

YuMi Deadly Maths

Prep Teacher Resource: **NA – Partners**

Prepared by the YuMi Deadly Centre
Faculty of Education, QUT

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ACKNOWLEDGEMENT

We acknowledge the traditional owners and custodians of the lands in which the mathematics ideas for this resource were developed, refined and presented in professional development sessions.

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Prepared by the YuMi Deadly Centre
Queensland University of Technology
Kelvin Grove, Queensland, 4059

ydc.qut.edu.au

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Prep Number and Algebra

Partners

Learning goal	Students will match numerals to quantities.
Content description	Number and Algebra – Number and place value <ul style="list-style-type: none">Connect number names, numerals and quantities, including zero, initially up to 10 and then beyond (ACMNA002)
Big idea	Number – interpretation of symbols
Resources	Ladder mat (large/small); cards: numerals, familiar objects (e.g. animals/flowers/cars/balls), dots; counters

Reality

Local knowledge	Counting, sorting, matching, familiar objects from home and from outside, e.g. <i>Show me five pebbles, four leaves, three fingers</i> – to ten fingers.
Prior experience	Counting number of people in family: <i>How many brothers/sisters do you have?</i>
Kinaesthetic	<p>Draw large numerals on the ground. Teacher shows each numeral on a card and students walk the shape of the numerals 0–10. Teacher asks for a story about each number, e.g. <i>I had 5 candles on my cake.</i></p> <p>Teacher tells a story about a number, e.g. <i>My hen laid 1 egg</i>; students make the shape of that numeral by lying on the ground/floor and contorting their bodies to form the shape of the given numeral. A student is then asked to find the corresponding numeral card and place it on the correct square of the large ladder mat.</p>

Abstraction

Body	<p>Teacher shows a numeral. Students form groups of the given number and all the class clap their hands the number of times represented by that numeral. Students then trace that numeral in the sandpit. Repeat for all numerals 0–10. Reverse.</p> <p>Ladder mat: Students are given counters or picture quantities or dots cards, one to ten, to arrange in order on the squares of the ladder mat. After each has been placed, students find and place its corresponding numeral card beside it. Students then count, e.g. one ball, numeral 1 and so on to 10.</p>
Hand	<p>Show numeral: With one finger, students draw the shape of each numeral on the desk or floor, in pairs on each other's back, in the sand.</p> <p>Show numeral, students clap their hands to match the numeral. Reverse: Teacher claps and students draw the numeral in the air.</p> <p>On individual small ladder mats, students arrange counters on the squares in ascending order (one to ten) and match with a small numeral card that they place beside each of the corresponding counters in the squares.</p>
Mind	Students shut their eyes and visualise either the numeral or picture quantity of a number that is called out. With eyes shut, they hold up that number of fingers, then write the numeral in the air, on the desk.
Creativity	Students choose a numeral, draw a picture and tell the class a story about that numeral, e.g. <i>I've chosen 5</i> (show numeral and tell the story about the drawing).

Mathematics

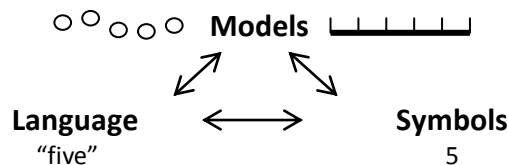
Language/ symbols	count, visualise, how many, quantity, total, arrange, number, numeral, match
Practice	<p>Activities are language based.</p> <p>In groups, each student has a set of numerals, objects or picture quantities, or dots. Roll one die and display the card and number of objects that match. Extend the game by using two dice. Students tell stories about the various numbers that are rolled.</p> <p>Find your partners: Distribute cards (zero to ten) of numerals, picture quantities/dots to students; students find other cards that match theirs. Then put the groups of students with the same number in order zero to ten.</p> <p>Snap: In pairs, students have a pack of cards with numerals, names and object quantities face down in front of them. In turn, they display one card at a time and hit the deck with their hand, saying "snap!", whenever there is a match. The student who claims the deck first takes all those cards into his/her hand. Repeat process until one student has no cards left to play. The other student is the winner.</p>
Connections	Relate to number names, subitising (recognising without counting) and cardinality (telling how many).

Reflection

Validation	Check that students are able to tell stories about items in their world and relate the number to the correct numeral.
Application/ problems	Provide applications and problems for students to apply to different contexts independently, e.g. identify numbers in different media and patterns and write the corresponding numeral.
Extension	<p>Flexibility. <i>Think of all the ways you can use to show how many there are in a group. Think of situations where a big number is needed and where a small number applies.</i></p>

Reversing. Provide opportunities for reversal, for example:

- teacher shows the numeral and students make the number and say what it is (language)
- teacher calls out a number and students show the numeral card and make the number with counters
- teacher gathers a number of objects and students call the number and show the corresponding numeral card.



The Payne and Rathmell (1977) triangle for early number

1. Say number ↔ objects
2. Objects ↔ numeral
3. Numeral ↔ say number

Generalising. *Numbers tell us about the quantity or how many we have. Different numerals describe different quantities, some are big amounts, other quantities are small.*

Changing parameters. *How do we show numbers that are bigger than 10? Look at the clock to see the number that comes after 10.*

Teacher's notes

- Use language-based consultation with students describing and explaining the relationship of numerals and their quantity.
- Students need to be taught the skill of visualising: closing their eyes and seeing pictures in their minds, making mental images; e.g. show a picture of a kangaroo, students look at it, remove the picture, students then close their eyes and see the picture in their mind; then make a mental picture of a different kangaroo.
- Suggestions in Local Knowledge are only a guide. It is very important that examples in Reality are taken from the local environment that have significance to the local culture and come from the students' experience of their local environment.
- Useful websites for resources: www.rrr.edu.au; <https://www.qcaa.qld.edu.au/3035.html>
- Explicit teaching that **aligns with students' understanding** is part of every section of the RAMR cycle and has particular emphasis in the Mathematics section. The RAMR cycle is not always linear but may necessitate revisiting the previous stage/s at any given point.
- Reflection on the concept may happen at any stage of the RAMR cycle to reinforce the concept being taught. Validation, Application, and the last two parts of Extension should not be undertaken until students have mastered the mathematical concept as students need the foundation in order to be able to validate, apply, generalise and change parameters.