Dr Paul Swan & Narelle Rice

Year 2
Quick Curriculum Guide

A reference and guide to the Australian Curriculum Version 9

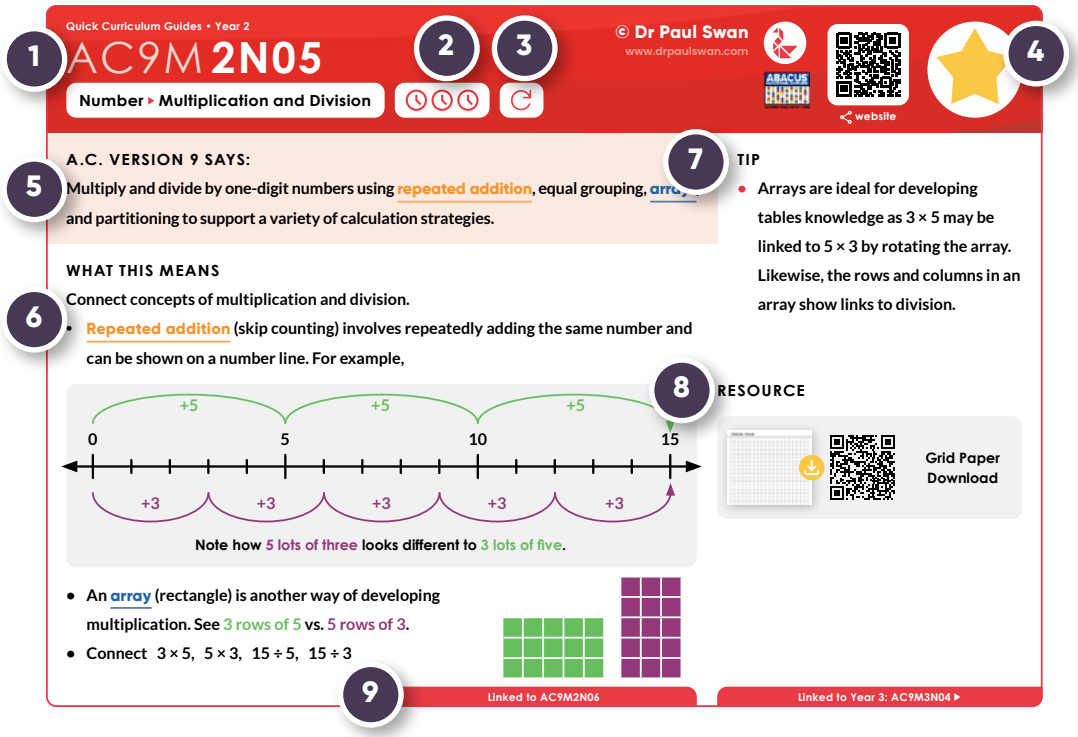
These Quick Curriculum Guides have been designed to take a look at the new Australian Mathematics Curriculum (AC9), explain terminology and provide interpretations. Narelle and I have used our professional judgement to put forward what is appropriate for students at this year level.

Using the Guide Cards

1. The Curriculum 9 code, strand, and our categorisation of content.

2. Our estimate of teaching time required.
   - = a short time (1 or a few lessons)
   - = more time (a few weeks)
   - = lots of time (3 weeks+)

3. This icon means we think this content is best approached with multiple exposures (interleaving).



4. The filled in star means, in our opinion, this is one of the most vital topics for the year level. Often these are pre-requisites for later learning.

5. Text from the curriculum. Terms we define are highlighted.

6. Our explanations, inferences, clarifications and suggestions.

7. Practical tips and sometimes activity ideas.

8. Resources and materials recommendations.

9. Links to other descriptors.
   Bottom left: previous year
   Middle: within this year
   Bottom right: next year

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Acknowledgements

Authors: Dr Paul Swan & Narelle Rice

We would like to also thank Linda Marshall and David Dunstan for comments and assistance.

Visual Overview

For a visual overview / planner, see our accompanying overview documents.

We have illustrated the direct connections that exist between and within year levels.

With this information, you can check out the directly related cards in the previous / next year. This is helpful to:

- understand what the students should be bringing in from previous years, and what might need revision,
- the exact difference in understanding from previous years to this year,
- the content that you may be able to bundle together, and,
- what the curriculum describes for next year, so you can avoid accidentally teaching beyond the year level.

These documents serve as general advice only and do not take into account your specific needs and conditions. While best care has been taken in compiling these materials, mistakes may exist.

AC9M 2N01

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Number ▸ Place Value

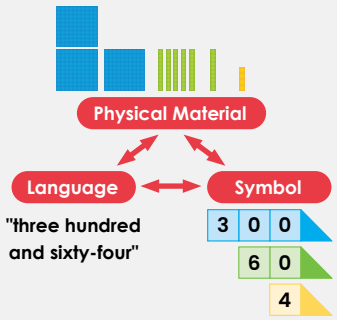
A.C. VERSION 9 SAYS:

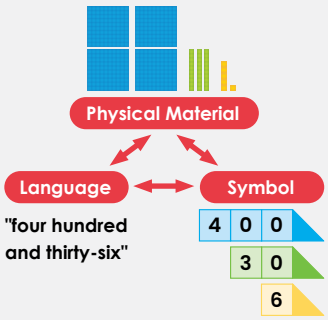
Recognise, represent and order numbers to at least 1000 using physical and virtual materials, numerals and number lines.

WHAT THIS MEANS

Place Value up to four-digit numbers.

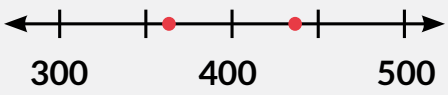
- Recognise; students can read numbers. (e.g. 7 200 as seven thousand two hundred).
- Represent; show numbers using materials.





TIP: RECOMMENDED APPROACH

Model with physical materials, language and symbol use and place onto a number line.



RESOURCES

Teaching Place Value - Year 2

Dice Games for Place Value

◂ Linked to Year 1: AC9M1N01

Linked to Year 3: AC9M3N01 ▸

AC9M 2N02

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Number ▸ Place Value

A.C. VERSION 9 SAYS:

Partition, rearrange, regroup and rename two- and three-digit numbers using standard and non-standard groupings; recognise the role of a zero digit in place value notation.

WHAT THIS MEANS

Flexible use of place value with two and three-digit numbers.

You can partition (break numbers into parts) in:

- Standard partitioning e.g. 392 as 3 hundreds + 9 tens + 2 ones (300 + 90 + 2)
- Place value e.g. **39 tens and 2 ones** or **380 and 12**.
- Non-standard e.g. 280 + 100 + 2

Renaming covers 'trading', 'regrouping', etc. For example, 248 can be interpreted as 2 hundreds 4 tens 8 ones, or 24 tens 8 ones, or 248 ones.

TIP

- Zero's role in place value is much easier for students to grasp when materials are used.

RESOURCES

Teaching Place Value - Year 2

Dice Games for Place Value

Check the Clues B

MANIPULATIVES

Interactive Place Value Arrow Cards

Interactive Base Ten Blocks & Base Ten Blocks Book

10-faced Dice (0 - 9)

See also: Place Value Plunder, Place Value Express 202

◂ Linked to Year 1: AC9M1N02

Linked to Year 3: AC9M3N02 ▸

AC9M 2N03

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Number ▸ Fractions

A.C. VERSION 9 SAYS:

Recognise and describe one-half as one of 2 equal parts of a whole and connect halves, quarters and eighths through repeated halving.

WHAT THIS MEANS

Beginning fraction concepts:

- When a whole is divided into equal parts, the number of equal parts represents the name of the fraction (the denominator).
- The more equal pieces, the larger the denominator, the smaller the unit fraction.
- The whole may refer to a single thing like a strip of paper of a collection of things like 8 counters.

TIP

- Paper folding activities. Folding strips of paper will lead to a better understanding of fraction walls and later number lines.

RESOURCES

Bond Blocks Core Addition & Subtraction Kit

Developing a Conceptual Understanding of Fractions

See also: Reasoning with Rods Book

MANIPULATIVES

Coloured Rods (Fraction Bars)

See also: Fraction Circles, Fraction Strips

Linked to AC9M2M02
Linked to Year 3: AC9M3N02 ▸

AC9M 2N04

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Number ▸ Addition and Subtraction

A.C. VERSION 9 SAYS:

Add and subtract one- and two-digit numbers, representing problems using number sentences and solve using part-part-whole reasoning and a variety of calculation strategies.

WHAT THIS MEANS

Students interpret word problems (addition and subtraction) and write appropriate number sentences.

- Number sentences; equation, e.g. 25 + 17 = 42
- Calculation strategies; partitioning, bridging ten, doubles, near doubles.

TIPS

- A part-part-whole diagram will help students interpret and solve addition/ subtraction problems.

Whole	
Part	Part

- Doubles and near doubles are new this year.

RESOURCES & MANIPULATIVES

Bond Blocks Core Addition & Subtraction Kit

10-faced Dice (0 - 9)

Base Ten Blocks (MAB) &Base Ten Blocks Book

Bead String 1-20

See also: Base Ten Blocks Book, Bead Strings Book, Number Balances, Ten Frames

◂ Linked to Year 1: AC9M1N04
Linked to AC9M2A02
Linked to Year 3: AC9M3N03 ▸

AC9M 2N05

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Number ▸ Multiplication and Division

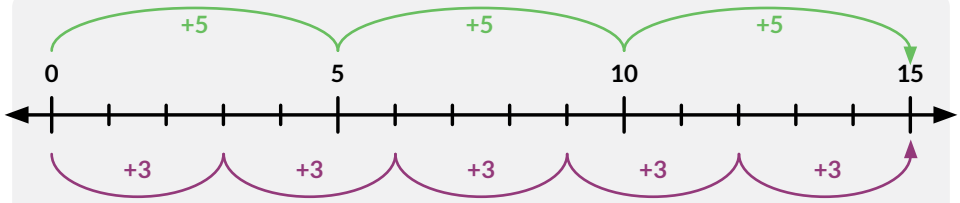
A.C. VERSION 9 SAYS:

Multiply and divide by one-digit numbers using repeated addition, equal grouping, arrays, and partitioning to support a variety of calculation strategies.

WHAT THIS MEANS

Connect concepts of multiplication and division.

- Repeated addition (skip counting) involves repeatedly adding the same number and can be shown on a number line. For example,



Note how 5 lots of three looks different to 3 lots of five.

- An array (rectangle) is another way of developing multiplication. See 3 rows of 5 vs. 5 rows of 3.
- Connect 3×5, 5×3, $15 \div 5$, $15 \div 3$

TIP

- Arrays are ideal for developing tables knowledge as 3×5 may be linked to 5×3 by rotating the array. Likewise, the rows and columns in an array show links to division.

RESOURCE

Grid Paper Download

Linked to AC9M2N06

Linked to Year 3: AC9M3N04 ▸

AC9M 2N06

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Number ▸ All Operations and Money

A.C. VERSION 9 SAYS:

Use mathematical modelling to solve practical problems involving additive and multiplicative situations, including money transactions; represent situations and choose calculation strategies; interpret and communicate solutions in terms of the situation.

WHAT THIS MEANS

Students need to decide whether they should add or subtract (additive situations) or multiply or divide (multiplicative situations) to solve a problem.

- Drawing diagrams, such as part-part-whole diagrams will help students understand problems (additive).
- There are several diagrams and methods that will help students understand which type of problem (additive, multiplicative) they are dealing with.

12			
3	3	3	3

12		
4	4	4

TIP

- Note the elaborations mention remainders in the context of modelling and solving practical problems. That is, acting out the problem. This does not refer to calculating with a remainder.

RESOURCES & MANIPULATIVES

Bond Blocks Core Addition & Subtraction Kit

ACARA's Mathematical Modelling Process Poster

Linked to AC9M2N05

Linked to Year 3: AC9M3N06 ▸

AC9M 2A01

website

Algebra ▸ Additive Patterns

A.C. VERSION 9 SAYS:

Recognise, describe and create additive patterns that increase or decrease by a constant amount, using numbers, shapes and objects, and identify missing elements in the pattern.

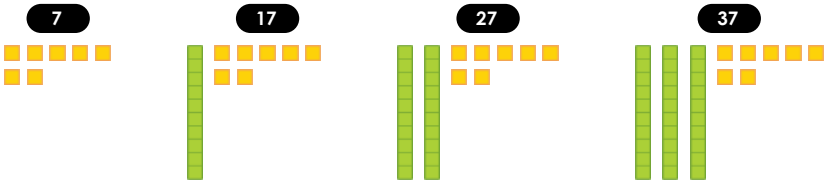
WHAT THIS MEANS

Working with patterns that involve adding or subtracting a constant amount (numbers or shapes).

- For example, the pattern 7, 17, 27, 37 involves starting with 7 and adding a constant amount of 10 each time. Students could describe this pattern "as adding ten each time".

TIP

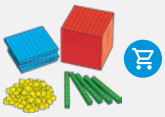
- These patterns can be shown with Base Ten Blocks.



RESOURCES & MANIPULATIVES

Pattern and Structure Mathematics Awareness Program (PASMAP) Book 2

Number Whiteboard



Base Ten Blocks (MAB) &Base Ten Blocks Book

◂ Linked to Year 1: AC9M1A01

AC9M 2A02

website

Algebra ▸ Basic Addition Facts

A.C. VERSION 9 SAYS:

Recall and demonstrate proficiency with addition facts to 20; extend and apply facts to develop related subtraction facts.

WHAT THIS MEANS

Recall (remember) the addition facts to 20.

- Recall; first level of recall is remembering a fact.
  Later, **Automatic recall** implies the fact is so well known that little mental processing is required.

Whole	
Part	Part Unknown

15	
8	?

8 + ? = 15

15 − 8 = ?

Whole Unknown	
Part	Part

?	
8	7

8 + 7 = ?

? − 8 = 7

- ***Note:*** *Using a mental strategy to reconstruct a fact would not constitute recall, but it is important that a student can reconstruct a forgotten fact.*

TIP

- Research suggests that students will struggle with complete recall of facts to 20 at Year 2. Typically researchers use a 3-second time when judging fluency.

RESOURCES & MANIPULATIVES

Bond Blocks Core Addition & Subtraction Kit

Bead String 1-20

Also try: School Friendly Cards, Dice (6 sided and 10-sided).

See also: Games to play with COMBO Booklet (Activity: Total 20),

◂ Linked to Year 1: AC9M1N04 | Linked to AC9M2N04 | Linked to Year 3: AC9M3A02 ▸

AC9M 2A03

website

Algebra ▸ Basic Multiplication Facts

A.C. VERSION 9 SAYS:

Recall and demonstrate proficiency with multiplication facts for twos; extend and apply facts to develop the related division facts using doubling and halving.

WHAT THIS MEANS

Learn the two times table.

- Link to the doubles addition facts.
- Halving can imply dividing by two.

RESOURCES

Bond Blocks Core Addition & Subtraction Kit (Doubling / Halving)

MANIPULATIVES

Maths Cubes

6 and 10-faced dice

See also: Dr Paul Swan Downloadable Games Pack (Doubles Game)

Linked to Year 3: AC9M3A03 ▸

AC9M 2M01

website

Measurement ▸ Units

A.C. VERSION 9 SAYS:

Measure and compare objects based on length, capacity and mass using appropriate uniform informal units and smaller units for accuracy when necessary.

WHAT THIS MEANS

Developing early measurement principles.

- Units need to be the same size (uniform).
  e.g. when measuring length use all popsticks or all paperclips, **not** a mix.
- Standard units like metres (m), litres (L) or kilograms (kg) are not used until Year 3.

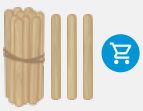
TIPS

- There will come a point where students might need a smaller unit like a half pop stick.
- Cups and jugs used for capacity comparisons should not have a scale on them.

RESOURCES & MANIPULATIVES

Maths Cubes

Backpack Bear Counters



Popsticks or Bundling Sticks

Bucket Balance

◂ Linked to Year 1: AC9M1M01 and AC9M1M02

Linked to Year 3: AC9M3M02 ▸

AC9M 2M02

Measurement ▸ Fractions

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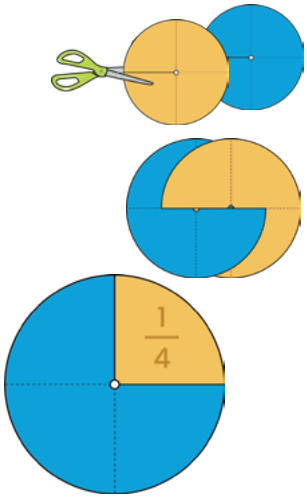
A.C. VERSION 9 SAYS:

Identify common uses and represent halves, quarters and eighths in relation to shapes, objects and events.

WHAT THIS MEANS

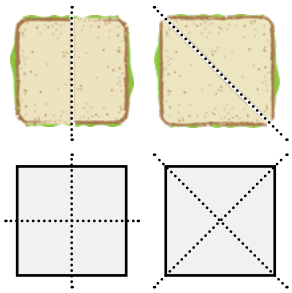
Using fractions in context, **NOT** fraction calculations.

- Folding a rectangle in half then half again to form quarters and half again to form eighths would be an example of this.
- Circular shapes need to be folded to show halves and quarters. This will help students understand terms like quarter past and half past when referring to analog clocks.



TIP

- **Activity:** Cutting sandwiches (or paper)



RESOURCES & MANIPULATIVES

Reasoning with Rods Book

Developing a Conceptual Understanding of Fractions

Coloured Rods (Fraction Bars)

Linked to AC9M2M04

AC9M 2M03

Measurement ▸ Time

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A.C. VERSION 9 SAYS:

Identify the date and determine the number of days between events using calendars.

WHAT THIS MEANS

Students need to be familiar with calendars. Expose students to a variety of calendars. Focus on the time between two events (duration).

- Full year calendar (some events span across a month or months)
- Month by month calendar
- Digital calendars

TIPS

- Make incidental reference to the calendar throughout the day.
- Help students calculate the time until an event e.g. a school excursion.

RESOURCES & MANIPULATIVES

POP Time: Months 1 & 2

Calendars

◂ Linked to Year 1: AC9M1M03

Linked to Year 3: AC9M3M03 ▸

AC9M 2M04

website

Measurement ▸ Clocks

A.C. VERSION 9 SAYS:

Recognise and read the time represented on an analog clock to the hour, half-hour and quarter-hour.

WHAT THIS MEANS

Read time on an analog clock.

Digital time is not mentioned but the connections would make sense in students' digital worlds of mobile phones, tablets etc. This is the first reference to reading or telling the time in the curriculum.

- When reading analog time students will need to know about fractions (See AC9M2M02 also A9M2M05).

TIPS

- Use the terms 'hour hand' and 'minute hand', rather than 'big' and 'little' hands.
- Expose students to 'past' & 'to', 'half past', 'quarter past', and 'quarter to', which is more difficult.
- Repeated reference to the clock throughout the school day will be required for students to learn analog time.
- Quarter to the hour is a difficult concept, as students need to see:

RESOURCES & MANIPULATIVES

Geared Clocks

Pocket Dice Book A

Linked to AC9M2M02 and AC9M2M05

Linked to Year 3: AC9M3M04 ▸

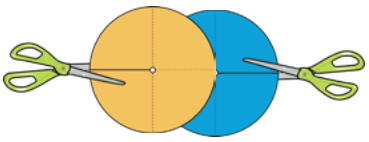
AC9M 2M05

website

Measurement ▸ Angle

A.C. VERSION 9 SAYS:

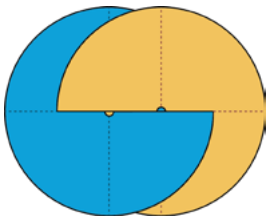
Identify, describe and demonstrate quarter, half, three-quarter and full measures of turn in everyday situations.



WHAT THIS MEANS

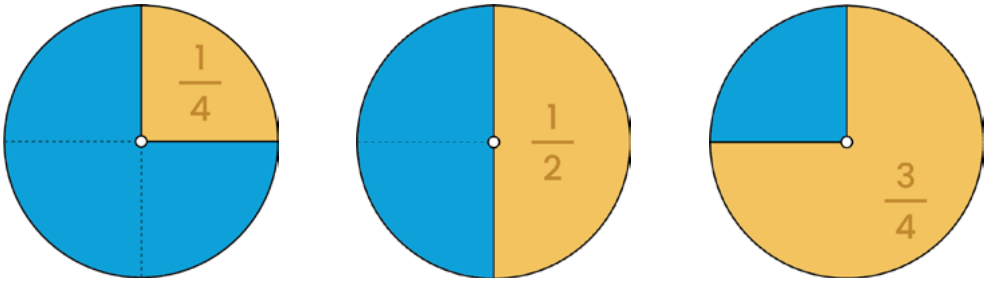
Focus the direction of turn, clockwise and anticlockwise and the amount of turn (e.g. half turn).

- Do not refer to degrees at this time.
- Links to understanding analog clocks (AC9M2M04).
- This can be a really difficult concept for students at this age.



TIP

- Do this before 2M04.



Linked to AC9M2M04

Linked to Year 3: AC9M3M05 ▸

AC9M 2SP01

Space ▸ Shapes

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A.C. VERSION 9 SAYS:

Recognise, compare and classify shapes, referencing the number of sides and using spatial terms such as “opposite”, “parallel”, “curved” and “straight”.

WHAT THIS MEANS

Know the names of 2D **shapes** and associated language so they can be sorted.

The shapes would include a variety of polygons:

- Triangles of various types, sizes and orientations,

- Quadrilaterals: square, rectangle, rhombus, trapezium...,

- Other polygons, regular **and irregular (as mentioned in elaborations)** in different orientations such as pentagon, hexagon, octagon extending to hepta/septagon (7 sides/angles) nonagon (9), decagon (10) and dodecagon (12) e.g. fifty cent.
- The only curves will be circle and semi-circle.

TIPS, RESOURCES & MANIPULATIVES

- The focus of Year 2 is on shapes whereas Year 3 deals with 3D objects.
- **Activity:** Which One Doesn't Belong (see http://wodb.ca)

Tangrams

Toying with Tangrams Book

Barrier Games Book

◂ Linked to Year 1: AC9M1SP01

Linked to Year 3: AC9M3SP01 ▸

AC9M 2SP02

Space ▸ Location and Direction

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A.C. VERSION 9 SAYS:

Locate positions in two-dimensional representations of a familiar space; move positions by following directions and pathways.

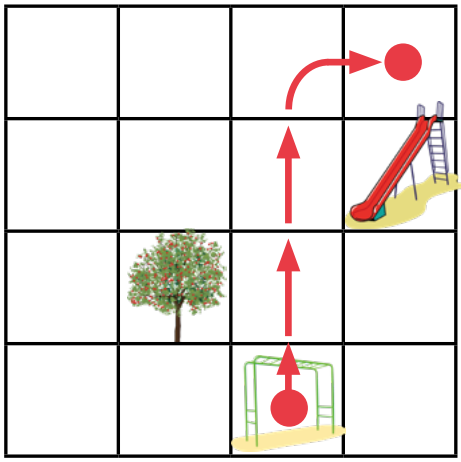
WHAT THIS MEANS

Can interpret simple maps and directions.

- Maps used should have no reference to scale, compass directions, or grid coordinates.
- The maps should properly reflect reality (e.g. "*to find the treasure start at the monkey bars, go past the tree and look behind the slide*").

TIP

- **Activity: Human Robot.** One student directs another student through a maze using instructions like "forward", "left turn", and "full turn". See **turtle programming** for digital option.



RESOURCE

Teaching Mathematics Through Story Books 2 (Years 2-3)

◂ Linked to Year 1: AC9M1SP02

Linked to Year 3: AC9M3SP02 ▸

AC9M 2ST01

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Statistics ▸ (1) Gather, (2) Display

A.C. VERSION 9 SAYS:

Acquire data for categorical variables through surveys, observation, experiment and using digital tools; sort data into relevant categories and display data using lists and tables.

WHAT THIS MEANS

One categorical variable means that there is only one type of data collected; e.g. favourite types of sport, or hair colour.

The child can ask family members / friends about their favourite meal, TV show, ice-cream, etc. and collect the data.

TIPS

- Conduct a poll and collect data.
- This could be recorded in a table using tally marks.
- **Activity: Transport Survey.** "How do students come to school?"
- Where 'frequency' is used 'total' is also appropriate.

How students came to school.

Transport	Tally
Walk	𝍸 𝍸 ||
Bicycle	𝍸
Car	𝍸 ||||
Bus	|||
Train	𝍸

Linked to AC9M2ST02

Linked to Year 3: AC9M3ST01 ▸

AC9M 2ST02

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Statistics ▸ (2) Display, (3) Communicate

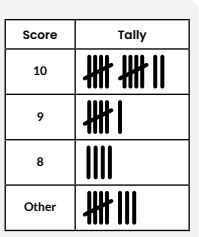
A.C. VERSION 9 SAYS:

Create different graphical representations of data using software where appropriate; compare the different representations, identify and describe common and distinctive features in response to questions.

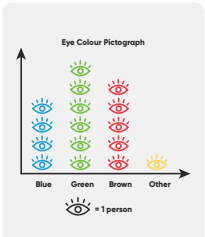
WHAT THIS MEANS

Create picture graphs (one-to-one), column/bar graphs, dot plots, tally charts and explain how well they show the data.

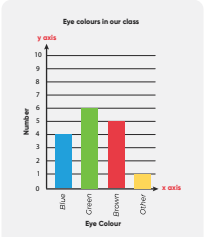
- You only need to look at a few specific graph types, see the elaborations for more information.



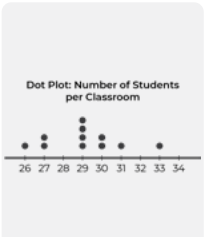
Tally



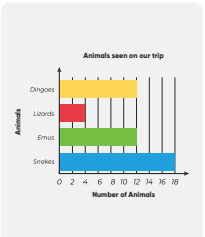
Pictograph



Column Graph



Dot Plot



Horizontal Bar Graph

LINKING ST01 AND ST02

Elements of statistics:

(1) GATHER: Ask a question

(2) DISPLAY: Table, Graph

(3) INTERPRET & COMMUNICATE

TIPS

- Use a spreadsheet chart feature to create a column graph.
- Compare two different types of graphs for the same data, e.g., a bar graph and a picture graph, both showing eye colours in the class.

Linked to AC9M2ST01

Linked to Year 3: AC9M3ST02 ▸