Home Learning TV – Lesson Plan – 15 September 

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| **Segment lesson planning details** |  |
| Title for segment: | Matariki mussels  |
| Year levels *(e.g. Yrs1 – 3)*: | Yrs 4-7 |
| NZC learning areas:  | Maths and Statistics: proportional reasoning |
| Purpose of lesson:(What learners will learn) | Learners will think proportionally Learners will know ratios in everyday use Learners will be able to use multiplicative strategies with ratios |
| Success Criteria – students will be able to: (how they will know when they have learnt it) |  Learners will be able to think proportionally using multiplicative strategies  Learners will be able to use a multiplicative comparison between two amounts  Learners will be able to use a ratio table |
| **Segment content/context details *(as appropriate)*** |
| Māori specific content i.e. the learning draws on Mātauranga Māori: |  Matariki celebrations; traditional harvests; sustainability | 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  |  |
| **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(5 mins) | Introduce language of divisor and dividendIntroduce distributive property of division  | Presenter greets everyone. Our goals for today are to be able to* think proportionally using multiplicative strategies
* use a multiplicative comparison between two amounts
* use a ratio table

Kia ora, welcome to matariki maths. When the stars of Matariki appear just before dawn in late May or early June this signals the Māori New Year. During this time we traditionally remember ancestors and celebrate new life. A big part of new life is the winter harvest. After we harvest we like to share out the kai. Sharing involves division so let’s warm up with some division problems. We’re going to be talking about the dividend which is the number being divided and the divisor which is the number you are dividing by. Have a look at these equations **(PowerPoint slide 2) on screen for 1 min.**Decide whether they are true or false. I’ll give you a minute to do this and talk to someone at home about your reasoning. What did you decide? Let’s have a look at the first equation together. 40 ÷ 10 = (40 ÷ 5) + (40 ÷ 5)**Presenter writes the equation on the whiteboard and points to parts of the equation as she talks.**In this equation we have split or distributed the divisor (10) but we haven’t split the dividend (40). Let’s have a look at 40 ÷ 10. We know the answer is 4. If we look at the other side and divide 40 by 5 it equals eight. So this must be false as we still haven’t added the other 8. Let’s have a look at the second one. 40 ÷ 10 = (20 ÷ 10) + (20 ÷ 10)**Presenter writes the equation on the whiteboard and points to parts of the equation as she talks.**We have distributed the dividend (40) but we haven’t distributed the divisor (10). We know that 40 ÷ 10 is 4. Let’s look at the other side. Twenty divided by 10 is 2, plus another 20 divided by 10 is 2, which gives us two plus two equal four. So both sides balance and this equation is true. What did you notice about which number we could distribute or split, the dividend or the divisor? Talk to someone at home about what you noticed. I’ll give some time. **(20 secs pause)**Did you say that you can distribute the dividend and not the divisor? That’s the distributive property of division. |
| **Learn**: Introducing learningReinforce routines, provide multiple exposure to concepts, and strategies. Scaffolding learning (1 min) | Introduction of Matariki context  | Let’s look at our problem for today. It’s all about harvesting with whānau. New Zealand is blessed with an abundance of seafood. Kai moana has been an integral part of Māori culture, and because of that iwi have customary rights as tangata whenua to harvest kai moana for events. The permit system allows for continued customary rights in recognition of Māori status under Te Tiriti o Waitangi. This also allows for sustainability of fisheries and the responsible gathering of kai moana. Today’s problem is about harvesting mussels for a Matariki Hākari. At this time of the year mussels are at their fattest. It’s also a great time to dive for kina, although it can be a bit makariri.  |
| **Respond**: Providing opportunities to use and practice (14) | Introduction of problematic task Making connections to equivalence in warm ups Introduction or ratio table Students pressed to calculate ratios from total amount | Zion and his Koro got a permit to harvest mussels for the Matariki Hākari at the Marae.Koro was a bit faster at harvesting the mussels than Zion and for every 4 mussels Zion harvested Koro harvested 7.That means this problem is about ratios. If Zion’s collecting four for Koro’s seven, what do you think the ratio will be? Have a kōrero about that, what do you think the ratio is? If you answered that the ratio is 4:7 you are right! Based on that ratio if Zion has collected 8 mussels how many has Koro collected? I’ll give you a minute to talk to someone about that. **(Pause 1 min Slide 3 on screen)**What did you think? If you said 14 you were right! Let’s step it up a bit. If Zion had collected 16 how many has Koro collected? I’ll give you some time to talk to someone about that. **( Pause 30 secs slide 4 on screen)** What was your answer? If you said 28. You were right. What was your reasoning? Let’s take a look. **(Presenter write on whiteboard)**4:78:1416:28Who noticed a multiplicative relationship between the two sides of the ratio. What we do to one side we must do to the other side. Does this remind you of anything? Think about the connection to our warm ups in our previous episodes where we talked a lot about balance in equations. Let’s look at the ratio 4:7. It has now become 16:28. What happened to the four to get to sixteen? (pause) You’re right, we multiplied by four. We know that four times four is sixteen. So we need to do the same thing to the other side. What’s seven times four? (pause) You’re right, twenty eight. Now let’s look at the total. Four plus seven equals eleven.**(Presenter write 11 on whiteboard next to 4:7 11)** If we multiply eleven by four that should be the total number of mussels collected. Four times eleven equals (pause) forty four. So what is 16 plus twenty eight? (pause) You’re right, it’s also forty four. **(Presenter write 44 on whiteboard next to 16: 28 44)**Hold on to that thought because you’re going to need it soon. First though we’re going to try another example. If Zion collects 24 mussels how many does Koro collect**? (presenter write 24 under the 16 on the whiteboard camera to focus on whiteboard)**. How many have they collected in total? And what was the multiplicative relationship. I’ll give you a minute to work this out. **(Pause 1 min)**This is one way we could represent out thinking using a ratio table: **(PowerPoint slide 5)** Who said we were multiplying by six this time? You were right. So seven times 6 = (pause) 42. And 11 times six equals (pause) 66. Tu meke. **(PowerPoint slide 6)**So let’s look at the ratio from Koro’s perspective. If Koro collected 70 mussels, how many would Zion have collected and what would the total be? What has the ratio been multiplied by? Use the table if you think that’s helpful I’ll give you a minute to work that out. **(PowerPoint slide 6 on screen 1 min).**How did that go? Did you realise seven had been multiplied by ten to get 70? Therefore we can multiply 4 by ten to get 40 mussels that Zion collected and eleven times ten will give us the total of 110. Let’s put this into our table. **(PowerPoint slide 7)**Now think about what you’re going to have to do to figure out the ratios, or who collected what, if you only know the total amount. If the total amount of mussels collected was 275, how many did Zion and Koro collect? I’m going to give you a minute to work this out. **(PowerPoint slide 7 on screen for 1 minute)**Let’s think about this together now. What was the original ratio? 4: 7 which gave us a total of 11. **(PowerPoint slide 8)**To work this out we need to divide 275 by 11 or use the inverse - eleven times something makes 275. **(Teacher to record thinking on whiteboard as they go to model solving this problem)**I know that 11 times ten is 110, so 11 times 20 must be 220. I know that eleven times 5 is 55. That makes 275 mussels all together, so 11 x 25 is 275. If I’ve multiplied 11 by 25 then I have to do the same to 4 and 7. So 4 x 25 is 100. And 7 times 25 is 175. 100 + 175 is 275. We can now fill those in. **(PowerPoint slide 9)** |
| **Share**: Learner and parent reflection on learning and engagement and what they can do next**(1 min)** | Recap of learning Students to consider ratios in their livesOpportunity to share learning with whanau and provocation introduced for further discussion.  | So can you remember our goals for today?Āe, that’s right we were going to learn to* think proportionally using multiplicative strategies
* use a multiplicative comparison between two amounts
* use a ratio table

So what have we learnt? We’ve learnt that there’s a multiplicative relationship between both sides of the ratio, and what we do to one side we must do to the other.We also learnt we can calculate ratios from a total. And how to use multiplication and division to allow us to do this. Have a talk to someone at home about where else you might use ratios. For example, mixing oil and petrol for two stroke engines, making juice, and recipes like rēwena bread. What are your ideas? What will you be doing to celebrate Matariki? Zion and Koro were gathering kai moana. What traditional food sources are from your rohe? Talk to your whānau and see what you can discover. Ka kite anō.  |