2.13D Frequency Polygons: Fluency and Exam Drill

Total Marks

EDEXCEL Edexcel 1MA1 · Calculator allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A frequency table shows the number of pencils sold each day last week.
Length of sale period (minutes): 0-5, 5-10, 10-15, 15-20
Frequency: 2, 5, 8, 5
Write down the midpoint of the class 10-15.

(Total for Question 1 is 1 mark)

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2 Given the class 20-30, find the midpoint.

(Total for Question 2 is 1 mark)

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3 A grouped frequency table gives ages of participants in a workshop.
Class intervals (years): 10-14, 15-19, 20-24
Frequencies: 4, 7, 9
Calculate the total number of participants.

(Total for Question 3 is 2 marks)

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4 A frequency table for number of goals scored by a school team in matches is shown.
Goals: 0-1, 2-3, 4-5
Frequencies: 3, 6, 1
Find the modal class.

(Total for Question 4 is 2 marks)

5 A grouped frequency table of times taken (minutes) to solve a puzzle is:

0-2: 5

2-4: 9

4-6: 6

Use midpoints to estimate the mean time to solve the puzzle. Give your answer to 1 decimal place.

(Total for Question 5 is 3 marks)

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6 Class intervals of daily step counts and frequencies are shown.

0-1999: 2

2000-3999: 5

4000-5999: 8

6000-7999: 5

Estimate the mean number of steps using midpoints. Give your answer to the nearest whole step.

(Total for Question 6 is 3 marks)

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7 The frequencies of marks in a test are grouped as follows.

Marks: 0-9, 10-19, 20-29, 30-39

Frequencies: 1, 4, 9, 6

(a) Calculate the cumulative frequency for the end of class 20-29.

(b) Using midpoints estimate the mean mark. Give your answer to 1 decimal place.

(a) Calculate the cumulative frequency for the end of class 20-29. **(1)**

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(b) Using midpoints estimate the mean mark. Give your answer to 1 decimal place. **(3)**

(Total for Question 7 is 4 marks)

8 A student drew a frequency polygon using class midpoints 5, 15, 25, 35 with frequencies 3, 9, 6, 2.

(a) What height should the point above midpoint 25 have on the polygon?

(b) Explain briefly how to complete a frequency polygon from a histogram.

(a) What height should the point above midpoint 25 have on the polygon? **(1)**

(b) Explain briefly how to complete a frequency polygon from a histogram. **(3)**

(Total for Question 8 is 4 marks)

Mark scheme · 2.13D Frequency Polygons: Fluency and Exam Drill

Question 1

- **B1** 12.5 cao
- **Answer: 12.5**

Question 2

- **B1** 25 cao
- **Answer: 25 (Recompute: (20 + 30) / 2 = 25)**

Question 3

- **M1** adds frequencies 4 + 7 + 9
- **A1** 20 cao
- **Answer: 20**

Question 4

- **M1** identify largest frequency 6
- **A1** 2-3 cao
- **Answer: 2-3**

Question 5

- **M1** use midpoints 1, 3, 5 and form sum 1*5 + 3*9 + 5*6
- **M1** divide total by 5 + 9 + 6 = 20 (method for mean)
- **A1** 3.1 awrt
- **Answer: 3.1**

Question 6

- **M1** use midpoints 999.5, 2999.5, 4999.5, 6999.5 and form sum of midpoint*freq
- **M1** divide by total frequency 20
- **A1** 4600 awrt
- **Answer: 4600**

Question 7

- (a) **B1** 14 cao
- **(a) Answer: 14**
- (b) **M1** use midpoints 4.5, 14.5, 24.5, 34.5 and compute sum(midpoint*freq)
- (b) **M1** divide by total frequency 20
- (b) **A1** 24.5 awrt
- **(b) Answer: 24.5**

Question 8

- (a) **B1** 6 cao
- **(a) Answer: 6**
- (b) **M1** plot a point at each class midpoint at the height equal to the class frequency
- (b) **M1** join the plotted points with straight lines in order
- (b) **A1** extend the polygon to the horizontal axis at the ends by joining to the midpoint of an adjacent empty class or to zero frequency as appropriate
- **(b) Answer: Plot a point at each class midpoint with height equal to the class frequency, join the points with straight lines, and extend the ends down to the horizontal axis so the polygon starts and ends at zero frequency.**