



S27-30min Frequency Polygons: 30-minute Pack

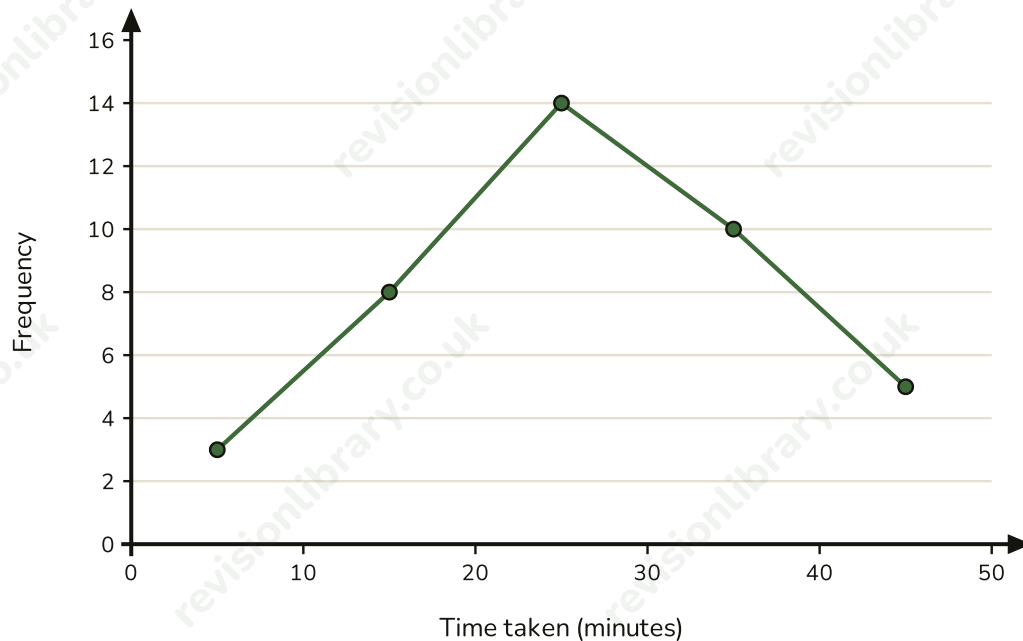
EDEXCEL 1ST0 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1 40 people completed a jigsaw puzzle at a puzzle cafe. The time taken, in minutes, is shown in the frequency polygon below.



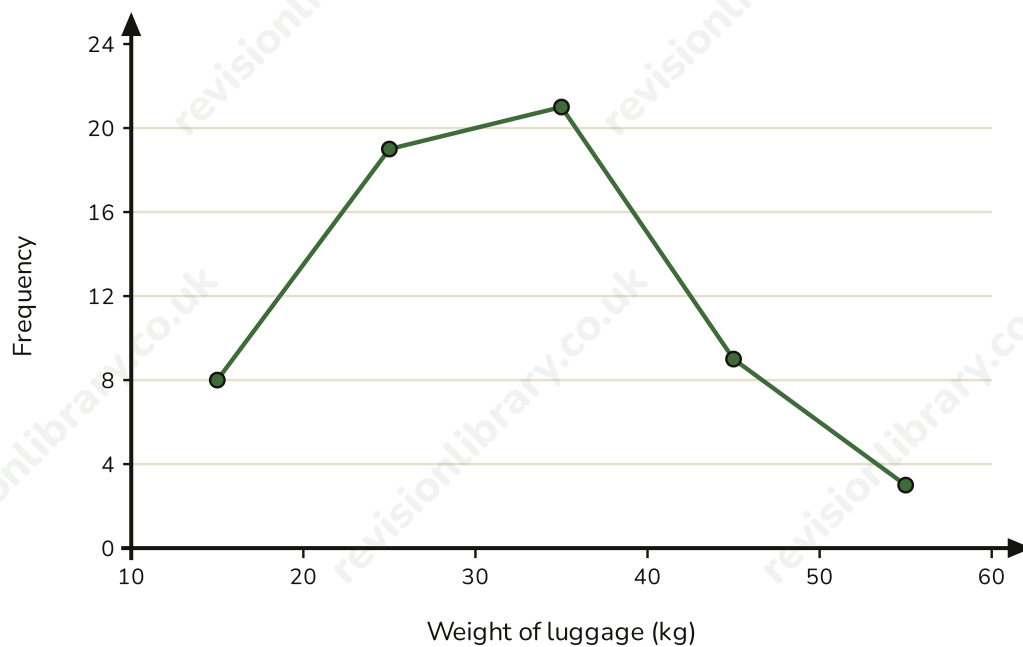
- (a) Write down the frequency of the class $10 < t \leq 20$. (1)

- (b) Write down the modal class. (1)

- (c) Work out the number of people who took more than 30 minutes to complete the puzzle. (2)

(Total for Question 1 is 4 marks)

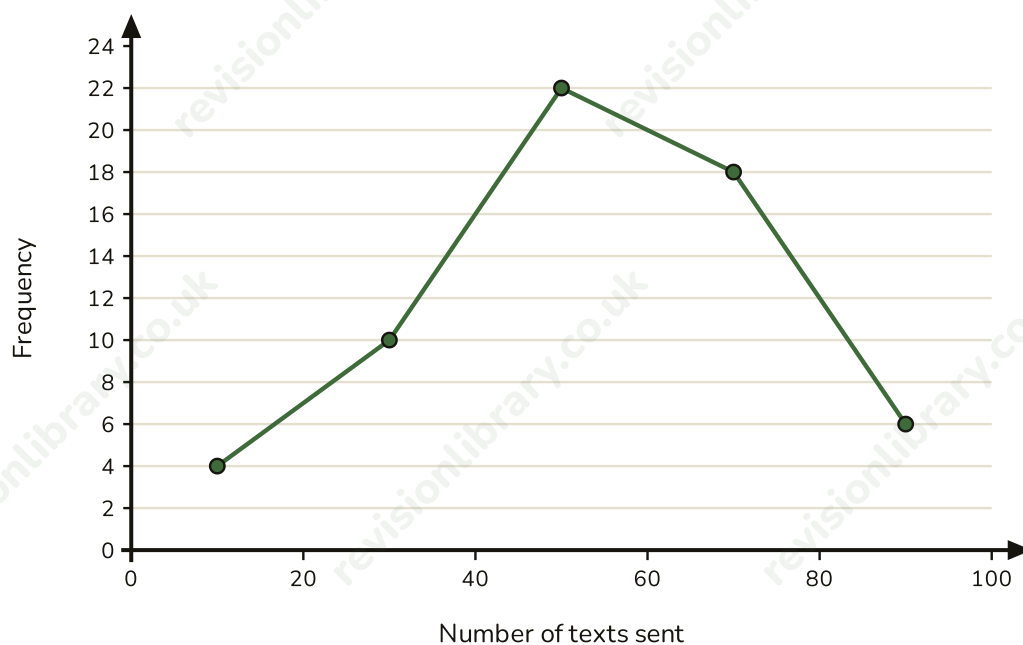
- 2 An airline checked in the luggage of 60 passengers at a check-in desk. The frequency polygon shows the weight, in kg, of each passenger's luggage.



- (a) Write down the modal class. (1)
-
- (b) Estimate the number of passengers whose luggage weighed more than 40 kg. (2)
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- (c) The airline charges an excess fee of £15 for each bag that weighs more than 40 kg. Work out an estimate for the total excess fees collected from these 60 passengers. (2)
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(Total for Question 2 is 5 marks)

- 3** 60 teenagers were asked how many text messages they sent yesterday. The frequency polygon shows the results.



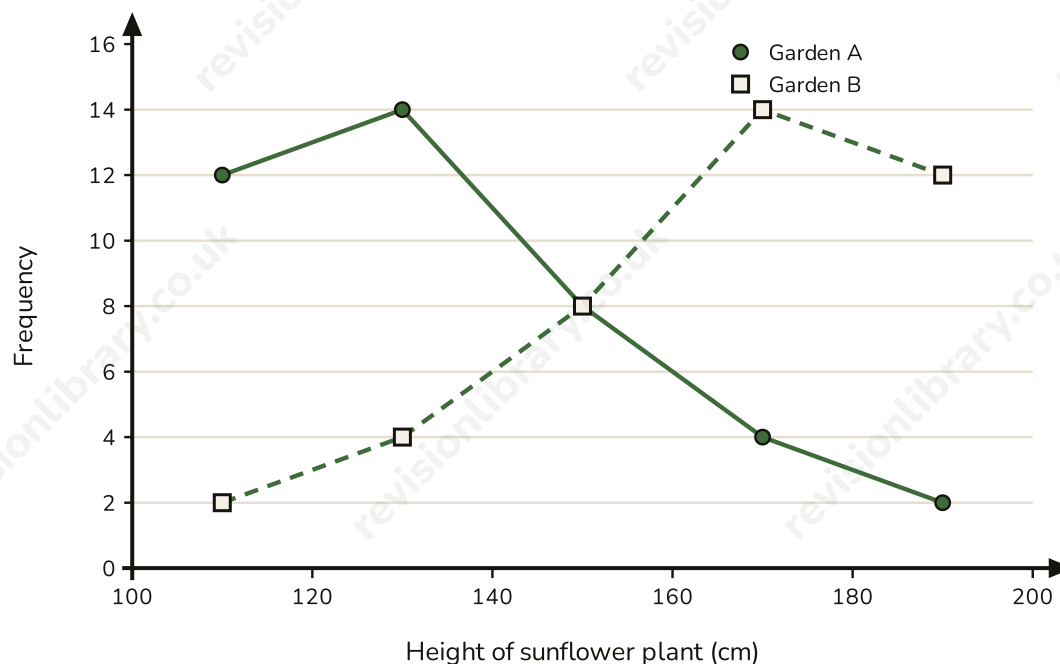
- (a) Write down the modal class. (1)

- (b) Describe the shape of the distribution shown by the frequency polygon. (2)

- (c) Estimate the number of teenagers who sent fewer than 40 texts. (2)

(Total for Question 3 is 5 marks)

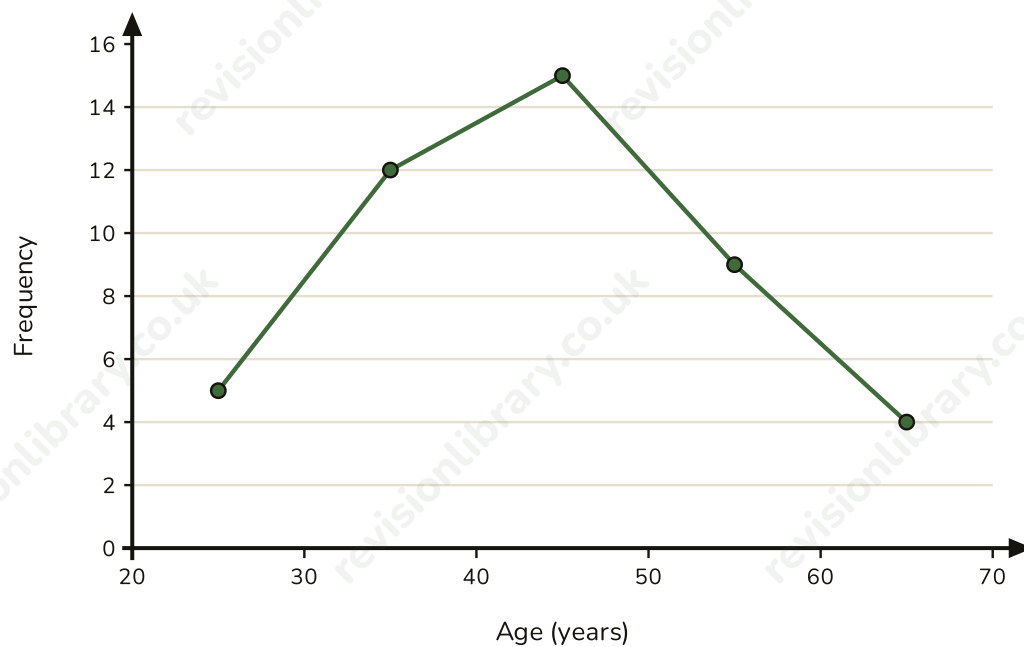
- 4 Two garden centres, Garden A and Garden B, each measured the height, in cm, of a sample of 40 sunflower plants. The frequency polygons for both distributions are shown on the same axes.



- (a) Write down the modal class for Garden A. (1)
-
- (b) Write down the modal class for Garden B. (1)
-
- (c) Compare the shapes of the two distributions. Use the word 'skewed' in your answer. (2)

(Total for Question 4 is 4 marks)

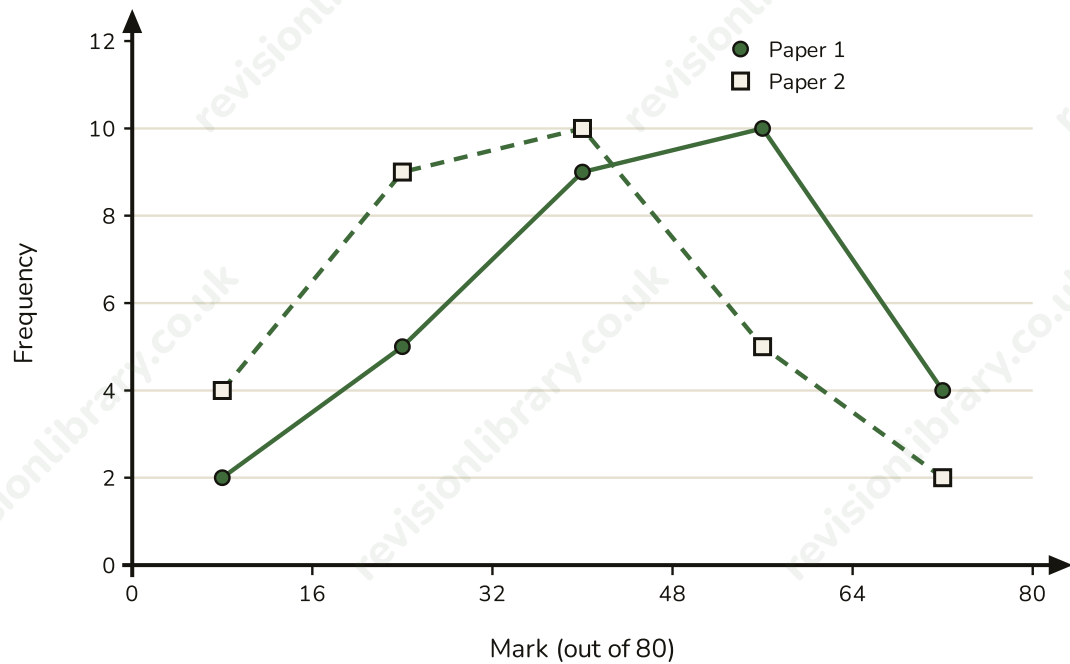
- 5 45 people attending a yoga class had their age, in years, recorded. The frequency polygon shows the results.



- (a) Using the frequency polygon, write down the number of people aged between 40 and 50. (1)
-
- (b) One of the yoga teachers claims: "More than 20 people at the class were over the age of 50." Determine whether the teacher is correct. Show your working. (2)
- (c) Estimate the percentage of people at the class who were aged under 40. (3)

(Total for Question 5 is 6 marks)

- 6** Two mock exam papers were sat by the same class of 30 students. The frequency polygons show the marks, out of 80, for Paper 1 and Paper 2.



(a) Show that the estimated mean mark for Paper 1 is 44.8. (3)

(b) Calculate the estimated mean mark for Paper 2. (3)

(c) State, with a reason, which paper the class found more difficult. (2)

(Total for Question 6 is 8 marks)

Mark scheme · S27-30min Frequency Polygons: 30-minute Pack

Question 1

- (a) **B1** 8 cao
- (a) **Answer: 8**
- (b) **B1** $20 < t \leq 30$ cao
- (b) **Answer: $20 < t \leq 30$**
- (c) **M1** $10 + 5$, oe
- (c) **A1** 15 cao
- (c) **Answer: 15**

Question 2

- (a) **B1** $30 < w \leq 40$ cao
- (a) **Answer: $30 < w \leq 40$**
- (b) **M1** $9 + 3$, oe
- (b) **A1** 12 cao
- (b) **Answer: 12**
- (c) **M1** 12×15 , oe (ft from (b))
- (c) **A1** £180 cao
- (c) **Answer: £180**

Question 3

- (a) **B1** $40 < t \leq 60$ cao
- (a) **Answer: $40 < t \leq 60$**
- (b) **B1** identifies a single peak (unimodal), in the class $40 < t \leq 60$
- (b) **B1** identifies that the distribution is roughly symmetrical/bell-shaped, with frequencies falling away on both sides of the peak, oe
- (b) **Answer: Unimodal, roughly symmetrical, peaking in the class $40 < t \leq 60$.**
- (c) **M1** $4 + 10$, oe
- (c) **A1** 14 cao
- (c) **Answer: 14**

Question 4

- (a) **B1** $120 < h \leq 140$ cao
- (a) **Answer: $120 < h \leq 140$**
- (b) **B1** $160 < h \leq 180$ cao
- (b) **Answer: $160 < h \leq 180$**
- (c) **B1** Garden A is skewed to the right/positively skewed: most plants are shorter (peak at a low height), with a tail of fewer, taller plants
- (c) **B1** Garden B is skewed to the left/negatively skewed: most plants are taller (peak at a high height), with a tail of fewer, shorter plants; or a valid comparison that Garden B's plants are generally taller
- (c) **Answer: Garden A is skewed to the right (positively skewed); Garden B is skewed to the left (negatively skewed).**

Question 5

- (a) **B1** 15 cao
- (a) **Answer: 15**
- (b) **M1** $9 + 4$, oe
- (b) **A1** 13, so the teacher is incorrect since 13 is not more than 20 (conclusion must be justified by the value found)
- (b) **Answer: 13 people; the teacher is incorrect.**
- (c) **M1** $5 + 12 (= 17)$, oe
- (c) **M1** $17/45 \times 100$
- (c) **A1** 37.8% or awrt 37.8%
- (c) **Answer: 37.8%**

Question 6

- (a) **M1** $8 \times 2 + 24 \times 5 + 40 \times 9 + 56 \times 10 + 72 \times 4 (= 1344)$, oe
- (a) **M1** $1344 / 30$
- (a) **A1** 44.8 shown correctly
- (a) **Answer: 44.8**
- (b) **M1** $8 \times 4 + 24 \times 9 + 40 \times 10 + 56 \times 5 + 72 \times 2 (= 1072)$, oe
- (b) **M1** $1072 / 30$
- (b) **A1** 35.7 (awrt) cao
- (b) **Answer: 35.7 (awrt)**
- (c) **B1** Paper 2
- (c) **B1** valid reason comparing the estimated means: Paper 2's estimated mean (35.7) is lower than Paper 1's (44.8), so students scored fewer marks on average on Paper 2
- (c) **Answer: Paper 2, since its estimated mean (35.7) is lower than Paper 1's (44.8).**