



Comparing distributions

- Interpreting more complex graphs
- Giving possible reasons for the shapes of graphs
- Justifying explanations using the evidence from calculations

Keywords

You should know

explanation 1a

explanation 1b

- 1** Two types of battery were tested to compare how long they last. 30 batteries of each type were tested under the same conditions. The results are shown in the tables.

Battery type A	
Duration (hours)	Frequency
$0 \leq t < 5$	2
$5 \leq t < 10$	4
$10 \leq t < 15$	5
$15 \leq t < 20$	6
$20 \leq t < 25$	4
$25 \leq t < 30$	5
$30 \leq t < 35$	4

Battery type B	
Duration (hours)	Frequency
$0 \leq t < 5$	0
$5 \leq t < 10$	0
$10 \leq t < 15$	12
$15 \leq t < 20$	13
$20 \leq t < 25$	4
$25 \leq t < 30$	1
$30 \leq t < 35$	0

$0 \leq t < 5$ means that the duration includes 0 and goes up to but does *not* include 5.

- a** Draw a grouped frequency diagram for the results of each type of battery.
- b** Calculate an estimate for the mean duration of each type of battery.
- c** Which battery type is more reliable? Justify your answer.
- d** A youth group is doing a sponsored 24-hour dance. They need to choose the batteries that are most likely to last the full 24 hours. Which battery type should they choose? Justify your answer.

- 2** The age distribution of the population in two countries is shown below. The distribution is given as a percentage for each age group.

Country A	
Age (years)	Percentage
$0 \leq A < 20$	24
$20 \leq A < 40$	30
$40 \leq A < 60$	28
$60 \leq A < 80$	14
$80 \leq A < 100$	4

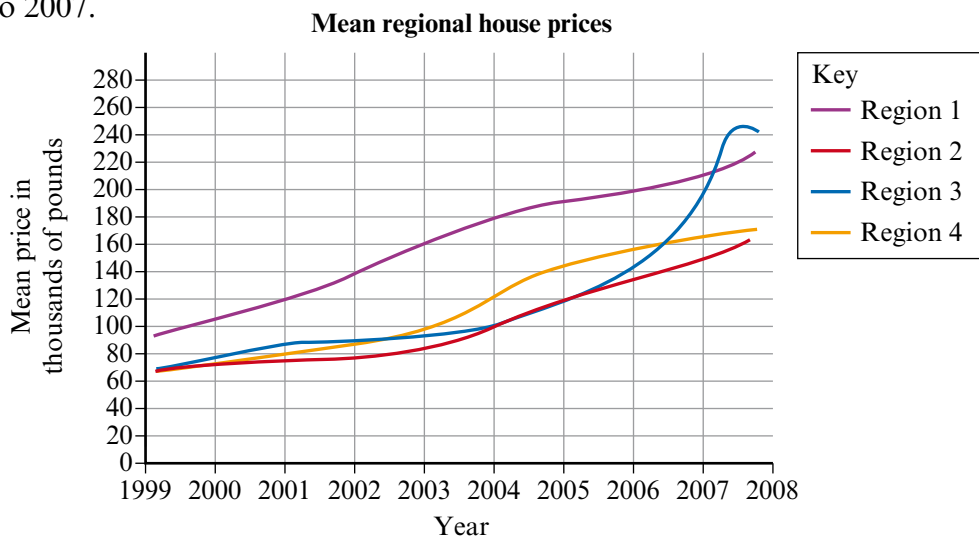
Country B	
Age (years)	Percentage
$0 \leq A < 20$	40
$20 \leq A < 40$	28
$40 \leq A < 60$	19
$60 \leq A < 80$	10
$80 \leq A < 100$	3

- a** Draw a grouped frequency diagram for each country.
- b** Calculate an estimate for the mean age of the population of country A.
- c** Calculate an estimate for the mean age of the population of country B.
- d** Describe in your own words the difference in the age distributions between the two countries.
- e** One of the countries is from the developed world and one is from the developing world.
Which country is likely to be from the developing world?
- f** Justify your answer to part **e**.

- 3** The table shows the temperature at noon every second day in two holiday resorts, A and B, during the month of August. One resort is in England, the other is in Portugal.

Day	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31
Noon temperature (°C) Resort A	32	31	28	34	29	27	31	30	35	31	31	27	32	31	36	30
Noon temperature (°C) Resort B	24	24	31	24	21	22	26	25	32	25	25	24	26	28	19	19

- a** On the same axes draw line graphs to show the temperatures at noon in the two resorts during August.
- b** For each resort calculate these statistics.
- i** the mean daily midday temperature
 - ii** the median daily midday temperature
 - iii** the modal midday temperature
 - iv** the range in the midday temperatures
- c** By referring to the line graphs and your calculations in part **b** state, with reasons, which of the resorts is likely to be the one in England.
- 4** This graph shows the mean house price in different regions of the UK from 1999 to 2007.



Comment on any similarities and differences in mean house prices in the four regions since 1999.