Number Ladder

P.4.2

Word Wall: *ladder, up, down, forward, back, compare, order, number line, first, through to tenth, middle, take turns*

Introduction

Students will use the number ladder to establish the counting sequence from 0 to 20.

Resources

- Early FISH Kit
- Mandalany Kit
- Foam Numbers
- Mini Whiteboards
- White board Pens
- Calculator
- Number Ladder
- Brown Paper Bag
- The Spider and the rain Board Game

Time/Classroom Organisation

This activity may be introduced in a small group as a 20 minute focused teaching and learning event.

Australian Curriculum Prep

Compare, order and make correspondences between collections, initially to 20, and explain reasoning (ACMNA289)

Represent practical situations to model addition and sharing (ACMNA004)

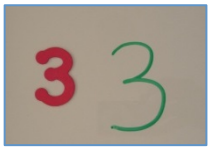
Proficiency Strand:

Problem Solving – discussing the reasonableness of the answer

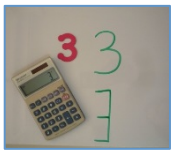
Reasoning – explaining processes for indirect comparison of length

Activity Process---Writing Numbers

1. Ask students to find the foam number 3.
2. Ask students to place it on the whiteboard and check with their friend that it is turned around the correct way.
3. Now ask students to copy the number 3.



4. Give students a calculator. Ask them to put the number 3 in the calculator. Discuss how different it looks to the written number 3. Ask students to write the number 3 that appears on the calculator.



5. Repeat with other numbers.

Source: E deVries & E Warren, 2011. *Building Mathematics in the Early Years.* Oxford University Press: Melbourne.

Activity Process – Number Ladder

1. Ask students to place the numbers 0 – 10 on the number line in order – starting at the bottom. Ensure students check that their numbers are around the correct way.
2. Now ask students to place all their foam numbers into a brown paper bag. Students shake the bag and then pull out the numbers one at a time, placing them on the correct rungs on the ladder.
3. Ask students to place the number 5 on the bottom rung and the number 10 on the 5th rung. Students then write the numbers that come in between on the number ladder.

Activity Process – Number Ladder

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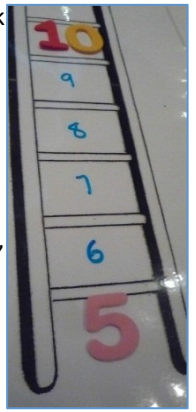
2. Now ask students to place all their foam numbers into a brown paper bag. Students shake the bag and then pull out the numbers one at a time, placing them on the correct rungs on the ladder.
3. Ask students to place the number 5 on the bottom rung and the number 10 on the 5th rung. Students then write the numbers that come in between on the number ladder. Repeat with other number combinations.



Source: E deVries & E Warren, 2011. *Building Mathema/cs in the Early Years.* Oxford University Press: Melbourne.

Variations & Extensions

1. Spacing Numbers

Resources: Sentence strips, foam numbers.

Ask students to place the foam number 0 at one end of the sentence strip and the foam number 2 at the other end of the sentence strip. Then ask students to place the number 1 where they think it would go.

Variations & Extensions Continued

Repeat this activity. This time ask students to place the number 0 at one end and the number 4 at the other end. Ask students to place the missing numbers in the places where they think they would go. Discuss with students the importance of spacing the numbers.

Source: E deVries & E Warren, 2011. *Building Mathema/cs in the Early Years.* Oxford University Press: Melbourne.

2. **The Spider and the Rain Game**

Resources: Board Game and transparent counters, number dice.

This is a game for two players based on the "Ipsey Wipsey Spider" rhyme. While playing the game learners count up and down what is, in essence, an unnumbered number---line. Ask students to predict who will win, before they begin.

To play *The Spider and the Rain* game

• Put the "spider" on the ***middle*** square.

One player is the Sunshine and the other is the Rain They ***take turns*** to throw the dice.

• The Sunshine makes the spider climb up and the Rain makes it go down.

• The Sunshine wins if the spider gets to the top of the drain---pipe and the Rain wins if the Spider gets washed out at the bottom.

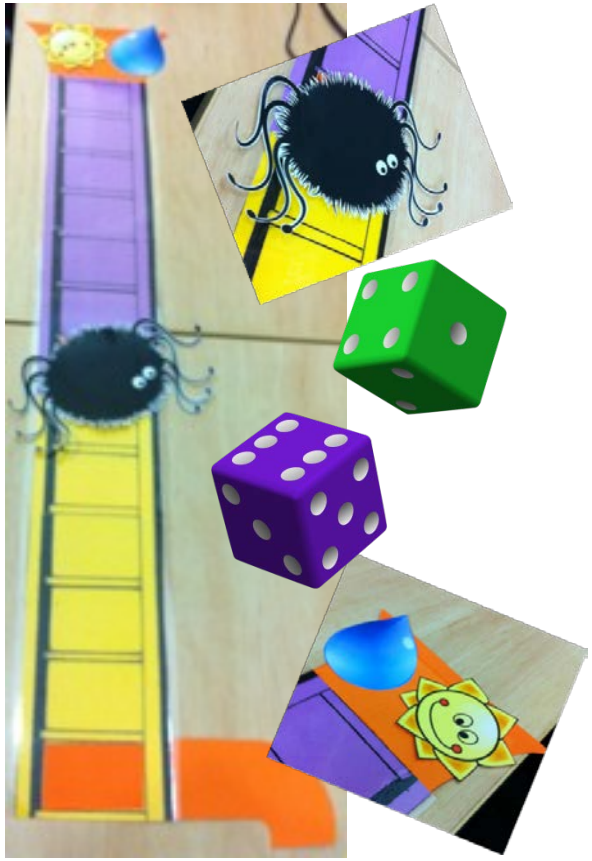
3. **Ten New Preps**

Pose the problem:

Imagine that ten new Preps are coming to school next week. How many boys or girls could there be?

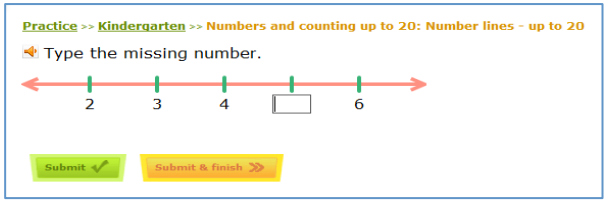
•Using a number line ask leaners to display how many boys and girls will make up the new students in the class. Provide cut paper shapes for boys and girls to be placed on the number line.

•Children will need to give some mathematical justification of how they have reached their solution.

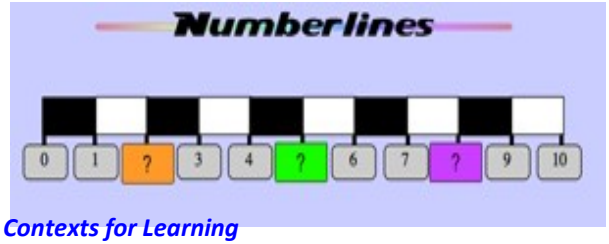


Digital Resources

http://au.ixl.com/math/kindergarten/number---lines---up---to---20



http://www.amblesideprimary.com/ambleweb/mentalmaths/numberlines.html



Contexts for Learning

Practice Writing Numerals

Play

- Walking, hopping or skipping around a numeral made by sticking masking tape to the floor.
- Moulding play dough, plasticine or modelling clay into the shape of a numeral.
- Drawing number in shaving cream or finger paint spread across the table.

Investigation

- Writing numerals on another child' back or hand with their finger – the second child can guess what the numeral is.
- Stretching elastic bands on a geo board to form numerals

Real life experience

- Writing numerals in sand or with finger paint.
- Gluing beans, corn or seeds over a numeral written on a card by the teacher.

Routines and Transitions:.

- Painting numerals on a blackboard or section of concrete with a large paintbrush and a bucket of water.
- Bending pipe---cleaners into the shape of the numerals.

- Writing numerals in the air with the index finger of their writing hand, their nose of their elbow.
- Make the numeral with a collection of counters.

Source: Department of Education, Queensland. 1990. *Years 1 to 10 Mathematics Sourcebook: Activities for teaching mathematics in Year 1*. Department of Education: Qld p154

Assessment---Criteria---Ten New Preps

• Correctly represents the ten Preps in two distinct groups

- justification---e.g. part whole understanding/adding to ten
- Mathematical language, makes 10, even, odd, pattern

• Made an attempt to visually represent ten but incorrect

- Justification none or little idea of task

Relevant parts of the achievement standard

By the end of the Prep year, students make connections between number names, numerals and quantities up to 10. They compare objects using mass, length and capacity. Students connect events and the days of the week. They explain the order and duration of events. They use appropriate language to describe location. Students count to and from 20 and order small collections. *They group objects based on common characteristics* and sort shapes and objects. Students answer simple questions to collect information.

Assessment---General

Teacher to observe evidence of thinking and reasoning mathematically.

Ask students to place the number 7 at the bottom of the ladder and the number 12 on the 5th rung. Ask students to write in the missing numbers. Observe their strategies and ask students to explain their answers.

Achievement Standard: count to and from 20

Prep Year Achievement Standard

By the end of the Prep year, students make

- connections between number names, numerals and quantities up to 10.
- compare objects using mass, length and capacity.
- connect events and the days of the week. They explain the order and duration of events.
- use appropriate language to describe location.
- count to and from 20 and order small collections.
- group objects based on common characteristics and sort shapes and objects.
- answer simple questions to collect information.

Background Reading

Counting is an important component of number and the early learning of operations. There is a distinction between rote counting and counting with understanding. Representing numbers in a variety of ways is essential for developing number sense. Counting with understanding involves counting with one---to---one correspondence and developing a sense of the size of numbers, their order and relationships.

Mathematics K---10 syllabus NSW

On a number line, numbers are represented as points and distances. Number lines are useful because they provide a linear representation of all numbers, in order of size. They can represent whole numbers, negative numbers, fractions and decimals and irrational numbers, all on one diagram.

They are also useful to model some number computations, especially for addition and subtraction.

Scales on instruments such as thermometers are examples of number lines, so reading a number line has practical use.

Graph axes are also number lines, and so understanding number lines is important for more advanced mathematics, not just as a tool for teaching.

Source: Department of Education and Early Childhood Development, Victoria. 2009. *Number lines with whole numbers.* Department of Education: VIC.

What does thinking, reasoning and working mathematically look like in the classroom?

Learners may be:

- Holding mathematical conversation
- Selecting appropriate procedures and strategies
- Using a range of representations from concrete materials to mathematical models
- Communicating mathematical ideas
- Reflecting on the reasonableness of their solution

Links to Related MAGs

P.3.4 – Hanging Geckoes
P.4.7 – Number Lines
1.2.2 – Hanging Geckoes
1.3.3 – Area to Linear