



S27-test Frequency Polygons: Test Pack

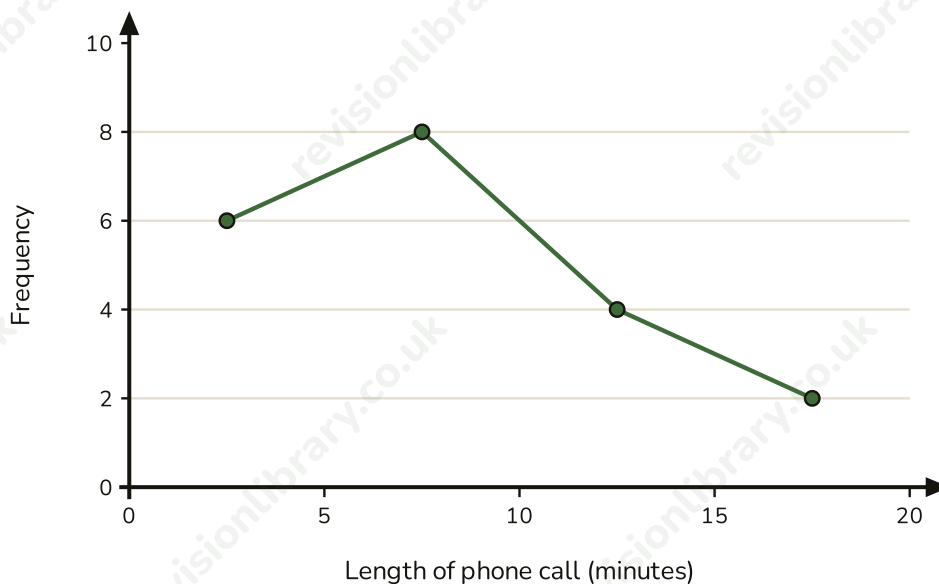
EDEXCEL 1ST0 · Calculator allowed · about 20 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

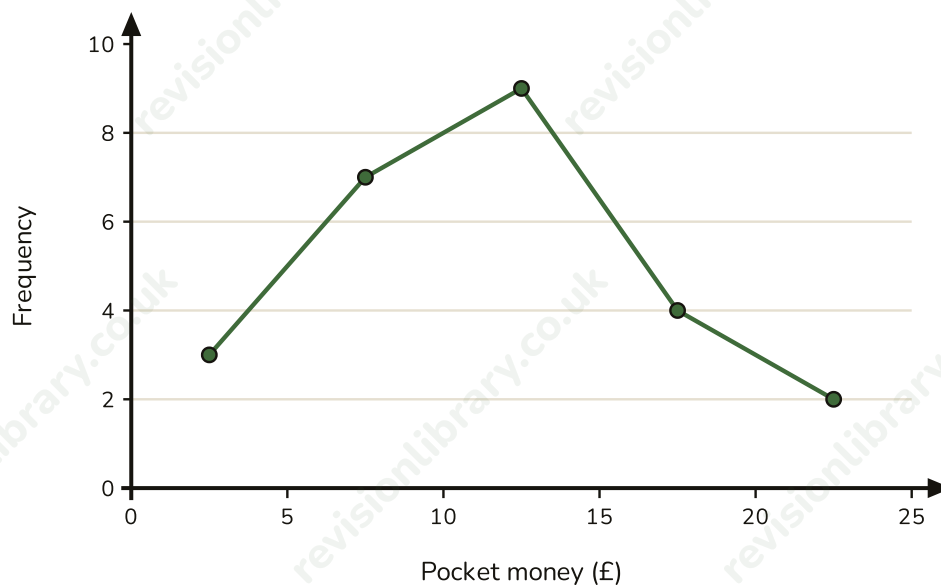
- 1** 20 people were surveyed about how long, in minutes, their last phone call lasted. The frequency polygon shows the results.



- (a) Write down the frequency of calls lasting more than 5 minutes but no more than 10 minutes. (1)
- (b) Work out the total number of people represented by the frequency polygon. (2)

(Total for Question 1 is 3 marks)

- 2 25 children were asked how much pocket money, in GBP, they receive each week. The frequency polygon shows the results.



(a) Write down the modal class. (1)

(b) Work out how many children receive £15 or less pocket money each week. (2)

(Total for Question 2 is 3 marks)

- 3** 30 employees at a company were asked how far, in km, they travel to work. The grouped frequency table shows the results.

Distance (km)	Frequency
$0 < d \leq 4$	5
$4 < d \leq 8$	9
$8 < d \leq 12$	8
$12 < d \leq 16$	5
$16 < d \leq 20$	3
Total	30



- (a)** Write down the midpoint of each class interval. **(2)**

- (b)** On the grid provided, draw the frequency polygon for this information. **(3)**

(Total for Question 3 is 5 marks)

4 A researcher is investigating how long it takes people to commute to work. She plans to collect data from a sample of workers and present her results using a frequency polygon.

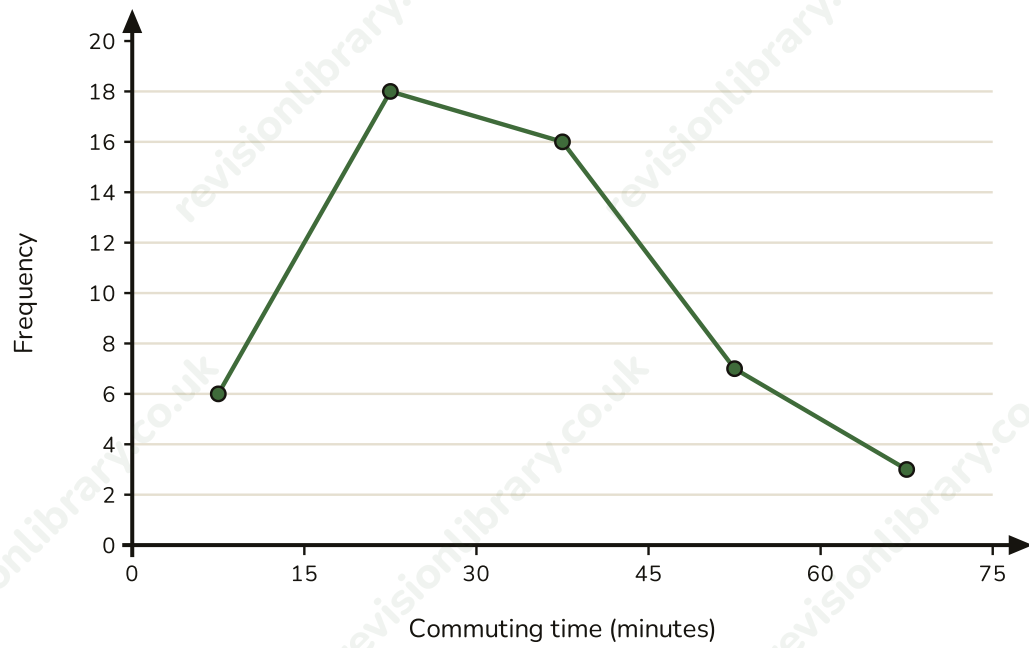
(a) Plan: Write a suitable question the researcher could use in a questionnaire to collect this data. Your question must produce numerical data. **(1)**

(b) Collect: The researcher considers asking only people arriving at one particular railway station. State one reason why this might not produce a sample representative of all commuters. **(1)**

(c) Process: The table shows the grouped commuting-time data she collected from 50 workers. Complete the midpoint column. **(2)**

Commuting time (minutes)	Frequency	Midpoint
$0 < t \leq 15$	6	
$15 < t \leq 30$	18	
$30 < t \leq 45$	16	
$45 < t \leq 60$	7	
$60 < t \leq 75$	3	

(d) Interpret: The frequency polygon for this data is shown below. Write down the modal class, and use it to describe what this tells you about the commuting times of most workers in the sample. **(2)**



(Total for Question 4 is 6 marks)

Mark scheme · S27-test Frequency Polygons: Test Pack

Question 1

- (a) **B1** 8 cao
- (a) **Answer: 8**
- (b) **M1** $6 + 8 + 4 + 2$, oe
- (b) **A1** 20 cao
- (b) **Answer: 20**

Question 2

- (a) **B1** $10 < m \leq 15$ cao
- (a) **Answer: $10 < m \leq 15$**
- (b) **M1** $3 + 7 + 9$, oe
- (b) **A1** 19 cao
- (b) **Answer: 19**

Question 3

- (a) **B1** at least three of the five midpoints correct
- (a) **B1** all five midpoints correct: 2, 6, 10, 14, 18
- (a) **Answer: 2, 6, 10, 14, 18**
- (b) **B1** a suitable uniform scale chosen on the frequency axis, starting at 0
- (b) **B1** all five points plotted at the correct midpoint/frequency: (2,5), (6,9), (10,8), (14,5), (18,3), $\pm$ half a small square
- (b) **B1** consecutive points joined with straight lines only
- (b) **Answer: Frequency polygon through (2,5), (6,9), (10,8), (14,5), (18,3).**

Question 4

- (a) **B1** a clear question that would produce numerical commuting-time data, with units and a defined time period stated, e.g. 'How many minutes did your journey to work take this morning?', oe
- (a) **Answer: e.g. 'How many minutes did your journey to work take this morning?'**
- (b) **B1** identifies that this excludes commuters who travel by other means (car, bus, bicycle, on foot, other stations), so the sample would not represent all commuters, oe
- (b) **Answer: It would only include train commuters using that station, missing everyone who commutes another way.**
- (c) **B1** at least three of the five midpoints correct
- (c) **B1** all five midpoints correct: 7.5, 22.5, 37.5, 52.5, 67.5
- (c) **Answer: 7.5, 22.5, 37.5, 52.5, 67.5**
- (d) **B1** $15 < t \leq 30$ cao
- (d) **B1** valid interpretation in context, e.g. most workers in the sample have a relatively short commute of 15-30 minutes, since this class has the highest frequency (18 of 50)
- (d) **Answer: $15 < t \leq 30$; most workers have a relatively short commute.**