Mathematics Stage 4 – unit of learning – making decisions



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## Rationale

The NSW Department of Education publishes a range of curriculum support materials, including samples of lesson sequences, scope and sequences, assessment tasks, examinations, student and teacher resource booklets, and curriculum planning and curriculum evaluation templates. The samples are not exhaustive and do not represent the only way to complete or engage in each of these processes. Curriculum design and implementation is a dynamic and contextually-specific process. While the mandatory components of syllabus implementation must be met by all schools, it is important that the approach taken by teachers is reflective of their needs and faculty/school processes.

NESA defines [programming](https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/understanding-the-curriculum/programming) as the process of ‘selecting and sequencing learning experiences which enable students to engage with syllabus outcomes and develop subject specific skills and knowledge’ ([NESA](https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/understanding-the-curriculum/programming) 2022). A program is developed collaboratively within a faculty. It differs from a unit in important ways, as outlined by NESA on their [advice on units](https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/understanding-the-curriculum/programming/advice-on-units) page. A unit is a contextually-specific plan for the intended teaching and learning for a particular class for a particular period. The organisation of the content in a unit is flexible and it may vary according to the school, the teacher, the class, and the learning space. They should be working documents that reflect the thoughtful planning and reflection that takes place during the teaching and learning cycle. There are mandatory components of programming and unit development, and this template provides one option for the delivery of these requirements. The NESA and department guidelines that have influenced this template are elaborated upon at the end of the document.

This resource has been developed to assist teachers in NSW Department of Education schools to create learning that is contextualised to their classroom. It can be used as a basis for the teacher’s own program, assessment, or scope and sequence, or be used as an example of how the new curriculum could be implemented. The resource has suggested timeframes that may need to be adjusted by the teacher to meet the needs of their students.

## Overview

**Description:** This program of learning addresses content from the focus areas of Data analysis and Data classification and visualisation. The lessons and sequences in this program of learning are designed to allow students to explore how we use data to assist in making decsions. Students will explore different ways of representing data which allow us make decision by analysing and interpreting the data.

**Duration:** This program of learning is designed to be completed over a period of approximately 5 weeks, but can be adapted to suit the school context.

**Explicit teaching:** Suggested learning intentions and success criteria are available for some lessons provided. Learning intentions and success criteria are most effective when they are contextualised to meet the needs of students in the class. The examples provided in this document are generalised to demonstrate how learning intentions and success criteria could be created.

## Outcomes

A student:

* develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly **MAO-WM-01**
* classifies and displays data using a variety of graphical representations **MA4-DAT-C-01**
* analyses simple datasets using measures of centre, range and shape of the data **MA4-DAT-C-02**

The identified Life Skills outcomes that relate to this unit are **MALS-DAT-01** – recognises and represents data in everyday contexts and **MALS-DAT-02** – interprets information from data displays.

[Mathematics K–10 Syllabus](https://curriculum.nsw.edu.au/syllabuses/mathematics-k-10-2022) © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales, 2022.

**Prior to planning for teaching and learning, please consider the following:**

**Engagement**

* How will I provide authentic, relevant learning opportunities for students to personally connect with lesson content?
* How will I support every student to grow in independence, confidence, and self-regulation?
* How will I facilitate every student to have high expectations for themselves?
* How will I identify and provide the support each student needs to sustain their learning efforts?

**Representation**

* What are some different ways I can present content to enable every student to access and understand it?
* How will I identify and address language and/or cultural considerations that may limit access to content for students?
* How will I make lesson content and learning materials more accessible?
* How will I plan learning experiences that are relevant and challenging for the full range of students in the classroom?

**Expression**

* How will I provide multiple ways for students to respond and express what they know?
* What tools and resources can students use to demonstrate their understanding?
* How will I know every student has understood the concepts and language presented in each lesson?
* How will I monitor if every student has achieved the learning outcomes and learning growth?

## Lesson sequence and details

### Learning episode 1 – Greedy pig game

#### Teaching and learning activity

Students determine a strategy for playing the game ‘Greedy Pig’ by collecting and analysing data to determine the average number of throws before the ‘poison’ number is rolled.

#### Syllabus content

* Represent single datasets using graphs, including frequency histograms and polygons, dot plots, stem-and-leaf plots, divided bar graphs, column graphs, line graphs, sector graphs and pictograms, with or without digital tools
* Include sources, titles, labels and scales when displaying data in a graph
* Identify and interpret data displayed on graphs
* Interpret patterns in graphical representations to make predictions

Table – lesson details

|  |  |  |
| --- | --- | --- |
| Visible learning | Required resources | Registration, adjustments and evaluation notes |
| [**Greedy pig game**](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-01-greedy-pig-game.docx)**Duration**: 1–2 lessons**Learning intention*** To understand that collecting data can help us to predict events and make decisions when the theoretical probability cannot be calculated.

**Success criteria*** I can organise data into a frequency table.
* I can make a prediction based on collected data.
 | * Projector
* Dice – one per pair of students or an online dice simulator alternative
* [*Greedy pig* spreadsheet](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-01-greedy-pig-game.xlsx)
* Class set of [Appendix A](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-01-greedy-pig-game.docx) handout for students
* Class set of [Appendix B](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-01-greedy-pig-game.docx) handout for students
* Optional: device per pair of students
 |  |

### Learning episode 2 – what is normal?

#### Teaching and learning activity

Students are introduced to measures of centre by considering what is ‘normal’. They utilise physical or online manipulatives to find the mode, median and mean of single datasets.

#### Syllabus content

* Calculate and describe the mean, median, mode and range of a dataset
* Classify the mean, median and/or mode as measure(s) of centre to represent the average or typical value of a dataset
* Identify the range as a measure of spread to describe variation in a dataset

Table – lesson details

|  |  |  |
| --- | --- | --- |
| Visible learning | Required resources | Registration, adjustments and evaluation notes |
| [**What is normal?**](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-02-what-is-normal.docx)**Duration**: 2 lessons**Learning intention*** To explore measures of centre as a method of determining the average or typical value of a dataset.

**Success criteria*** I can calculate and describe the mode of a single dataset.
* I can calculate and describe the median of a single dataset.
* I can calculate and describe the mean of a single dataset.
 | * Projector
* Counters or similar
* Laptop per pair of students or class set of [Appendix A](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-02-what-is-normal.docx) worksheets
* Class set of [Appendix B, C, D and E](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-02-what-is-normal.docx)
 |  |

### Learning episode 3 – the 3 M’s

#### Teaching and learning activity

This learning episode allows students the opportunity to consolidate their understanding of mean, mode, median and range. Students will be working mathematically to justify their responses.

#### Syllabus content

* Calculate the mean $\overline{x}$ of a set of data using digital tools
* Calculate and describe the mean, median, mode and range of a dataset
* Classify the mean, median and/or mode as measure(s) of centre to represent the average or typical value of a dataset
* Identify the range as a measure of spread to describe variation in a dataset

Table – lesson details

|  |  |  |
| --- | --- | --- |
| Visible learning | Required resources | Registration, adjustments and evaluation notes |
| [**The 3 M’s**](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-03-the-3-ms.docx)**Duration**: 2 lessons**Learning intention*** To understand the effect that a data value has on the mean, mode and median of a data set.

**Success criteria*** I can find the mode and range of a dataset.
* I can find the median of a dataset.
* I can calculate the mean of a dataset.
* I can explain the effect that changing a data value in a data set, has on the mean, median, mode and range.
 | * Class set of [Appendix A](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-03-the-3-ms.docx) worksheet
* Class set of [Appendix B](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-03-the-3-ms.docx) worksheet
 |  |

### Learning episode 4 – what does Google know about me?

#### Teaching and learning activity

Students investigate the types of data that can be collected and categorise it using the labels categorical, numerical, continuous, discrete, nominal and ordinal.

#### Syllabus content

* Classify and describe variables as numerical or categorical
* Describe a numerical variable as either discrete or continuous
* Describe a categorical variable as nominal or ordinal
* Distinguish between and compare numerical (discrete or continuous) and categorical (nominal or ordinal) variables

Table – lesson details

|  |  |  |
| --- | --- | --- |
| Visible learning | Required resources | Registration, adjustments and evaluation notes |
| [**What does Google know about me?**](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-04-what-does-google-know-about-me.docx)**Duration**: 1–2 lessons**Learning intention:*** To be able to identify and categorise data.

**Success criteria:*** I can describe different types of data.
* I can identify different types of data.
* I can identify techniques to analyse different types of data.
 | * Projector
* Set of [Appendix A](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-04-what-does-google-know-about-me.docx) cards per pair
* Class set of [Appendix B](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-04-what-does-google-know-about-me.docx) worksheet
* Optional: laptop per pair of students
 |  |

### Learning episode 5 – slow reveal graphs

#### Teaching and learning activity

Students explore why graphical representations of data are easier to interpret than raw data, and investigate the features of a graph that are necessary to tell the story of the data.

#### Syllabus content

* Distinguish between and compare numerical (discrete or continuous) and categorical (nominal or ordinal) variables
* Represent single datasets using graphs, including frequency histograms and polygons, dot plots, stem-and-leaf plots, divided bar graphs, column graphs, line graphs, sector graphs and pictograms, with or without digital tools
* Include sources, titles, labels and scales when displaying data in a graph
* Select the type of graph best suited to represent various single datasets and justify the choice of graph
* Identify and interpret data displayed on graphs
* Identify features of graphical representations to draw conclusions

Table – lesson details

|  |  |  |
| --- | --- | --- |
| Visible learning | Required resources | Registration, adjustments and evaluation notes |
| [**Slow reveal graphs**](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-05-slow-reveal-graphs.docx)**Duration**: 1–2 lessons**Learning intention*** To learn the features of graphs that make them a useful visual representation of data.
* To interpret data from different types of graphs.

**Success criteria*** I can explain what features are necessary on a graph to make it a useful visual representation of data.
* I can interpret data presented in graphical form.
* I can explain what type of graph is best suited for different types of data.
 | * Projector or means of displaying spreadsheet and PowerPoint to students
* [*First fleet* spreadsheet file](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-05-first-fleet.xlsx)
* [*Slow reveal graphs* PowerPoint](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-5-slow-reveal-graphs.pptx)
* Class set of [Appendix A](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-05-slow-reveal-graphs.docx) worksheet
* Newspapers, magazines or internet
 |  |

### Learning episode 6 – sector graphs

#### Teaching and learning activity

Students collect simple data without a definite end and examine the advantages of a sector graph over other representations.

#### Syllabus content

* Represent single datasets using graphs, including frequency histograms and polygons, dot plots, stem-and-leaf plots, divided bar graphs, column graphs, line graphs, sector graphs and pictograms, with or without digital tools
* Include sources, titles, labels and scales when displaying data in a graph
* Select the type of graph best suited to represent various single datasets and justify the choice of graph

Table – lesson details

|  |  |  |
| --- | --- | --- |
| Visible learning | Required resources | Registration, adjustments and evaluation notes |
| [**Sector graphs**](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-06-sector-graphs.docx)**Duration**: 1 lesson**Learning intention*** To understand scenarios where a sector graph is a useful representation of data.

**Success criteria*** I can draw a sector graph using technology.
* I can interpret data presented in a sector graph.
* I can explain scenarios where a sector graph would be an appropriate choice to represent a data set.
 | * Projector
* Laptop per pair of students (minimum)
 |  |

### Learning episode 7 – breaking the code

#### Teaching and learning activity

Students collect data to determine commonly used letters, to assist in breaking a code.

#### Syllabus content

* Identify and describe datasets as having no modes (uniform), one mode (unimodal), 2 modes (bimodal) or multiple modes (multimodal)
* Represent single datasets using graphs, including frequency histograms and polygons, dot plots, stem-and-leaf plots, divided bar graphs, column graphs, line graphs, sector graphs and pictograms, with or without digital tools
* Include sources, titles, labels and scales when displaying data in a graph
* Select the type of graph best suited to represent various single datasets and justify the choice of graph
* Identify and interpret data displayed on graphs
* Identify features of graphical representations to draw conclusions

Table – lesson details

|  |  |  |
| --- | --- | --- |
| Visible learning | Required resources | Registration, adjustments and evaluation notes |
| [**Breaking the code**](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-07-breaking-the-code.docx)**Duration**: 1–2 lessons**Learning intention*** To be able to represent and interpret a dataset using graphs and frequency tables.
* To be able to identify and describe the mode(s) of a dataset.

**Success criteria*** I can represent a dataset in a frequency table.
* I can represent a dataset in an appropriate graph.
* I can use the terms uniform, unimodal, bimodal and multimodal to describe datasets.
 | * Projector
* [*Breaking the code* PowerPoint file](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-7-breaking-code.pptx)
* Newspapers or other reading material
* Optional: laptops and [*Breaking the code* spreadsheet file](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-07-breaking-the-code.xlsx)
 |  |

### Learning episode 8 – texting competition

#### Teaching and learning activity

Students collect and analyse data to determine who is the fastest texter in their class. The create graphical representations of the data in order to make accurate conclusions.

#### Syllabus content

* Represent single datasets using graphs, including frequency histograms and polygons, dot plots, stem-and-leaf plots, divided bar graphs, column graphs, line graphs, sector graphs and pictograms, with or without digital tools
* Include sources, titles, labels and scales when displaying data in a graph
* Select the type of graph best suited to represent various single datasets and justify the choice of graph
* Identify and interpret data displayed on graphs
* Identify features of graphical representations to draw conclusions
* Calculate and describe the mean, median, mode and range of a dataset

Table – lesson details

|  |  |  |
| --- | --- | --- |
| Visible learning | Required resources | Registration, adjustments and evaluation notes |
| **[Texting competition](mathematics-s4-unit-2-lesson-08-texting-competition.docx)****Duration**: 2 lessons**Learning intention*** To understand how to interpret data represented in graphical representations.
* To be able to identify and compare different graph types.

**Success criteria*** I can create a stem-and-leaf plot from a set of data.
* I can create a dot plot from a set of data.
* I can create a divided bar graph from a set of data.
* I can interpret data represented in different types of graphs.
 | * Mobile phones or laptop per group of 3
* Stopwatch per group of 3
* Laptop per group of 3
* [*Texting competition* Spreadsheet file](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-08-texting-competition.xlsx)
* Copies of [Appendix B](https://schoolsnsw.sharepoint.com/sites/CurriculumReformResourceDevelopment/Shared%20Documents/1.%20Editorial/Accessibility%20and%20copyright/NESA%20Syllabus/Maths/Pending/Maths%20-%20Stage%204/Stage%204%20Unit%202/mathematics-s4-unit-2-lesson-08-texting-competition.docx) and [Appendix C](https://schoolsnsw.sharepoint.com/sites/CurriculumReformResourceDevelopment/Shared%20Documents/1.%20Editorial/Accessibility%20and%20copyright/NESA%20Syllabus/Maths/Pending/Maths%20-%20Stage%204/Stage%204%20Unit%202/mathematics-s4-unit-2-lesson-08-texting-competition.docx) if students are not using a spreadsheet
 |  |

### Learning episode 9 – Mythbusters

#### Teaching and learning activity

Students explore a variety of misleading graphs and identify features of graphs that are used to make them misleading.

#### Syllabus content

* Represent single datasets using graphs, including frequency histograms and polygons, dot plots, stem-and-leaf plots, divided bar graphs, column graphs, line graphs, sector graphs and pictograms, with or without digital tools
* Explain why a given graphical representation can lead to a misinterpretation of data

Table – lesson details

|  |  |  |
| --- | --- | --- |
| Visible learning | Required resources | Registration, adjustments and evaluation notes |
| [**Mythbusters**](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-09-mythbusters.docx)**Duration**: 1–2 lessons**Learning intention*** To be able to recognise when data is misrepresented in graphs.

**Success criteria*** I can identify features of graphs that are used to make them misleading.
* I can redraw graphs so that the data is not misrepresented.
 | * Projector
* Copies of [Appendix A](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-09-mythbusters.docx) and [Appendix B](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-09-mythbusters.docx)
* [*Mythbusters* PowerPoint](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-9-myth-busters.pptx)
 |  |

### Learning episode 10 – you should eat more chocolate

#### Teaching and learning activity

Students manipulate data to persuade an audience. They create an infographic using Canva and provide written justification for decisions made.

#### Syllabus content

* Represent a dataset using a statistical infographic and justify the choice of graphical representation used
* Identify and interpret data displayed on graphs
* Explain why a given graphical representation can lead to a misinterpretation of data

Table – lesson details

|  |  |  |
| --- | --- | --- |
| Visible learning | Required resources | Registration, adjustments and evaluation notes |
| [**You should eat more chocolate**](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-10-you-should-eat-more-chocolate.docx)**Duration**: 2–3 lessons**Learning intention*** To persuade an audience with statistics.
* To identify bias in graphical displays.

**Success criteria*** I can manipulate data to persuade an audience.
* I can identify bias in graphical displays.
 | * Projector
* Copies of each of [Appendix A, B and C](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-10-you-should-eat-more-chocolate.docx) placed around the room
 |  |

### Learning episode 11 – going to the movies

#### Teaching and learning activity

Students collect data and create graphs to compare Marvel movies with the Harry Potter series to determine which is more popular. Through this context they will learn about frequency histograms and polygons and when they should be used over a column graph or line graph.

#### Syllabus content

* Represent single datasets using graphs, including frequency histograms and polygons, dot plots, stem-and-leaf plots, divided bar graphs, column graphs, line graphs, sector graphs and pictograms, with or without digital tools
* Select the type of graph best suited to represent various single datasets and justify the choice of graph
* Identify features of graphical representations to draw conclusions
* Calculate and describe the mean, median, mode and range of a dataset

Table – lesson details

|  |  |  |
| --- | --- | --- |
| Visible learning | Required resources | Registration, adjustments and evaluation notes |
| [**Going to the movies**](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-11-going-to-the-movies.docx)**Duration**: 1–2 lessons**Learning intention*** To be able to graph column and line graphs and frequency histograms and polygons.
* To understand the relationship between data type and graph selection.

**Success criteria*** I can graph column and line graphs.
* I can graph frequency histograms and polygons.
* I can determine which graph to draw based on data type.
 | * Projector
* [*Going to the movies* PowerPoint](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-11-going-movies.pptx)
* [Appendix A](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-11-going-to-the-movies.docx) cut into cards for each student
* Option: spreadsheet software and laptop per pair of students
 |  |

### Learning episode 12 – how heavy is too heavy?

#### Teaching and learning activity

Students collect data to compare the weight of their bags with the recommended weight for their age group. They then write a letter to the Principal or P&C to convince them of the need for lockers, using statistics and graphs from their analysis.

#### Syllabus content

* Calculate the mean $\overline{x}$ of a set of data using digital tools
* Calculate and describe the mean, median, mode and range of a dataset
* Classify the mean, median and/or mode as measure(s) of centre to represent the average or typical value of a dataset
* Represent single datasets using graphs, including frequency histograms and polygons, dot plots, stem-and-leaf plots, divided bar graphs, column graphs, line graphs, sector graphs and pictograms, with or without digital tools
* Include sources, titles, labels and scales when displaying data in a graph
* Select the type of graph best suited to represent various single datasets and justify the choice of graph
* Represent a dataset using a statistical infographic and justify the choice of graphical representation used
* Identify and interpret data displayed on graphs
* Identify features of graphical representations to draw conclusions
* Interpret patterns in graphical representations to make predictions
* Explain why a given graphical representation can lead to a misinterpretation of data

Table – lesson details

|  |  |  |
| --- | --- | --- |
| Visible learning | Required resources | Registration, adjustments and evaluation notes |
| [**How heavy is too heavy?**](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-12-how-heavy-is-too-heavy.docx)**Duration**: 2 lessons**Learning intention*** To be able to select an appropriate graphical representation to display data.
* To be able to calculate measures of centre using a spreadsheet.

**Success criteria*** I can select an appropriate graph type to represent continuous, numerical data.
* I can use formulas in Excel to calculate mean, median, maximum, minimum and range.
* I can use statistics and graphs to justify a decision an argument.
 | * Projector
* Optional: scales to weigh bags
* [*How heavy is too heavy* spreadsheet](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-unit-2-lesson-12-how-heavy-is-too-heavy.xlsx)
* Laptop per pair of students (minimum)
 |  |

## References

[NSW Mathematics K-10 Syllabus](https://curriculum.nsw.edu.au/syllabuses/mathematics-k-10-2022) © 2022 NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales.

NESA (NSW Education Standards Authority) (2022) ‘[Programming](https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/understanding-the-curriculum/programming)’, Understanding the curriculum, NESA website, accessed 17 March 2023.

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