Strand		Knowledge and understanding		Strand: Processes and production skills			
		Digital systems	Representation of data	Collecting, managing and analysing data	*Creating digital solutions by:*		
					Investigating and defining	Evaluating	Collaborating and managing
Content Description		Recognise and explore digital systems (hardware and software components) for a purpose (ACTDIK001)	Recognise and explore patterns in data and represent data as pictures, symbols and diagrams (ACTDIK002)	Collect, explore and sort data, and use digital systems to present the data creatively (ACTDIP003)	Follow, describe and represent a sequence of steps and decisions (algorithms) needed to solve simple problems (ACTDIP004)	Explore how people safely use common information systems to meet information, communication and recreation needs (ACTDIP005)	Create and organise ideas and information using information systems independently and with others, and share these with known people in safe online environments (ACTDIP006)

Sequence of Lessons / Unit	Approx. time rq'd	Year A or B	CD	Achievement standard #	CD	Achievement standard #	CD	Achievement standard #	CD	Achievement standard #	CD	Achievement standard #	CD	Achievement standard #
Data is all around us	5	F-1	☐		☑	2	☑	4	☐		☐		☐	

Years F-2 Achievement Standard	Years 3 and 4 Achievement Standard
By the end of Year 2 • Students identify how common digital systems (hardware and software) are used to meet specific purposes. (1) • They use digital systems to represent simple patterns in data in different ways. (2) • Students design solutions to simple problems using a sequence of steps and decisions. (3) • They collect familiar data and display them to convey meaning. (4) • They create and organise ideas and information using information systems, and share information in safe online environments. (5)	By the end of Year 4 • Students describe how a range of digital systems (hardware and software) and their peripheral devices can be used for different purposes. (1) • They explain how the same data sets can be represented in different ways. (2) • Students define simple problems, design and implement digital solutions using algorithms that involve decision-making and user input. (3) • They explain how the solutions meet their purposes. (4) • They collect and manipulate different data when creating information and digital solutions. (5) • They safely use and manage information systems for identified needs using agreed protocols and describe how information systems are used. (6)

Data is all around us
Represent data as symbols, numbers and pictures.
Collect, sort and present data in a digital format.

Exploring data
Represent data in different ways. Collect, sort and present data in digital formats.
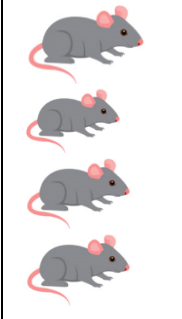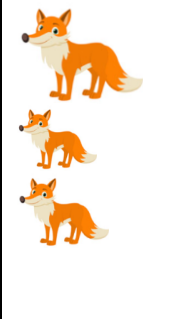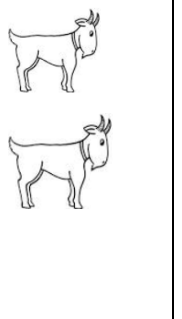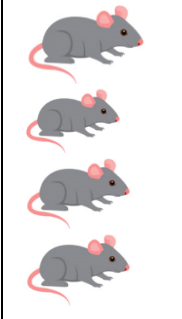
Data is all around us

This aspect of digital technologies has strong connections to the Mathematics learning area and can be integrated to make learning more meaningful. The data strand at F-2 can also be taught in alignment with reading when students are expected to construct meaning from text. Text is a form of data. Connections to other relevant learning areas are also indicated where applicable.
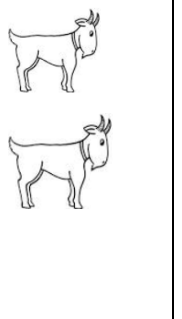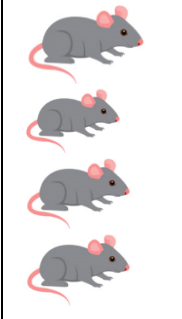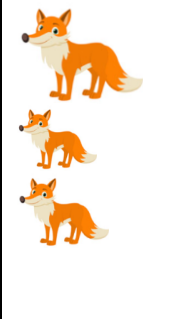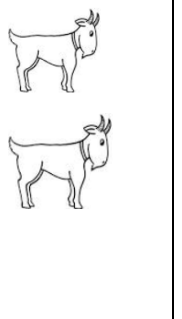
Data is all around us in our everyday life and even our own observations inform us. Data can be presented to us as information in the form of numbers such as the time, date, car speed, temperature, or a train timetable. Data can be presented as symbols such as weather icons, visually as pictures or maps, or as text. Often data is presented using a combination of these such as when used to create an infographic. We use the data to make decisions; Am I running late? What will I wear? How do I travel to a certain location? Should I eat this? What ingredients have been used to make this dish?

In Digital Technologies **representing** data refers to the way data is symbolised, visually treated or provided as audio. For example, at the F-2 level, data about animals may be represented as images of each animal, emotions may be represented as emojis, and weather data may be represented as icons for wind, rain or describing the amount of sunshine. **Presentation** of data deals with the format in which it may be presented, such as in a table, T-chart or Y-chart, a picture graph or a bar graph.

We may collect data through observations, photography, audio recordings, video recordings, by survey or from other sources. Data often comes to us unorganised so the first step is to sort the data by common characteristics or attributes, then arrange the data to help make sense and look for patterns, and finally present the data visually.

	Flow of activities			
Short text	Explore everyday data Use a familiar context to discuss what data is and the forms it comes in.	Sort and present data Explore ways to sort data to look for patterns and present the data.	Represent data in different ways Explore ways to represent data in different ways using relevant software.	Collect data
Curriculum alignment	*Representation of data (ACTDIK002)* *Collecting, managing and analysing data (ACTDIP003)*	*Collecting, managing and analysing data (ACTDIP003)* *Representation of data (ACTDIK002)*	*Representation of data (ACTDIK002)* *Collecting, managing and analysing data (ACTDIP003)*	*Representation of data (ACTDIK002)* *Collecting, managing and analysing data (ACTDIP003)*
Questions to guide exploration	*What is data?*	*How does sorting data help us make sense of data?*	*How can I represent data?*	*How can I collect and present my data?*
What's this about?	Data is all around us in our everyday life and even our own observations inform us. Data can be presented to us as information in the form of numbers such as the time, date, car speed, temperature, or a train timetable. Data can be represented as symbols, such as weather icons, or presented visually as pictures or maps, or presented as text. Often data is presented using a combination of these such as when used to create an infographic. We use the data to make decisions; Am I running late? What will I wear? How do I travel to a certain location? Should I eat this? What ingredients have been used to make this dish?	To make sense of data it needs to be sorted and organised. Organising data requires students to look for common attributes such as colour when sorting fruit or by eye-colour. Once the data is sorted into categories it can be represented as pictures or blocks in a column. The data can then be presented as a graph, such as a picture graph.	In Digital Technologies, **representing** data refers to the way data is symbolised, visually treated or provided as audio. For example, data about animals may be represented as images of each animal, emotions may be represented as emojis, weather data may be represented as icons for wind, rain or describing the amount of sunshine.	**Presentation** of data deals with the format in which it may be presented, such as in a table, T-chart or Y chart, a picture graph or bar graph.
The focus of the learning (in simple terms)	Display the word 'data'. Ask students the question, 'What do you think is meant by the word 'data'? Provide examples and guide discussion to point out that data comes in many forms and isn't always numbers or words. The light we see outside our window is data we observe and interpret to determine if it is day or night. Talk about something familiar to connect the term 'data' to things they know about, such as the weather. What data do we use to talk about the weather? Refer to a weather app and discuss how the data is represented on screen. What data would the app use? Use the '[What is Data]' slide presentation to explain the term 'data': • Data can be numbers, images, text or sound. • When data is turned into information it can be used to make decisions. • Text and number data can be collected. • Data can be organised (put into groups) to make it meaningful. Provide each student with an ['About me'] worksheet to record data about themselves, for example: name,	Refer to a data set that is unorganised, such as the display of the 'About me' worksheets suggested in the previous section. Ask questions like: • What is the most common eye colour? • What hobby is most common? • How many people have more than four people in their family? As a result, students will begin to understand the need to sort and arrange the data to make sense of the data and answer these types of questions. Choose a question to answer and model how to sort and organise the data. As a class, create a table and systematically count up the items for each column. If choosing the question about families, discuss how to represent the data. What format can be used to present the data? Create a digital chart. Use a software program such as Kid Pix or a similar drawing program that enables you to create 'stamps' of objects so they can be repeated easily, deleted and arranged. Repeat the process to answer other questions of interest. Use a different format for presentation, for example,	Provide opportunities for students to represent data using a relevant software such as Kid Pix or Paint, or a simple drawing app such as Draw and Tell or Drawing Pad. A relevant context could be to discuss feelings and emotions and integrate the use of emojis as a way to represent the types of emotions: • angry, sad, happy, scared, excited. Discuss the use of emojis in electronic communications such as in SMS messages and email. Record, sort and present numerical data. Read a text that has a range of animals or characters such as *Green eggs and ham*. Explain that we are going to collect data to see which animal appears most time in the story. Invite the students to listen to the story and respond each time an animal is named. Record the number, using pictures, tally marks and numbers. Discuss the different ways the data is represented.	Provide opportunities for students to collect class data to answer a question. Use a relevant context such as ways of getting to school, favourite food, favourite pet, or favourite book or TV character. Provide guidance and support to sort and arrange the data, selecting appropriate headings for tables. Discuss relevant ways to present the data, such as a chart. Ask students to discuss the usefulness of the method of presentation.

	age, hair colour, height, digital image and drawing of themselves, favourite pets, likes, dislikes, hobbies, number of brothers, number of sisters. Discuss ways to represent each type of data. Display the worksheets and use these to highlight and explain that all of this information (words, images, drawings, numbers) is data.	likes and dislikes may be presented as a T-chart. Ideally students progress to making their own charts using a computer and familiar software. In each case discuss the usefulness of the presentation and discuss patterns in data. Provide further opportunities to sort items such as attribute blocks, toys, construction blocks, or other similar objects. Discuss the attributes being sorted. Arrange the objects in columns, count each item in the column and give each a value. Make statements based on the sorted objects, giving reference to the most or least, and how much more of one object compared to another. Provide students with a series of picture and number patterns. Discuss the patterns and ask students to identify and describe the patterns. Ask students to continue the patterns.	Mouse / Fox / Goat table: | Mouse	Fox	Goat
---	---	---
(images)	(images)	(images)
I I I I	I I I	I I
M M M M	F F F	G G
4	3	2 | Play the 'People pattern' game. Students are called by name to form a long line. Use student attributes to create a pattern and invite students to guess the pattern, for example,: **boy, girl, boy, girl or** **boy, boy, girl, boy, boy, girl**. Invite students to consider other ways to create people patterns, for example, brown hair, blonde hair. Create symbols or drawings to represent the people pattern. Encourage students to use symbols/images to demonstrate the pattern (eg blonde hair, brown hair, blonde hair). Invite students to create and follow patterns using kinaesthetic activities such as clapping, stomping, hopping or skipping. Symbols can be created to represent movements: hop, hop; jump, jump, jump; clap; repeat = HH; JJJ; C; R	
Supporting resources and tools and purpose/context for use.	'[What is Data]' Use this slide presentation to explain the term 'data'.			[Data Detective] These lesson ideas provide example teaching activities to assist students in exploring data, progressing from paper-based to digital solutions.
Assessment	**Suggested approaches may include:** worksheet, '[About me]' data. **Achievement standard** **Collect** familiar data and **display** them to convey meaning. **Use** digital systems to **represent** simple patterns in data in different ways.	**Suggested approaches may include:** student-created patterns. **Achievement standard** **Collect** familiar data and **display** them to convey meaning. **Use** digital systems to **represent** simple patterns in data in different ways.	**Suggested approaches may include:** ways data is represented using software and how it is presented in a chart. **Achievement standard** **Collect** familiar data and **display** them to convey meaning. **Use** digital systems to **represent** simple patterns in data in different ways.	**Suggested approaches may include:** ways data is represented using software and how it is presented in a chart **Achievement standard** **Collect** familiar data and **display** them to convey meaning. **Use** digital systems to **represent** simple patterns in data in different ways.