Data. Bar and line graphs.

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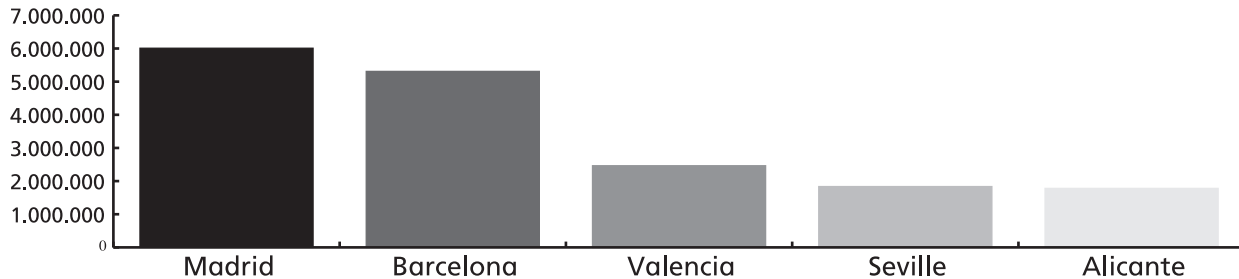### 1 Write.

This bar graph shows the population of the five most populated provinces in Spain. A bar graph is a visual representation of information. It is one of the easiest ways to compare numbers.


a. What is the approximate population of Valencia? _____

b. Which province has the biggest population? _____

c. Has Valencia got a bigger population than Alicante? _____

d. _____ and _____ have a similar population.

e. _____ has a much bigger population than _____ .

2 Draw a bar graph in your notebook.

Country	China	India	United States	Indonesia	Brazil
Population (million people)	1,314	1,095	298	245	188

3 Draw a line graph and complete the table.

This line graph shows how rain changes over the year. Line graphs show changes over time.
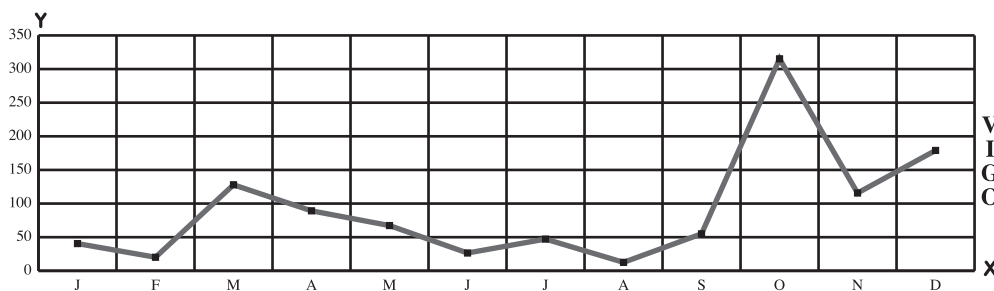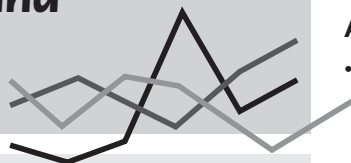

Source: Instituto Nacional de Estadística. 2005

Rain in millimetres												
	J	F	M	A	M	J	J	A	S	O	N	D
Vigo	40,5	20,2	127,9	89,2	67,3	26,5	47,2	12,6	55,0	315,2	115,7	179
Santander	71,2	108,5	65,9	143,2	38,8	15,2	35,4	19,8	57,9	54,6	317,1	148,3

	Vigo	Santander
Wettest month		
Driest month		

Data. Bar and line graphs.

Aim
• To study bar and line graphs.

Language focus
Key vocabulary: *bar graph, line graph, population, populated, wettest, driest*

Key language: *A bar graph is a visual representation of information. Line graphs show changes over time. Valencia has a bigger population than Seville. The wettest month in Vigo in 2005 was October.*

Materials
• Worksheet.

Warm-up
• Find out about the pupils' favourite colours and represent the information on a bar graph. Draw on the board two axes that you will use to construct your graph. Label the vertical axis *Number of pupils* and the horizontal axis *Colours*. Ask the pupils *What's your favourite colour? Put your hand up if your favourite colour is blue.* Count the number of pupils whose favourite colour is blue and draw in the bar for the colour blue to the appropriate height. Continue with the other colours. Ask the pupils some questions about the bar graph, eg, *How many pupils prefer green? Which is the most popular colour? Which colour is more popular, red or orange? Which colour is the least popular?*
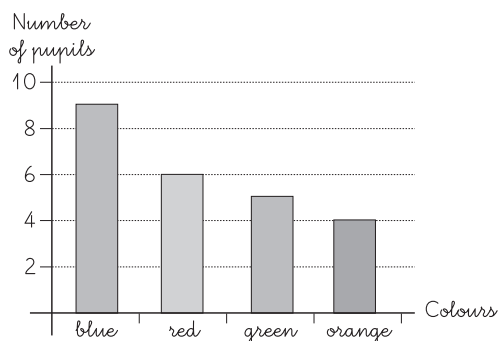
Completing the Worksheet

Activity 1
• Ask the pupils to write in their notebooks as many Spanish provinces as they can in two minutes. Encourage the pupils to compare their answers in pairs. Invite some pupils to write some provinces on the board. Ask the pupils some questions about the provinces on the board, eg, *Is ___ in the north? Is ___ on the coast? Is ___ big? What's the weather like in ___? What food can you eat in ___? What famous monuments are there in ___?*

• Write *Seville, Valencia, Alicante, Barcelona* and *Madrid* on the board. Encourage the pupils to order the provinces by population. Encourage the pupils to use *I think ___ has got a bigger population than ___,* eg, *I think Valencia has got a bigger population than Seville.* Ask the pupils to look at the bar graph in Activity 1 and check their answers.

• Explain that *the bar graph in Activity 1 shows the population of the five most populated provinces in Spain in January 2006. Bar graphs are good ways of representing information. They are very visual and it's easy to compare numbers. The height of the bars gives us information about the population in the five provinces.* Ask the pupils some questions, eg, *Which province has got the biggest population? Which province has got the smallest population? Which two provinces have a similar population? Which two provinces have a very different population?*

• Ask the pupils to answer the questions and complete the sentences in Activity 1

Answers: Population of Madrid: 6,008,000; Barcelona: 5,309,000; Valencia: 2,463,000; Sevilla: 1,835,000; Alicante: 1,783,000.
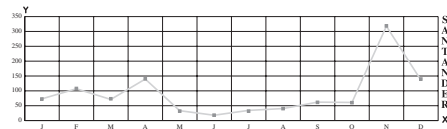
a-2,5 million; **b**-Madrid-6 million; **c**-Yes, it has;   **d**- Seville/Alicante; **e**-Madrid/Alicante

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Extension activity

Arrange the class in groups of eight or ten. Ask the pupils to carry out a survey in their group on a topic they are interested in (eg, technology). Encourage the pupils to ask two or three questions to the other pupils in their group using *Have you got ___?* or *Do you ___?* Pupils then represent their answers on a bar graph in their notebooks. Get feedback from the groups. Encourage the pupils to use *___ pupils in my group ___,* eg, *Three pupils in my group have got a mobile phone.* Do an example on the board, eg, draw on the board two axes that you will use to design your graph. On the vertical axis label the number of pupils and on the horizontal axis label *mobile phone.* Ask the pupils *Have you got a mobile phone?* Count the number of pupils who have got a mobile phone and draw in the bar to its appropriate height.

Activity 2

- Ask the pupils *Which are the five most populated countries in the world?* Write their answers on the board. Ask the pupils to look at Activity 2 and check their answers. Encourage the pupils to draw a bar graph in their notebooks representing the population of the five most populated countries in the world.

Answers:

Activity 3

- Ask the pupils questions about the weather in their city or town, eg, *Does it rain a lot in winter? Does it rain in summer?* Ask the pupils questions about other cities or towns, eg, *Can you tell me the names of cities where it rains a lot?*

- Ask the pupils to look at the line graph in Activity 2. Ask the pupils some questions, eg, *Which are the wettest months in Vigo? Which is the driest month in Vigo?*

- Explain that line graphs are another way of representing data. The line graph in Activity 2 shows how the amount of rain changes over the year. The y axis indicates the amount of rain and the x axis the months of the year. The points for the rainfall for each month are connected by a line. That is why this graph is called a line graph.

- Encourage the pupils to look at the information about Santander. Ask the pupils to draw the points for the rainfall in Santander and connect them with a line. Then ask them to complete the table at the bottom of the page.
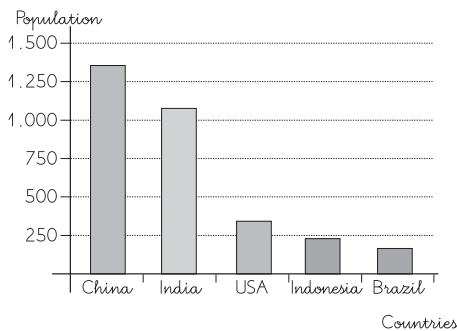
Answers:

	Vigo	Santander
Wettest month	October	November
Driest month	August	June

Extension activity

Ask the pupils some questions about the weather in Lleida, eg, *How much does it rain in Lleida in February? And in October?* Ask the pupils to imagine the line for Lleida and design a line graph like the one in Activity 2 in their notebooks. Write the information about the amount of rain in Lleida on the board and ask the class to draw the line on the same graph. Encourage the pupils to compare their predictions with the real line.

Lleida. Rain in millimetres 2005:

J: 2,6	F: 8,2	M: 10,1	A: 2,9
M: 49,6	J: 9,7	J: 9,5	A: 30,8
S: 19,6	O: 60,1	N: 57,5	D: 8,0