

**NELSON  
MATHS**

**VICTORIAN  
CURRICULUM**



DIGITAL  
RESOURCES  
INSIDE



# Teacher's Resource Book

Pauline Rogers

**ML** data, recording sheets, survey, tables, tally charts, two-way tables, Venn diagram

LESSON PLAN **1**

**TUNING IN**

**OUR PENCIL DATA**

**You will need:** coloured pencils

Have each student choose their favourite coloured pencil. As a group, collect the data on the board, showing students' favourite coloured pencils. Allow students to guide this, to determine their prior knowledge in this area. Students may create a list, table or graph. To vary this activity, students could work in groups and then share their ideas with the whole class.

**WHOLE-CLASS INTRODUCTION**

**COLLECTING OUR DATA**

**You will need:** coloured pencils

Have each student now choose two pencils in their favourite colours, e.g. red and orange. As a group, create a list on the board of the colours chosen by each student (e.g. blue, green, blue, red (note: this will include multiples of some colours)). Discuss what students notice. Ask, 'Is this an effective way of collecting data?' Then create a list of symbols, e.g. B for blue, or shade some of the colour on the board. Ask, 'Is this a more efficient way of collecting data?' Then work as a group to present the data as a bar graph, a dot plot and/or horizontal (if students are ready), discussing the importance of labelling columns and rows. The tables may include numeric totals. Ask, 'Which method of data collection do you prefer, and why?'

**INDEPENDENT TASKS**

**Note:** Choose from Tasks 1, 2 or 3.

**You will need:** *Word* or *Excel*, Student Book p. 80 'Daisy's Data'

**TASK 1: USING LISTS AND TABLES**

Have pairs of students devise a question, e.g. 'What is your favourite football team?' Students collect data from their classmates, using their preferred method. When they have completed the collection, have them write two statements about what they discovered from their survey question.

**TASK 2: INTERACTIVE TASK**

Have students work in pairs on computers, using *Word* or *Excel* to collect data. Students devise a survey question, then survey the class and collect data electronically. Allow students to select their preferred method. Have them write two sentences below the data about what they discovered from their survey question.

**TASK 3: STUDENT BOOK p. 80 'Daisy's Data'**

**TEACHING GROUP**

**You will need:** a variety of hands-on materials, e.g. counters, teddies, blocks

**CREATING GROUPS**

- For students who require support, give them a selection of hands-on materials, e.g. counters, teddies, blocks. Students sort the materials into different categories, e.g. types of materials, colours. They record the data on a list or table of their choosing.

**COLLECTING DATA ABOUT A PROBLEM**

- For students who require a challenge, present them with a problem, e.g. finding out how much paper is thrown away in the classroom each day. Have students create and design a process for collecting data about the problem. Allow them to implement their process to examine its effectiveness.

**REFLECTION**

Select from the following to suit your class and their learning outcomes:

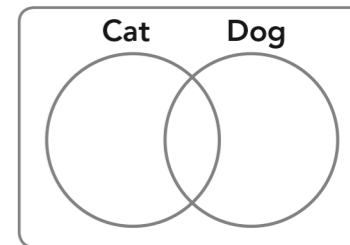
- Have students share their results from the survey they conducted in Independent Tasks, Task 1. Ask, 'What did you discover? Why did you decide to collect the data using that method?'
- Have students share the data they collected in Independent Tasks, Task 2. Ask, 'What did you discover? Why did you decide to collect the data using that method? Did using the computer make some things easier or harder? What were they?'
- Have students from the Teaching Group 'Collecting Data About a Problem' explain how they went about designing the process and then collecting data. Students present their findings to the group.

**TUNING IN**

**VENN DIAGRAMS**

**You will need:** sticky notes

Give each student a sticky note to write their name on. Draw a Venn diagram on the board. Write 'Cat' above one circle and 'Dog' above the other. Then invite students to place their name on the diagram, depending on whether they have a cat or a dog. Ask, 'Where do I put my sticky note if I don't have a cat or a dog?' Count the sticky notes and write the numbers in each element of the Venn diagram. Keep the Venn diagram on the board. This activity can be varied by using hoops on the ground and having students stand in the hoops.



**WHOLE-CLASS INTRODUCTION**

**2-WAY TABLES**

**You will need:** sticky notes

Repeat the Tuning In activity, with students writing their name on the sticky notes. Then draw a 2-way table on the board. Have students add their sticky note to the appropriate cell in the table. Count the sticky notes and write the numbers in each element of the 2-way table. Have students make statements, e.g. 'Thirteen people have a dog in our class'. Make the link between the Venn diagram and the 2-way table.

	Has a dog	Doesn't have a dog
Has a cat		
Doesn't have a cat		

**INDEPENDENT TASKS**

**Note:** Choose from Tasks 1, 2 or 3.

**You will need:** *Word*, Student Book p. 81 'Venn Diagrams and 2-Way Tables'

**TASK 1: SURVEYING FOOD**

Have pairs of students develop a survey question about food and decide on the method of collection – either a Venn diagram or a 2-way table. Remind students they need two elements to their question. Have students collect the data and complete the presentation. Students write three sentences below their diagram/table about what they found. To extend the activity, students could convert the first set of data into the other format.

**TASK 2: INTERACTIVE TASK**

Have students work independently to create a question about music, and survey their classmates. Then students work on computers, using *Word* to collect their data into either a Venn diagram or a 2-way table. Students write three sentences below their diagram/table about what they found. Their information should be contained in a one-page document.

**TASK 3: STUDENT BOOK p. 81 'Venn Diagrams and 2-Way Tables'**

**TEACHING GROUP**

**You will need:** BLM 38 'Venn Diagrams'

**VENN DIAGRAMS: GAMES**

- For students who require support, give them BLM 38 'Venn Diagrams'. Have them write four questions about the top Venn diagram, e.g. 'How many people owned a 3DS and a Wii?' Students swap their questions for a partner to complete. Repeat with the second diagram.

LESSON PLAN **2**

## VENN DIAGRAMS WITH THREE CIRCLES

- For students who require a challenge, have them develop and collect information that would require three circles on a Venn diagram. Students could look at Student Book p. 81 'Venn Diagrams and 2-Way Tables' or BLM 38 'Venn Diagrams' for ideas.

## REFLECTION

Select from the following to suit your class and their learning outcomes:

- Have students share their findings about food from Independent Tasks, Task 1. Ask, 'Why did you decide to use a Venn diagram/2-way table? What did you learn from your survey?'
- Have students share their findings about music from Independent Tasks, Task 2. Ask, 'Why did you decide to use a Venn diagram/2-way table? What did you learn from your survey?' Have students reflect on the differences between using pen and paper and computers to collect their data.
- Have students from the Teaching Group 'Venn Diagrams: Games' share the questions they developed about games.
- Invite students from the Teaching Group 'Venn Diagrams with Three Circles' to share their diagrams and the questions they developed. Ask, 'How did you come up with the question? What was something interesting you learned?'

## TUNING IN

### TOPIC QUESTIONS

**You will need:** poster paper

Give students a topic – it could be related to an issue at school, e.g. recycling or the school garden. Have small groups of students brainstorm three questions about the topic that they could collect data on, and record them on poster paper.

## WHOLE-CLASS INTRODUCTION

### SELECTING TOPIC QUESTIONS

**You will need:** questions on poster paper from Tuning In

Have students present their questions from Tuning In to the group. Discuss which questions are most interesting, which questions would allow the collection of data and which questions could be recorded slightly to allow the collection of information. As a group, decide on five main questions.

## INDEPENDENT TASKS

**Note:** Choose from Tasks 1, 2 or 3.

**You will need:** *Excel* and *Word*, poster paper, Student Book p. 82 'Our Question: My Report'

### TASK 1: COLLECTING THE DATA

Divide the class into five groups and give each group a question from the Whole-Class Introduction activity. Have each group research and collect data about their question, presenting it on poster paper in one of the ways examined in the previous lessons, e.g. tables, Venn diagrams, 2-way tables. Students could visit other classes to collect the data.

### TASK 2: INTERACTIVE TASK

Have students work as a group on computers to create a report of their collected data. This could include using *Excel* or *Word* to present the data and diagrams. Have students write interesting facts about their data.

### TASK 3: STUDENT BOOK p. 82 'Our Question: My Report'

## TEACHING GROUP

**You will need:** sample data (e.g. from a newspaper)

### PRACTISING QUESTIONS

- For students who require support, provide them with a topic, e.g. the environment or water issues. Have each student write a question that could be surveyed about the topic. As a group, examine the question that would be the most effective. If there is time, have students survey and collect data from the rest of the class on the question, then, as a group, collate the data to determine the results.

## INTERPRETING DATA

- For students who require a challenge, give them a set of data, e.g. from a newspaper. Have students determine what the data represents, then have them write three statements about what the data shows.

## REFLECTION

Select from the following to suit your class and their learning outcomes:

- Have groups of students present their findings from Independent Tasks, Tasks 1 and 2. This could include paper materials and their electronic report. Have them share their interesting facts and findings.
- As a class, draw all the different questions from Independent Tasks, Tasks 1 and 2, together and make some conclusions about the investigation.
- Invite students to reflect on the activity. They may wish to use some of the ideas from Student Book p. 82 'Our Question: My Report'.

## Home Tasks

Select from the possible Home Tasks:

- As a class, develop a question that students would like to survey parents and carers on. Have each student take the question home, survey the appropriate people and collect the data. Have students return to school with collected data, collate it and create a brief report. Have students report the results at home.

## Assessment

- Have students complete **Student Assessment p. 83**.
- Review with students **Assessment Task Card 4.20**.

**During the three lessons:**

- Collect examples of student questions and collected data, with their comments about what they learned, as a sample of their ability to collect and interpret data.
- Collect examples of student electronically created tables, Venn diagrams and 2-way tables to add to digital portfolios, as evidence of data collection and ability to interpret the findings.
- Collect students' written reflections about their learning from Lesson Plan 3.

## Recommendations for Future Learning

**Specific to students who are experiencing some difficulty:**

- Q 1 Review what a Venn diagram is. Show the student an example and practise interpreting data. Then have the student create their own question. Finally, have the student collect the data and create the representation on the Venn diagram.
- Q 2 Review what a 2-way table is. Show the student an example and practise interpreting data. Then have the student create their own question. Finally, have the student collect the data and create the representation on a 2-way table.
- Q 3 Have the student practise writing survey questions linked to sets of data, e.g. from a newspaper, then have them write their own questions.

**If the student has not achieved the recommended skills for this unit:**

- See **Assessment Task Card 4.20** for specific recommendations.
- Review data terminology and basic structures such as Venn diagrams and 2-way tables. Give the student templates to use.
- Work with small data sets before moving to large data sets.
- Allow the student to use relevant and available technology (e.g. *Word*, *Excel*) to support them with data organisation and presentation.
- Review *Nelson Maths: Victorian Curriculum Year 3 Unit 11*.

**If the student has achieved the recommended skills and these skills are firmly established, consider:**

- Moving forward to *Nelson Maths: Victorian Curriculum Year 5 Unit 20*.
- Having the student work with larger data sets, e.g. the school population.
- Having the student work with data sets from the media, and interpret the data or re-interpret it in different formats and presentations.

# SAMPLE