

How long did you take?

Mathematics learning objectives

Framework:

- **HD:** Construct frequency tables, pictograms and bar and line graphs to represent the frequencies of events and changes over time.
- **HD:** Find and interpret the mode of a set of data.
- **NC:** Ma4, 1a; Ma4, 2a–d

Physical education learning objective (NC)

- **2a:** Plan, use and adapt strategies, tactics and compositional ideas for individual, pair, small-group and small-team activities.

Vocabulary

Bar line chart, database, mode, range

Resources

- Stopwatches, PE equipment such as balls, hoops and skipping ropes, local newspapers and/or internet access

CD-ROM:

- Activity sheets: 'Olympic medals table 1912' (also p27), 'Timings table', 'Blank bar line chart', 'Olympic medals table 1968', 'Olympic medals – 1912 and 1968' and '2008 Olympic data' (1 and 2)
- Images: 'Runners' 1–4
- Bar chart tool; Pie chart tool; Table tool

Introduction

Show the images from the CD-ROM and discuss the range of sports that are held at the Olympic Games. Explain that, in 1912, results were recorded with basic stopwatches, and that from 1968 onwards the results were recorded using electronic timing, which is much more accurate. Display the activity sheet 'Olympic medals table 1912'. This table shows the top ten medal winners in the 1912 Olympics. Ask the children to write down the total number of medals won, in order, from least to most. When they have finished ask:

- Which country won the most medals in total?
- What is the range of the total number of medals won?
- How did you work that out?
- What is the mode of the total number of medals won?



CD-ROM follow-up material

Provide pairs with copies of the activity sheets '2008 Olympic data' 1 and 2. Ask the pairs to read and discuss the data, and answer the questions. They can enter the data into a spreadsheet and make bar line and pie charts using the relevant tools in the Kids Zone of the CD-ROM and compare them for ease of use.

Children's task

Explain to the children that you would like them to work in groups of four. They plan three PE activities, such as running 50m, throwing and catching a ball 20 times. They choose one of the tasks, and each try it three times. They record their times on the activity sheet 'Timings table'. If there is time, they try the other two tasks in the same way. Back in the classroom the children find the range and mode of their scores for the tasks they have completed. They then work together to compare each other's scores. Taking each person's best score they find the mode and range for their group, and make a bar line chart, using the activity sheet 'Blank bar line chart' or the bar chart tool in the Kids Zone of the CD-ROM. When making bar line charts remind the children to include the scale that they have chosen.

Differentiation

More confident: Challenge the children to use a digital stopwatch that gives time to two decimal places. Ask them to take readings as accurately as they can, and to find the mode and the range of these.

Less confident: Decide whether to work with the children to find the range and the mode of the data.

Review

Review with the children the data that they have collected. Ask them to explain, for example:

- How did you find the mode/range of this data?
- Does anyone have a larger range than this?

Display both activity sheets 'Olympic medals table 1912' and 'Olympic medals table 1968'. Ask the children to look carefully at the gold medal winners; then ask questions for each year such as:











- What is the mode for the gold/silver/bronze medals?
- How did you find the mode?
- Why do you think that the USA came top of the medals table in both years?
- How many medals were won in total?

Now try this...

Children can find out more about race results from local sports clubs which involve timings. They devise their own table to collect the data, using the table tool in the Kids Zone of the CD-ROM. Ask them to find the range and mode of the data and make bar line charts, choosing appropriate scales and titles.

Olympic medals table 1912

- This table shows the top ten medal winners in the 1912 Olympics.

Rank	Nation	Gold	Silver	Bronze	Total
1	 United States	25	19	19	63
2	 Sweden	24	24	17	65
3	 Great Britain	10	15	16	41
4	 Finland	9	8	9	26
5	 France	7	4	3	14
6	 Germany	5	13	7	25
7	 South Africa	4	2	0	6
8	 Norway	4	1	4	9
9	 Canada	3	2	3	8
10	 Hungary	3	2	3	8