

YuMi Deadly Maths

Year 2 Teacher Resource:

NA – The animals went in two by two

Prepared by the YuMi Deadly Centre
Faculty of Education, QUT



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ACKNOWLEDGEMENT

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Year 2 Number and Algebra

The animals went in two by two

Learning goal	Students will recall the twos counting sequence and use skip counting by twos to count a collection.
Content description	Number and Algebra – Number and place value <ul style="list-style-type: none">Investigate number sequences, initially those increasing and decreasing by twos, threes, fives and ten from any starting point, then moving to other sequences. (ACMNA026)
Big idea	Number – counting; Algebra – patterns
Resources	Number track, Maths Mat, containers with various even numbers of manipulatives up to 100, cubes, number beads string

Reality

Local knowledge	Discuss items that come in pairs, e.g. hands, feet, arms, legs, eyes, ears, bicycle wheels; extend to many pairs, e.g. shoes, gloves, many pairs of animals in Noah’s Ark; sing the song, “The Animals went in two by two”.
Prior experience	Check that students can count forwards and backwards from 1 to 100.
Kinaesthetic	Using the number track to 100, students play “Follow the leader”, one at a time, skip counting in twos from zero saying the numbers as they go. Practise skip counting forwards/backwards. Maths Mat: One student stands at a given even number and others follow in a line skip counting forwards/backwards in twos from the given starting point on the Maths Mat saying each number as they go. Repeat process starting from odd number starting points.

Abstraction

Body	Line students up in pairs and count in twos as each pair walks over a stick or line. Have students count forwards and backwards in 200s, e.g. 2 00, 4 00, 6 00, 8 00, 10 00. Does anyone know another name for ten hundred? [one thousand] Groups of four to six students, each student having a container with varying even numbers of manipulatives up to 100 in each container. Students together count in twos the number of manipulatives, e.g. animals, in each student’s container. First student takes two objects out at a time, all say the number as they go: 2 animals, 4 animals ... The animals are placed beside the container after they have been counted. Finish by saying, e.g. <i>Jane had 36 animals in her container.</i> Reverse the process by counting backwards in twos. Put the animals back into the container counting backwards in twos from the total, e.g. <i>There are 36 animals beside the box, now 34 beside the box, 32, ... 0.</i> All students in the group take turns to repeat the process.
Hand	Students colour the twos counting pattern on a 99 board starting from 0. Discuss the pattern that has been made. Write the sequence of numbers in the twos counting to 100. Calculators: Enter any number, e.g. $14 + 2 = = =$ and students say the number each time. [14, 16, 18, 20 ...] Start with an odd number $27 + 2 = = =$ [27, 29, 31, 33 ...]
Mind	Students visualise objects sitting in pairs and then two more/less, e.g. six pairs of cats and now two more/less.
Creativity	Students show a twos pattern, e.g. the animals going into the ark, and count how many animals Noah had; rows of flowers with two in each row.

Mathematics

Language/ symbols

count, skip count, sequence, collection, numeral, number name, zero, one hundred

Practice

1. Orally skip count in twos the number of students in the class. Start at zero, skip first student, proceed with the count: 2, 4, ... Give further oral practice by giving a selected student a number, even or odd, and proceeding to skip count in twos forwards/backwards from the number.
2. Students take handfuls of Unifix cubes and count the collection in twos to find the total. Record how many. Swap with a partner and check results of each count.
3. Skip count by twos on an unnumbered number line starting from 0 and hopping in twos. Say: *Start at 0 (record the starting point, 0), skip one, land at 2 (record the numeral 2), skip one, land at 4 (record 4), and so on.*
4. Record the numerals and names on a ladder starting at 0 and skip counting in twos to 30, forwards and backwards. Start at different numbers, even and odd, to begin counting in twos.
5. Make a twos number beads string using alternate colours to 40. Move beads in groups of two from hand to hand and count as you go. Count in twos starting from odd numbers.

Connections

Relate to doubles.

Reflection

Validation

Students find objects in their world that come in twos, pairs, couples. *Why is it easier to skip count a collection in twos rather than count it in ones? Why does the class move in twos and not in ones?*

Application/ problems

Provide applications and problems for students to apply to different real-world contexts independently, e.g. *A light plane has seats in rows of two. How many rows are needed for 14 (26, 38, etc.) passengers to go on the flight?*

Extension

Flexibility. Ensure students are able to apply the twos counting process to many different situations, e.g. rows, number line, vertical ladder, scale on a graph, computer and digital technologies.

Reversing. Given an unknown collection, students can skip count to find the total and reverse by finding the total in the collection given the number of skips the collection takes.

Generalising. *Counting in ones or skip counting in twos will achieve the same outcome.* Demonstrate how the quantity does not change. *Skip counting in twos can begin from any number, even or odd.*

Changing parameters. Explore the twos counting sequence in unfamiliar number grids and contexts, e.g. a lift stopping every second floor. Have students skip count in threes, fours, fives, tens. Look at the binary (base 2) system:

1	1
10	2
11	3
100	4
101	5
110	6
111	7
1000	8

Teacher's notes

- Check that students not only confidently recall number sequences, but also recognise the connection between counting and quantity.
- Twos number beads string: Tie a knot at the beginning of the string, thread two beads of one colour, tie another knot leaving a little space then thread another two beads of a different colour, tie another knot, thread two beads of the first colour, tie a knot, thread two beads of the second colour, tie a knot and repeat the pattern until there are 20 or 30 beads in total on the string, tie a final knot.
- 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 kookaburra, 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 bird.
- 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.