students are able to share with the class what they have learnt, enjoyed and disliked about the lesson. Teachers are able to assess students by listening to their responses.

Comment [JV5]: 3.3 Use teaching strategies Pre-assessments are very beneficial at the start of a unit to assess what students know. This helps plan future lessons.

					<p>know about multiplication/ division.</p> <ul style="list-style-type: none"> - This will help the teacher plan lessons.
<p>Session 2:</p> <ul style="list-style-type: none"> • Student will learn a range of strategies to help them solve 1, 2 and 4 multiplication facts. 	<p>Around the world</p> <ul style="list-style-type: none"> - Students have to form a big circle. - One student will have to get in front of another student. - The teacher will call out a multiplication equation. - The first student to answer the problem stands in front of the next student. - If the student answers the equation incorrectly, they stay where they are and the winner continues. - The student who goes through the most students wins the game. 	<p>Students will be taught strategies to help them solve their 1, 2 and 4 multiplication facts.</p> <ul style="list-style-type: none"> - Ask students what strategies/ tricks they use to help them solve their 1, 2 and 4 multiplication facts. • Double (x 2) <ul style="list-style-type: none"> - Eg: $2 \times 8 = 16$ - $8 + 8 = 16$ • Double, Double (x 4) <ul style="list-style-type: none"> - $6 \times 4 = 24$ - $6 \times 2 = 12$ - $12 \times 2 = 24$ • Practice these two strategies with the class on the whiteboard. 	<p>Study ladder – online resource</p> <ul style="list-style-type: none"> - Students will complete multiplication activities related to multiplication. 	<p>Share time:</p> <ul style="list-style-type: none"> - Students will have to share one thing they learnt from the lesson. - One thing they found interesting/ challenging. 	<p>Assessment criteria:</p> <ul style="list-style-type: none"> - Students understand how to solve 1 multiplication facts using effective strategies. - Students are able to solve 2 multiplication facts using appropriate strategies. - Students are able to solve 4 multiplication facts using efficient strategies. • Assessment will be taken through observation. - Checklist.

Comment [JV7]: 3.3 Use teaching strategies
Around the world is another fun game that the students love to play.

Comment [JV9]: 3.4 Select and use resources
Students love using ICT. I try to incorporate ICT as much as I can in my lessons as students are always motivated to learn.

Comment [JV8]: 3.3 Use teaching strategies
Questioning students helps you gain knowledge on how students solve problems and their mathematical thinking.

I always ask students how they would solve a problem before providing them with other strategies.

- I use a student-centered approach to teaching. Where students are at the center of their learning.

<p>Session 3:</p> <ul style="list-style-type: none"> Students will learn how to solve 3 and 6 multiplication facts by using a range of different strategies. 	<p>Around the world – teacher will only say 1, 2 and 4 multiplication facts.</p> <ul style="list-style-type: none"> Encourage students to use the strategies from the previous lesson. 	<p>Students will be taught strategies to help students solve their 3 and 6 multiplication facts.</p> <ul style="list-style-type: none"> Double and then add the multiplier. <ul style="list-style-type: none"> $3 \times 4 = 12$ $4 \times 2 = 8$ $8 + 4 = 12$ Use our five multiplication facts and then add the multiplier. <ul style="list-style-type: none"> $7 \times 6 = 42$ $7 \times 5 = 35$ $35 + 7 = 42$ Practice these strategies with the class. 	<p>Yellow group – TFG (Teacher focus group)</p> <p>Blue group - oxford card</p> <p>Red group - Sumdog/ Studyladder (online resource).</p> <p>Purple group - Multiplication Scramble</p>	<p>Share Time:</p> <ul style="list-style-type: none"> Ask students: What was one thing they learnt / found interesting/ challenging about the lesson. Allow a few students to share their responses with the class. 	<p>Assessment criteria:</p> <ul style="list-style-type: none"> Students are able to solve 3 multiplication facts using appropriate strategies. Students are able to solve 6 multiplication facts using a range of strategies.
<p>Session 4:</p> <ul style="list-style-type: none"> Students will learn how to solve 7 and 8 multiplication facts using a range of different strategies. 	<p>Card war.</p> <ul style="list-style-type: none"> Students will need to get into pairs. They will need a deck of cards. They will need to flip two cards over. The first person to say the correct answer wins the cards. The student who has the 	<p>Students will be taught strategies to help them solve their 7 and 8 multiplication facts.</p> <ul style="list-style-type: none"> Looking at other multiplication facts and then adding or subtracting a number to get the answer. Eg: 4×7 ($4 \times 6 + 4 = 28$) 	<p>Activities:</p> <ul style="list-style-type: none"> Yellow group: Card game. Blue group: Multiplication scramble. Red group: Teacher focus group. Purple group: Multiplication challenge 	<p>Share time:</p> <ul style="list-style-type: none"> Give students a chance to discuss with a partner one thing they have learnt/ found interesting/ challenging. Allow a few students to share with the class. 	<p>Assessment criteria:</p> <ul style="list-style-type: none"> Students can work out multiplication facts using one or more strategies. Students use the seven and eight multiplication strategies to help them solve equations.

Comment [JV10]: 3.3 Use teaching strategies Providing a range of activities to meet the needs of all students within my class.

3.4 Select and use resources I have used a variety of resources in the one lesson.

	<p>most cards wins the game.</p>	<ul style="list-style-type: none"> • Double, Double, Double strategy. Eg: $2 \times 8 = 16$ • $2 \times 2 = 4$ • $4 \times 2 = 8$ • $8 \times 2 = 16$. <p>Eg: $16 \times 8 = 128$</p> <ul style="list-style-type: none"> • $16 \times 2 = 32$ • $32 \times 2 = 64$ <ul style="list-style-type: none"> • $64 \times 2 = 128$ 			<ul style="list-style-type: none"> • - Students are able to explain the strategy that they used clearly to the class. • Assessment will be taken through observation. - Checklist.
<p>Session 5:</p> <ul style="list-style-type: none"> • Students will learn how to solve 5 and 10 multiplication facts using a variety of different strategies. 	<p>Kahoot – Online resource.</p> <ul style="list-style-type: none"> - Teacher will find a kahoot multiplication quiz online. - The students have to log on Kahoot and type in the number on the teachers screen. - Students will receive a multiplication equation with four possible answers. The students have to choose the correct answer. - After each question there is a tally of who is winning. 	<p>Students will be taught strategies to help them solve their 5 and 10 multiplication facts.</p> <ul style="list-style-type: none"> • The teacher will write all the five multiplication facts on the whiteboard and get students to identify any strategies. • Practice these strategies with the class. • 5 times tables: the last digit goes 5, 0, 5, 0. • It is always half of 10 (Eg: $5 \times 6 = 30$ / $10 \times 6 = 60$ (half of 60 is 30)). • You can use your four multiplication facts to help you ($4 \times 5 = 20$ - $4 \times 4 = 16$ plus four more 20). • 10 times tables: 	<ul style="list-style-type: none"> • Students will get onto study ladder (online resource) • Students will complete multiplication questions. • Students will receive a score at the end of each task. • Students will know what they have to work on. 	<p>Share Time:</p> <ul style="list-style-type: none"> - Students will sit in a circle. - Ask students to say one thing they learnt from the lesson or one thing they found challenging. - All students will have an opportunity to share their response. - Allow an opportunity for question time. 	<p><u>Assessment criteria:</u></p> <ul style="list-style-type: none"> • - Students can work out their 5 and 10 multiplication facts using one or more strategies. • - Students are able to explain the strategy that they used clearly to the class. • Assessment will be taken through observation. - Checklist.

		Add zero at the end ($10 \times 8 = 80$).			
Session 6: <ul style="list-style-type: none"> Students will learn how to solve 9 multiplication facts using a variety of different strategies. 	Around the world- teacher will call out multiplication facts for 1, 2, 3, 4, 5, 6, 8 and 10.	Students will be taught strategies to help them solve their 9 multiplication facts <ul style="list-style-type: none"> Finger strategy. Is 10x the number minus the number. Eg: $9 \times 6 = 10 \times 6 - 6 = 54$ When you add the digits together, you get 9. The last digits go 9,8,7,6,5,4,3,2,1,0. 	Activities: <ul style="list-style-type: none"> 2 groups multiplication scramble. 2 groups multiplication toss. Red group : Teacher focus group	Reflection Time: <ul style="list-style-type: none"> Get students to sit in a circle. Ask students to show how they felt about the lesson by putting on a facial expression (happy, sad, confused) - Allow students to share how they felt with the class. Ask students why they felt the way they did.	<u>Assessment criteria:</u> <ul style="list-style-type: none"> Students can work out their 9 multiplication facts using one or more strategies. Students are able to explain the strategy that they used clearly to the class. Assessment will be taken through observation. Checklist.
Session 7: <ul style="list-style-type: none"> Students will learn how to solve larger 2 by 1 multiplication equations using the partition strategy and the vertical format. 	<ul style="list-style-type: none"> Kahoot- online resource. Multiplication quiz. 	<ul style="list-style-type: none"> Show students the partition strategy. Make it clear to students that it doesn't matter how you partition (break up) the multiplicand. You just need to multiply all parts with the multiplier.	Activity: Put the following equations on the whiteboard. <ul style="list-style-type: none"> 23×9 42×6 67×4 39×2 62×3 81×7 93×8 <ul style="list-style-type: none"> Students have to 	Reflection time: <ul style="list-style-type: none"> Get students to write a reflection about the lesson in their math's books. Students have to: Draw a face that describes how they felt about the math's lesson. (Is it a happy face, a sad face, a confused face, a crying face).	<u>Assessment criteria:</u> <ul style="list-style-type: none"> Students will be able to a partition multiplication facts to help them solve their problem. Students will be able to solve two by one multiplication

		<ul style="list-style-type: none"> Show students how to solve 2 by 1 equations using the vertical format. Practice both strategies with the students. 	<p>solve these equations in their maths books using two or three different strategies for each problem.</p> <ul style="list-style-type: none"> Teacher Focus Group (Purple Group): Solve 2 by 1 and 2 by 2 equations with these students. 	<p>Students will then have to write why they feel the way they do. I feel like this because..... I feel I am good at I think I can improve on</p>	<p>facts vertically.</p> <ul style="list-style-type: none"> - Students will be able to solve two by two multiplication facts vertically (Teacher focus group). Work samples Observation (with checklist) – teacher focus group.
<p>Session 8:</p> <ul style="list-style-type: none"> Students will learn how to solve 2 by 2 digit multiplications using the vertical format. 	<p>Around the world – all multiplication facts.</p>	<p>Revise the partition strategy and how to solve 2 by 1 equations using the vertical format.</p> <ul style="list-style-type: none"> Teach students how to solve 2 by 2 digit multiplication equations using the vertical format. Practice this strategy with the class using the whiteboard. 	<p>Purple Group: Solve 3 by 3 equations (Sheet).</p> <p>Remaining groups: Solve 2 by 2 equations (Sheet)</p> <p>Red group: Teacher Focus group.</p>	<p>Share time:</p> <p>Students will have to choose someone they don't usually work with.</p> <p>Ask students to share with their partner one thing they learnt and one thing they can improve on.</p> <p>Their partner will share their response with the class.</p>	<p><u>Assessment criteria:</u></p> <ul style="list-style-type: none"> - Students will be able to solve two by two multiplication facts vertically. - Students will be able to solve three by three multiplication facts using the vertical format (Teacher focus group). Work samples Observation (with checklist) – teacher focus group.

<p>Session 9:</p> <ul style="list-style-type: none"> Students will learn a range of different strategies to help solve division problems. 		<p>Put the word "Division" on the whiteboard.</p> <ul style="list-style-type: none"> Get students to brainstorm what they know about division and what strategies they use to help solve division problems. <p>Teacher students the following strategies...</p> <ul style="list-style-type: none"> Draw equal groups. Draw an array. Repeated subtraction Fact family (Multiplication). Number line. 	<p>Teacher will put 6-8 division problems on the whiteboard.</p> <p>Students have to work out the problem using 2 or more different strategies.</p> <p>Early finishers: Study ladder solving division equations.</p>	<p>Reflection time:</p> <p>Students will write in their maths books the following.</p> <ol style="list-style-type: none"> Students have to draw a face of how they felt throughout the lesson. Students have to explain why they felt the way they did. <p>"I felt like this because....."</p> <ol style="list-style-type: none"> Students have to complete the following. <p>One thing I learnt today was.....</p> <p>An example of this is.....</p> <p>One thing that I can improve on is.....</p>	<p>Assessment criteria:</p> <ul style="list-style-type: none"> Students are able to solve division problems using one or more strategies. Students are able to explain their strategies to the class. <ul style="list-style-type: none"> Work Samples.
<p>Session 10:</p> <p>Students will learn a range of different strategies to help solve division problems.</p>	<p>Around the world using division facts.</p>	<p>Revise the strategies that were taught from the previous lesson.</p> <ul style="list-style-type: none"> Teach students how to solve division problems using long division. 	<p>Open Task:</p> <p>Students will come up with two of their own division equations.</p> <p>Students have to solve the division fact using as many strategies as they can.</p>	<p>Share time:</p> <p>Students will form a big circle.</p> <p>Get students to share with the class:</p> <ul style="list-style-type: none"> one thing they learnt. one strategy they like to use and feel comfortable 	<p>Assessment criteria:</p> <ul style="list-style-type: none"> Students are able to solve division problems using one or more strategies. Students are able to explain their strategies to the class.

Comment [JV11]: 3.3 Use teaching strategies

Brainstorming is a great teaching strategy as many ideas can be generated in a short time, it encourages creative thinking, it is a fun and exciting way to generate ideas and it provides an opportunity for widespread participation and involvement. Students are also able to learn from one another and gain confidence.

Comment [JV12]: 3.3 Teaching strategies.

Teachers can provide students with open-ended tasks as they promote problem solving.

Open tasks are effective as they enable the whole class to participate, they can easily be modified or extended in order to scaffold learning. Open tasks promote engagement in tasks that will enable our students to reason effectively, use systems thinking, make judgments and decisions, and solve problems.

				<p>using,</p> <ul style="list-style-type: none"> - one thing they still find difficult. 	<ul style="list-style-type: none"> • Work samples. • Rubric.
<p>Session 11:</p> <p>Students will learn how to solve division and multiplication worded problems.</p>	<p>Put two worded problems on the whiteboard. One being a multiplication worded problem and the other being a division worded problem</p> <p>Ask students to have a discussion with the person next to them on what the problem is asking them to do.</p>	<p>Revise the 5 steps on how to solve a problem.</p> <ul style="list-style-type: none"> -Read the problem -Identify key words -Choose an appropriate strategy. -Solve the problem. -Re-read the problem and look over your working out. <p>Ask students to identify the key words and ask them is it a division or multiplication problem.</p> <ul style="list-style-type: none"> • Ask students what are appropriate strategies that can be used to solve the problem. (Teacher will solve the problem using the students strategies). 	<p>Yellow group: T.F.G (Working on the floor with me).</p> <p>Blue group: Working out 2 by 1 worded multiplication and division problems.</p> <p>Purple group: Solving 2 by 2 multiplication worded problems and 2/3 by 1 division worded problems.</p> <p>Early finishers:</p> <ul style="list-style-type: none"> • Students can create their own worded division and multiplication worded problem <p>Or</p> <ul style="list-style-type: none"> - Sumdog challenge (multiplication and division problems) 	<p>Share time</p> <p>Get students to sit in a circle.</p> <p>Ask students to share one thing they learnt today/ found challenging.</p>	<p><u>Assessment criteria:</u></p> <ul style="list-style-type: none"> - Students are able to read carefully multiplication worded problems and solve them using more than one appropriate strategies. - Students are able to read carefully and solve worded division problems using more than one appropriate strategies. <ul style="list-style-type: none"> • Work samples • Anecdotal notes.

<p>Session 11: Post assessment - multiplication and division.</p>	<p>Kahoot - (Online resource)</p> <p>Division quiz</p>	<p>Teacher will not explain or teach students anything as it is a pre - test.</p> <p>Teacher will make it clear that students need to work on the problems on their own and that there will be no talking.</p>	<p>Students will have to complete a multiplication / division test.</p> <p>Early finishers: Sumdog (multiplication and division challenge) or study ladder.</p>	<p>Reflection time:</p> <ol style="list-style-type: none"> 1. Draw a face of how you felt this whole unit. 2. Complete the following sentences. <p>"I feel about the unit because....."</p> <p>" I learnt examples of this is....."</p> <p>"One thing I still need to improve on is....."</p> <p>"I am going to"</p> <p>As a class create a brainstorm on</p>	<ul style="list-style-type: none"> • Work samples.
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Teacher Evaluation:

This unit was very successful. Students were able to learn a range of strategies to help them solve their multiplication facts up to their 10 timetables. The strategies that students learnt and are using to help them solve multiplication facts are double, double double, double double double, using other multiplication facts then adding or subtracting the multiplicand and by halving. Students also learnt a range of strategies to help them solve division problems. The division strategies that the students learnt in this unit of work and are using to solve problems are drawing circles, number lines, using the reverse strategy and repeated subtraction.

In this unit I planned a lot of open tasks. This allowed all students to start the problem and have ago at solve a division or multiplication strategy using any way they like. Open tasks allow the teacher to see what students know and how they best like to solve a problem. It was great to see all students solving problem using a range of strategies. It is important that the students know that mathematics is not about getting the answer, it is about solving the problem in as many ways as possible. Students were able to demonstrate this throughout the unit.

In all math's lessons I had a teacher focus group. This allowed me to give further assistance to those students that needed extra support; it also gave me an opportunity to extend students that needed a challenge.