

5

Television viewing

Coverage

This unit is about interpreting information from diagrams, charts and line graphs, collecting data from a questionnaire, representing data in diagrams and line graphs, and finding the arithmetical (mean) average and range of a set of data. Interpreting information from bar charts, pictograms and tables and representing information in tables and charts will not be taught in this unit. These are taught at Entry 2 and Entry 3, and many textbooks and other learning materials provide exercises in interpreting charts and tables. At this level, learners are not expected to represent data in a pie chart although they will be expected to interpret a pie chart. At this level, learners only need to be able to calculate the mean for a set of up to ten data items.

Skills

HD1/L1.1 extract and interpret information (e.g. in tables, diagrams, charts and line graphs)

HD1/L1.2 collect, organise and represent discrete data (e.g. in tables, charts, diagrams and line graphs)

HD1/L1.3 find the arithmetical average (mean) for a set of data

HD1/L1.4 find the range for a set of data

Resources needed for effective teaching of this unit:

Demonstration	Group	Pair	Individual
Whiteboard or chalkboard 3-D shapes that can easily be opened out into a net	Charts and graphs from adverts, newspapers and reports Articles from newspapers or magazines where averages and range are used Copies of questionnaires from newspapers, magazines and the Internet Access to spread sheet package desirable	String or other flexible material for measuring distances on maps Local maps Road map of UK	Centimetre rulers Metric graph paper or squared paper String or other flexible material for measuring distances on maps Calculators Local maps Toblerone box Road map of UK Travel brochures Access to Internet desirable

Reminder

In the Links, H means Help, E means Extension and M means Mini-project.

Remember

Throughout the unit, be aware of the reading needs of learners.

You may need to read out parts of the text.

Words **highlighted** in **bold** will need particular clarification.

Context

- Discuss the scenario in a group.
- Be sensitive to the fact that not all learners watch TV or go to the cinema. However, their families or friends may have an interest in watching TV or going to the cinema and most will have seen articles about popular TV programmes.

Stimulus questions

- Do you watch TV or video tapes?
- Do you visit the cinema?
- Do you read articles in the newspaper or magazines about TV programmes or films?
- Do you know which TV programmes are most popular?
- How many hours on average do you watch TV in a week?
- Do you read maps or plans?
- What maths skills do you think you might need for these things?

Pages 2–3

How popular are TV programmes?

Introduction to activities 1 and 2

- As a group, discuss when you might want to extract information from tables, charts and line graphs, for example from:
 - tables in price lists
 - catalogues brochures and websites
 - line graphs such as conversion graphs
 - sales figures

- temperature graphs
- bar charts
- pie charts
- line graphs and tables in a newspaper following the Budget.

Note: Extracting and interpreting information from bar charts, pictograms and tables will not be taught in this unit. These are taught at Entry 2 and Entry 3 and many textbooks and learning materials provide exercises in interpreting charts and tables.

- Discuss how in everyday life, data tend to be complex, and charts and graphs can be used to persuade and mislead as well as inform. Have a selection of graphs and charts available from newspapers, adverts and reports to illustrate this.
- Explain how a chart or graph is a picture of numerical information.

Activity 1

- Explain the term **discrete data**. Explain how charts are usually used to display discrete data.
- Discuss how a pie chart is usually used when you want to show the proportion of the whole that each group represents. Explain the word **sector** and that a pie chart is a circle divided into sectors. Explain that the size of the sector tells us how many are in that group; the bigger the sector the more there are in that group.
- Explain how the title of the chart and the labels on the axes or the key tell you what the chart is about.
- Discuss the pie chart. What information does it give us?
- Discuss how the pie chart is divided into sectors that are $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{8}$ of the whole circle.
- Learners may need to review how to find a fraction of a quantity.
- Learners work individually or in pairs to complete the activity.

Activity 2

- Explain the term **trend**. Discuss how line graphs show trends, such as the general increase or decrease across a graph.
- Explain the term **axes**.
- Explain how the title of the graph and the labels on the axes tell you what the chart is about.

- Explain the term **continuous data**. Line graphs are usually used to display continuous data.
- Discuss the line graph. What information does it give us?
- Discuss the scales on the axes. Explain how there may not be an exact number of millions watching TV in a particular month.
- Explain that sometimes we may not be able to read the exact value from the graph.
- Learners complete the activity individually or in pairs.
- As a group discuss the trends in the data. Why do more people tend to watch TV in the winter months than in the summer months?

LINKS: H1, E1, M2

Pages 4–5 Soap village

Introduction to activities 3 and 4

- As a group, discuss when you might want to interpret diagrams or drawings, for example, floor plans or assembly instructions for flat-packed furniture.
- As a group, discuss when you might want to interpret information from a map, e.g. to find your way around a city or town or to plan how to travel to other cities or towns.
- Explain that, in order to fit a drawing or map onto paper, the measurements have to be made smaller or scaled down.
- Explain that on a scale drawing or map, every measurement is in proportion to the actual or real measurement.
- Explain the term **scale**.
- Explain how a scale is written as a comparison between two lengths, for example 1 cm to 1 m, or 1 : 100. Give some examples of using these scales.

Activity 3

- Discuss the scale drawing of set 2 and what the scale means.
- Explain how to work out the actual overall length of the set.
- Learners complete the activity individually or in pairs.

- Compare answers in a class discussion.

Activity 4

- Discuss the map of the village and what the scale means.
- Explain that we usually measure distances on a map in centimetres.
- When we work out actual distances from a map, we use metres or kilometres, depending on the scale of the map.
- Explain how to work out the distance from the pub to the church. Measure the distances between the crosses marked on the buildings. Explain that it may be difficult to measure distances on a map with a ruler. It may be easier to use string or other flexible material. Demonstrate how to do this.
- Learners may need to review how to change centimetres to metres and/or kilometres.
- Discuss how to measure the distance from 1 First Street to 11 First Street.
- Ask learners to complete the activity individually or in pairs.
- Compare answers in a class discussion.

LINKS: H2, H4, E2, M3

Pages 6–9 Viewing trends

Introduction to activity 5

Note: Collecting, organising and representing discrete data using charts and tables will not be taught in this unit. These are taught at Entry 2 and Entry 3 and many textbooks and learning materials provide exercises on representing data in charts and tables.

- Discuss when we might want to represent data using a line graph, e.g. for sales figures, patient temperature charts, results of a survey.
- Explain how numerical information can be displayed as a line graph. Remind learners that line graphs are usually used to display continuous data.
- Explain that a line graph has two axes: the **horizontal** axis and the **vertical** axis. Explain the terms vertical and horizontal.

- Explain that when the scales on the axes start from 0, the point where the axes cross is called the **origin**. Explain the term origin.
- Discuss the importance of labelling the axes and giving the graph a title.
- Discuss choice of scales; why we choose a scale that is easy to use and why we draw the graph so that it fills all the available space.
- Explain why we usually draw a line graph on squared or graph paper.

Activity 5

- Discuss the meaning of the information in the table.
- Explain that sometimes data are given in millions or thousands.
- Explain steps 1–5 to the group. Discuss suitable scales for the data.
- Learners complete the activity individually or in pairs.
- As a group, discuss the graphs drawn and the choice of scales.

LINKS: H3, E1

Pages 10–11

What do we mean by 'average'?

Introduction to activity 6

- Discuss where we may use averages, e.g. average temperatures, average rainfall, average wage, house prices etc.
- Discuss what the group understands by the term average.
- Explain the term **mean** and that the mean is the most commonly used average.
- Discuss everyday examples of the use of the word **range** and what it means, e.g. price range, age range etc.
- Explain that the range measures the spread of the data.
- Discuss how the average and range are used in newspaper or magazine articles.

Activity 6

- Explain how to work out the mean and range of a set of data.
- Explain that 0 is included as a value.
- Discuss how, for discrete data, it may be more appropriate to round the mean to the nearest whole number. For continuous data round to two decimal places.
- Learners complete the activity individually or in pairs.
- As a group, discuss the questions in which it might be appropriate to round the mean to the nearest whole number.

LINKS: H6, E3, M1, M2

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What do you watch on TV?

Introduction to activity 7

- Discuss the use of questionnaires in everyday life.
- Explain that questionnaires are often used in surveys to collect **statistical** information. Explain the term statistical.
- Discuss some sample questionnaires. What information is the questionnaire collecting? Are the questions clear? Are the questions personal?
- Discuss why questionnaires should be kept short.
- Discuss why it may be helpful to have 'yes' and 'no' answers.
- Discuss why it is best to avoid open-ended questions.

Activity 7

- Discuss the question, 'Which type of television programme is your favourite?'. Explain why we chose categories for answers.
- Discuss when it is appropriate to group data. Remember, however, that if learners want to work out the mean of a set of data it is not appropriate at this level to group the data as learners do not have the skills to calculate the mean of grouped data.
- Ask learners to complete the activity individually or in pairs.

- As a group, discuss the questions that the learners have written.

LINKS: H5, E4, M1

Pages 13–14 Help

H1

- Learners work individually in class or at home.
- This activity provides further practice in interpreting information from a pie chart and line graph.
- Discuss what information the pie chart shows.
- Discuss what information the line graph shows. Discuss the scales used on the axes.

H2

- Learners work individually or in pairs.
- They will need a local map.
- Discuss the scale on the map.
- Explain how to work out the distance between two places.

H3

- Learners work individually in class or at home.
- Discuss suitable scales for the line graph.

H4

- Learners work individually or in pairs.
- Discuss suitable units for measuring the chosen room.
- Explain how to draw a plan or sketch of the chosen room with dimensions marked on it.

H5

- Learners work individually, in pairs or as a group.
- As a group, discuss possible answers. Decide which questions are most appropriate.

H6

- Learners work individually in class or at home.
- This activity provides further practice in calculating the mean and range of sets of data.

Page 15 Extension

↑ E1

- Learners work individually in pairs.
- As a group discuss the main features of the charts and graphs in newspapers etc. Are they misleading? Has an appropriate scale been used?
- Discuss suitable scales for the line graph in question 2.
- Discuss other conversion graphs, for example, temperature.
- For question 3, discuss which representations are most appropriate.
- Discuss using different scales. What is the visual effect on the slope of a line graph of using a different scale? What is the effect if the graph doesn't start at 0?

↑ E2

- Learners work individually, in pairs or as a group.
- Discuss the scale on the road map.
- Explain how to work out the actual distance between two places.

↑ E3

- Learners work individually or in pairs.
- As a group, discuss how the temperatures in different resorts compare with the UK temperature.

↑ E4

- As a group, discuss the leisure facilities that are already available. What additional facilities would people like?
- Learners work individually, in pairs or as a group to complete the activity.

Page 16 Mini-projects

- Learners work Individually or in groups in class or at home.
- The projects involve application of skills covered in this unit.

- Make sure learners understand exactly what they are trying to achieve.

M1

- Learners should not group the number of hours that people watch TV or listen to the radio as they have to calculate the mean. However, learners may need to group the data for drawing graphs and charts.

M2

- Discuss the trends shown by the graphs.
- How do the average and range compare for each set of data?

M3

- Practise drawing plans. If learners do not have access to the Internet, download the plan for them.

Pages 17–18

Check it

Use these questions to assess how learners have coped with the skills in this unit. Ask learners to indicate the areas in which they would like more help.

How am I doing?

To be completed by learners individually, with teacher support.