Home Learning TV – Lesson Plan – 17 September 

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| **Segment lesson planning details** |  | | | |
| Title for segment: | Manu tukutuku | | | |
| Year levels *(e.g. Yrs1 – 3)*: | Year 4-7 | | | |
| NZC learning areas: | Mathematics and Statistics: Measurement: area | | | |
| Purpose of lesson:  (What learners will learn) | Learners will discover and apply the rule to find the area of a polygon (rectangles and triangles) using multiplication | | | |
| Success Criteria – students will be able to:  (how they will know when they have learnt it) | Learners will be able to:   * find the area of a rectangle * recognise that a triangle has half the area of a rectangle * find the area of a triangle with base and height measures | | | |
| **Segment content/context details *(as appropriate)*** | | | | |
| Māori specific content i.e. the learning draws on Mātauranga Māori: | Matariki context: area of manu tukutuku | Pacific specific content i.e. the learning is focused on Pacific knowledge: | |  |
| **Segment production details** | | | | |
| Equipment requirements: |  | | | |
| Copyright requirements:  Please be specific: Source (*Seven Sizzling Sausages* by Sam Smith –URL link to the source), intended use (to demonstrate alliteration), and length (timings for video clips) |  | | | |
| **Segment links and attachments *(list all links to recordings or attachments, the source and confirm that copyright permissions are granted)*** | | | | |
| Links to recordings /resources |  | | | |
| Attachments | PowerPoint | | | |
| **Segment plan content** | | | | |
|  | Teaching and learning activities linked to purpose | | High level script (key points/questions) | |
| **Activate**: Activating prior learning, knowledge of contexts and relationships | Look for and explain patterns in a set of numbers  Generalise from patterns to make predictions and conjectures  Learning about multiples of 3 | | Presenter greets everyone.  Kia ora whanau  Those of you that tuned in yesterday will remember the cool patterning that we did with the number 9. Today we are going to look at the patterns that multiples of three make. Multiples are what we get after multiplying the number by an integer.  So 3x1=3, 3x2=6, and 3x3=9.  So do you understand what multiples are now? Three, six and nine are all multiples of three.  Let’s start counting.  (Presenter write on whiteboard)  03  06  09  12  15  18  Have you noticed a pattern yet? If not think back to yesterday and try adding the numbers across.  For example,  12 becomes 1+2 which equals 3 (presenter record 1+2=3 next to 12 on the whiteboard)  15 becomes 1+5 which equals 6 (presenter record 1+5=6 next to 15 on the whiteboard)  18 becomes 1+8 which equals 9 (presenter record 1+8=9 next to 18 on the whiteboard)  Are you seeing a pattern now? Yes, when you add the digits in multiples of 3 they will always add up to a 3, a 6, or a 9.  Don’t believe me. Let’s try some more! If we carry on counting in threes from 18.  (Presenter record on whiteboard)  21  24  27  30  33  36  Let’s look at 27, two plus seven makes nine.  What about 33? Yes, three plus three makes six.  So why is this important and how can it help us? Well, if you know the digits of a number add up to 3, 6 or 9 you know that number is divisible by 3.  Let’s try it out. 432 is divisible by 3 because 4+3+2=9. Check on your calculator if you don’t believe me  432 divided by 3 is 144  Shall we try another?  2304 is divisible by 3 because 2 + 3 + 0 + 4= 9  You can check this with your calculator.  Did you get 2304 divided by 3 is 768?  Let’s try this number 543.  5 + 4 + 3 = 12  1 + 2 from the 12 equals 3  so 543 is divisible by 3, try it.  Just like yesterday's warm up, we discovered number patterns that make mathematics more accessible, and fun! | |
| **Learn**: Introducing learning  Reinforce routines, provide multiple exposure to concepts, and strategies. Scaffolding learning | Introduction to problem  Activate prior knowledge  Introduce area model as representation.  Finding area of a rectangle  Rule and generalising the rule for area of a rectangle  Exploring area of a triangle  Consolidating area of a rectangle  Formula for finding area of a triangle | | Let’s look at today's problem.  Today we are going to be learning about the area of rectangles and triangles.  Let’s start with thinking about rectangles.  If the length of a rectangle is 4 cm and the width is 3 cm. What will the area be?  If you said it was 12 centimetres squared because the area is the length multiplied by the width you are correct!  But why does this work and why do we say centimetres squared?  Let’s look at a representation (PowerPoint: slide 2).  The length of 4 and the width of 3 results in a total of 12 squares.  For this area it is 12 square centimetres. Think about this like an array, and the area is the space covered.  What would the area be if the length was 10 metres and the width was 3 metres?  (PowerPoint: slide 3)  Did you come up with the area being 30 square metres?  We know that the length of 10 metres multiplied by the width of 3 metres will give us 30 metres because 3 x 10 = 30.  Can you come up with other measurements for the length and the width that will also give us 30 square metres?  For example, the length could be 30 metres and the width could be 1 metre, since one times thirty equals thirty.  I’ll give you a bit of time to think about this.  Did you come up with (presenter write on board)  2 x 15?  5 x 6?  Did anyone think to halve the 5 and double the 6 because  2.5 x 12 = 30 (presenter write on board)  Did anyone think about it this way?  We know that 2 x 15 = 30 (presenter point to whiteboard).  If we double the 2 it equals 4.  What do we have to do to the 15?  Yes halve it to 7.5, so  4 x 7.5 = 30 (presenter write on board)  In today's task we are going to work out the area of a manu tukutuku, a Matariki kite, to hang in the hall. We will need to calculate how much space it will take up to see if we have enough room.  Our Matariki kite design is triangular like this (PowerPoint: slide 4)  We already know that to calculate the area of a rectangle we multiply the length by the width.  So how do we work out the area of a triangle? I’ll give you a moment to talk to someone at home about that.  Let’s have a look together.  (PowerPoint slide 5)  A rectangle cut in half diagonally creates 2 triangles.  If the length of this rectangle was 10cm and the width was 3 cm the area (Length x Width) would be 30 square centimetres.  So what do you think the area of each triangle would be?  If you said the area of each triangle must be half of the area of the rectangle you were right. The area of each triangle is 15 square centimetres.  (PowerPoint slide 6)  So how do you think we worked out the area of each triangle? Yes! To work out the area of the triangle we multiplied half the width by the length.  (PowerPoint slide 7)  When calculating the area of a triangle we talk about the base and height instead of width and length.  The formula for finding the area of a triangle is half the base multiplied by the height or you could use base multiplied by height divided by 2. | |
| **Respond**: Providing opportunities to use and practice | Generalising: finding area of another triangle using the formula | | Let’s have a go at finding the area of our manu tukutuku triangle (PowerPoint slide 8). If our height is 3 meters and our base is 1 meter what would our area be? Take a moment to talk to someone at home with you.  Ok, let’s go back to our formula which was half the base times height.  Half of 1 metre is 0.5 metres and the height is three metres.  0.5 x 3 = 1.5 metres squared (Presenter write on whiteboard).  So the area our Matariki kite will take up on the wall is 1.5 square metres. Good work whanau! | |
| **Share**: Learner and parent reflection on learning and engagement and what they can do next | Recap of learning  Students to consider area in their lives  Opportunity to share learning with whanau and provocation introduced for further discussion. | | So let's recap what we learnt today.  We learnt that when we talk about area the unit of measurement is metres squared. We also learnt that to work out the area of a rectangle you multiply the length by the width. Lastly, we learnt that to work out the area of a triangle you multiply half the base by the height. Or else you can multiply the base by the height and divide it by two.  Can you work out the area of some items around your house? Have you got anything that’s in the shape of a rectangle or a triangle, like a table or a whariki?  And have a think about what could be a practical reason we need to work out the area of something? For example, to see if a bed or a desk would fit in your room. Talk to your whanau about time’s they’ve had to work out the area of something and how they did it. | |