# 2.13 Frequency Polygons: 30-minute Pack

EDEXCEL 1MA1 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

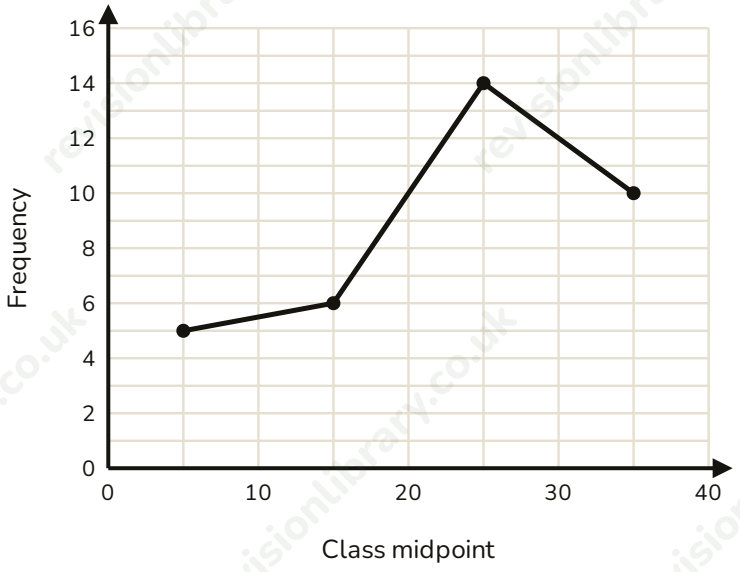
**Answer ALL questions. Show all your working.**

**1** The grouped frequency table shows data about time in minutes, x, for a group of people. Class intervals and frequencies: $0 < x \leq 10$: 6; $10 < x \leq 20$: 5; $20 < x \leq 30$: 12; $30 < x \leq 40$: 2; $40 < x \leq 50$: 5. Write down the coordinates of the points you would plot to draw a frequency polygon.

**(Total for Question 1 is 2 marks)**

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**2** The points plotted for a frequency polygon are (5, 5), (15, 6), (25, 14), (35, 10). All class intervals have the same width. Work out (a) the width of each class interval and (b) the total frequency.




**(Total for Question 2 is 3 marks)**

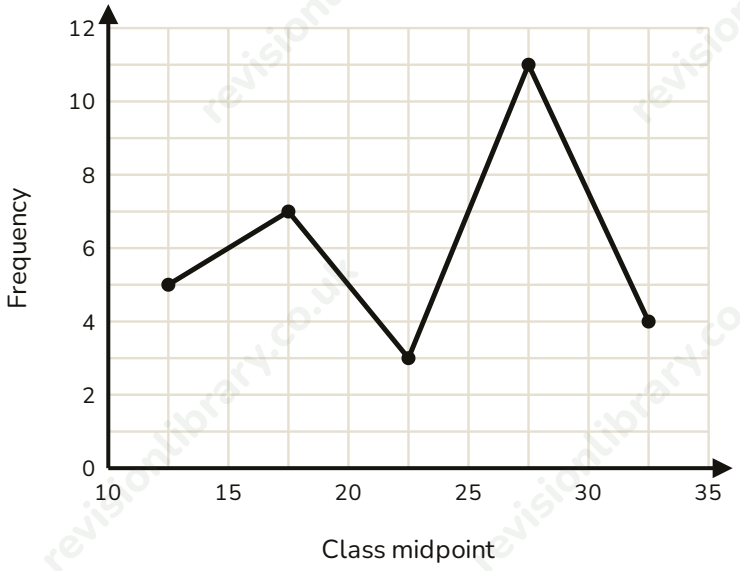

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**3** The grouped frequency table shows data about time in minutes, x, for a group of people. Class intervals and frequencies: $0 < x \leq 5$: 4; $5 < x \leq 10$: 4; $10 < x \leq 15$: 7; $15 < x \leq 20$: 5. Write down the coordinates of the points you would plot to draw a frequency polygon.

**(Total for Question 3 is 2 marks)**

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**4** The points plotted for a frequency polygon are (12.5, 5), (17.5, 7), (22.5, 3), (27.5, 11), (32.5, 4). All class intervals have the same width. Work out (a) the width of each class interval and (b) the total frequency.




**(Total for Question 4 is 3 marks)**

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**5** The grouped frequency table shows data about mass in kg, x, for a group of people. Class intervals and frequencies: $0 < x \leq 10$: 8; $10 < x \leq 20$: 9; $20 < x \leq 30$: 12; $30 < x \leq 40$: 12. Write down the coordinates of the points you would plot to draw a frequency polygon.

**(Total for Question 5 is 2 marks)**

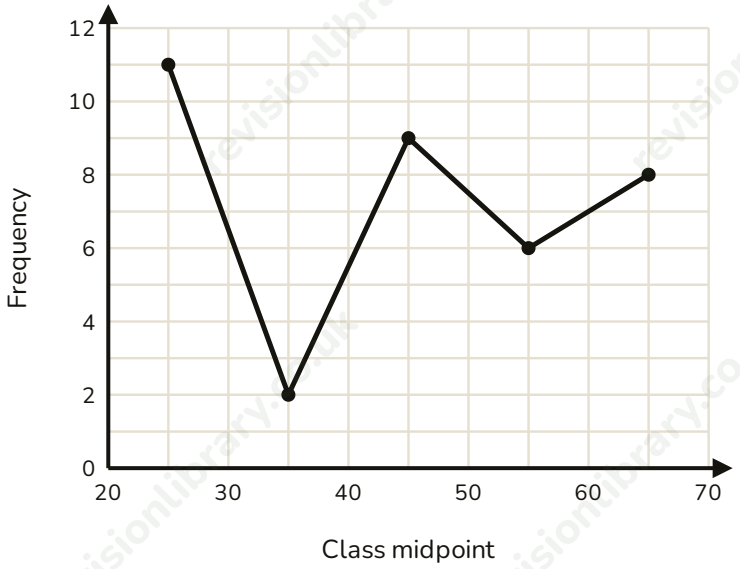

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**6** The grouped frequency table shows data about length in cm, x. Class intervals and frequencies: $0 < x \leq 10$: 6; $10 < x \leq 20$: 11; $20 < x \leq 30$: 7; $30 < x \leq 40$: 14; $40 < x \leq 50$: 15. Write down the modal class.

**(Total for Question 6 is 1 mark)**

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**7** The points plotted for a frequency polygon are (25, 11), (35, 2), (45, 9), (55, 6), (65, 8). All class intervals have the same width. Work out (a) the width of each class interval and (b) the total frequency.




**(Total for Question 7 is 3 marks)**

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**8** The grouped frequency table shows data about time in minutes, x, for a group of people. Class intervals and frequencies: $0 < x \leq 10$: 12; $10 < x \leq 20$: 9; $20 < x \leq 30$: 7; $30 < x \leq 40$: 12; $40 < x \leq 50$: 7. Write down the coordinates of the points you would plot to draw a frequency polygon.

**(Total for Question 8 is 2 marks)**


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**9** A frequency table shows how long, in minutes, each customer waited in a queue at a post office in Cardiff.

Waiting time (minutes): 0-5, 5-10, 10-15, 15-20

Frequency: 6, 9, 7, 3

Write down the width of the class 10-15.

**(Total for Question 9 is 1 mark)**

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**10** A cycling club recorded the distances, in km, ridden by members last weekend.

Distance (km): 0-10, 10-25, 25-40, 40-60

Frequency: 5, 12, 9, 4

Find the midpoint of the class 10-25.

**(Total for Question 10 is 1 mark)**

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**11** A garden centre recorded the heights, in cm, of tomato plants, grouped into classes.

Height (cm): 40-60, 60-80, 80-100, 100-120

Frequency: 4, 10, 14, 6

Estimate the range of the heights, using the boundaries of the classes.

**(Total for Question 11 is 3 marks)**


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# Mark scheme · 2.13 Frequency Polygons: 30-minute Pack

## Question 1

| | |
|---|---|
| uses midpoints of the class intervals | **M1** |
| (5, 6), (15, 5), (25, 12), (35, 2), (45, 5) cao | **A1** |

**Answer: (5, 6), (15, 5), (25, 12), (35, 2), (45, 5)**

## Question 2

| | |
|---|---|
| difference between consecutive midpoints | **M1** |
| 10 | **A1** |
| 35 | **B1** |

**Answer: (a) 10, (b) 35**

## Question 3

| | |
|---|---|
| uses midpoints of the class intervals | **M1** |
| (2.5, 4), (7.5, 4), (12.5, 7), (17.5, 5) cao | **A1** |

**Answer: (2.5, 4), (7.5, 4), (12.5, 7), (17.5, 5)**

## Question 4

| | |
|---|---|
| difference between consecutive midpoints | **M1** |
| 5 | **A1** |
| 30 | **B1** |

**Answer: (a) 5, (b) 30**

## Question 5

| | |
|---|---|
| uses midpoints of the class intervals | **M1** |
| (5, 8), (15, 9), (25, 12), (35, 12) cao | **A1** |

**Answer: (5, 8), (15, 9), (25, 12), (35, 12)**

## Question 6

| | |
|---|---|
| $40 < x \leq 50$ cao | **B1** |

**Answer: $40 < x \leq 50$**

## Question 7

| | |
|---|---|
| difference between consecutive midpoints | **M1** |
| 10 | **A1** |
| 36 | **B1** |

**Answer: (a) 10, (b) 36**

## Question 8

| | |
|---|---|
| uses midpoints of the class intervals | **M1** |
| (5, 12), (15, 9), (25, 7), (35, 12), (45, 7) cao | **A1** |

**Answer: (5, 12), (15, 9), (25, 7), (35, 12), (45, 7)**

## Question 9

| | |
|---|---|
| 5 cao | **B1** |

**Answer: 5**

## Question 10

| | |
|---|---|
| 17.5 cao | **B1** |

**Answer: 17.5**

## Question 11

| | |
|---|---|
| identifies the upper boundary of the largest class as 120 | **M1** |
| identifies the lower boundary of the smallest class as 40 | **M1** |
| 80 (cm) cao | **A1** |

**Answer: 80 cm**


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