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## Representations of Data: Histograms - Edexcel Past Exam Questions

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1. A teacher recorded, to the nearest hour, the time spent watching television during a particular week by each child in a random sample. The times were summarised in a grouped frequency table and represented by a histogram.

One of the classes in the grouped frequency distribution was 20–29 and its associated frequency was 9. On the histogram the height of the rectangle representing that class was 3.6 cm and the width was 2 cm.

(a) Give a reason to support the use of a histogram to represent these data. (1)

(b) Write down the underlying feature associated with each of the bars in a histogram. (1)

(c) Show that on this histogram each child was represented by  $0.8 \text{ cm}^2$ . (3)

The total area under the histogram was  $24 \text{ cm}^2$ .

(d) Find the total number of children in the group. (2)

**Jan 07 Q5**

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2.

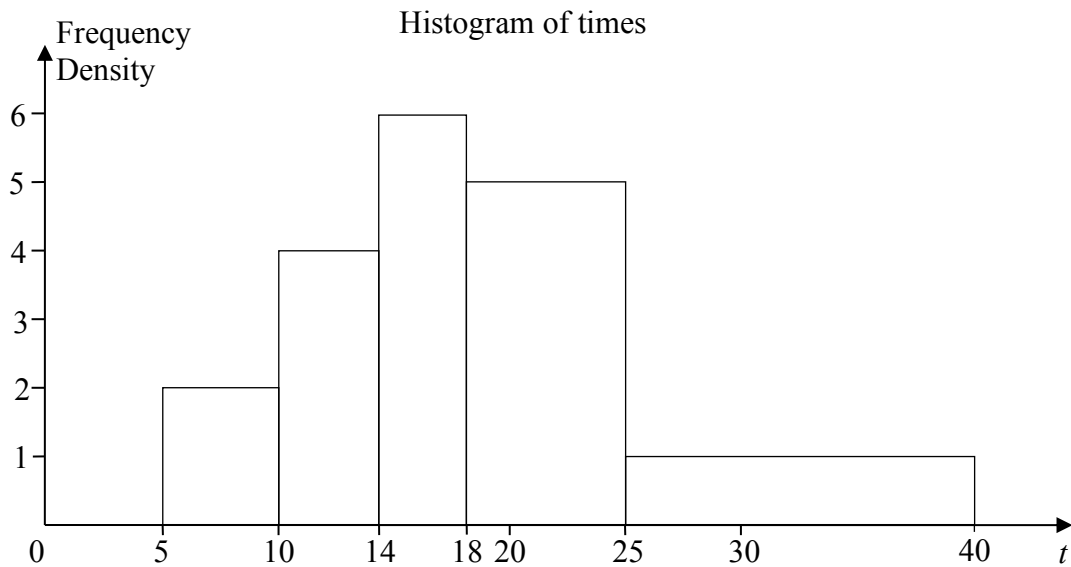

**Figure 2**

Figure 2 shows a histogram for the variable  $t$  which represents the time taken, in minutes, by a group of people to swim 500 m.

(a) Copy and complete the frequency table for  $t$ .

$t$	5 – 10	10 – 14	14 – 18	18 – 25	25 – 40
Frequency	10	16	24		

(2)

(b) Estimate the number of people who took longer than 20 minutes to swim 500 m.

(2)

(c) Find an estimate of the mean time taken.

(4)

(d) Find an estimate for the standard deviation of  $t$ .

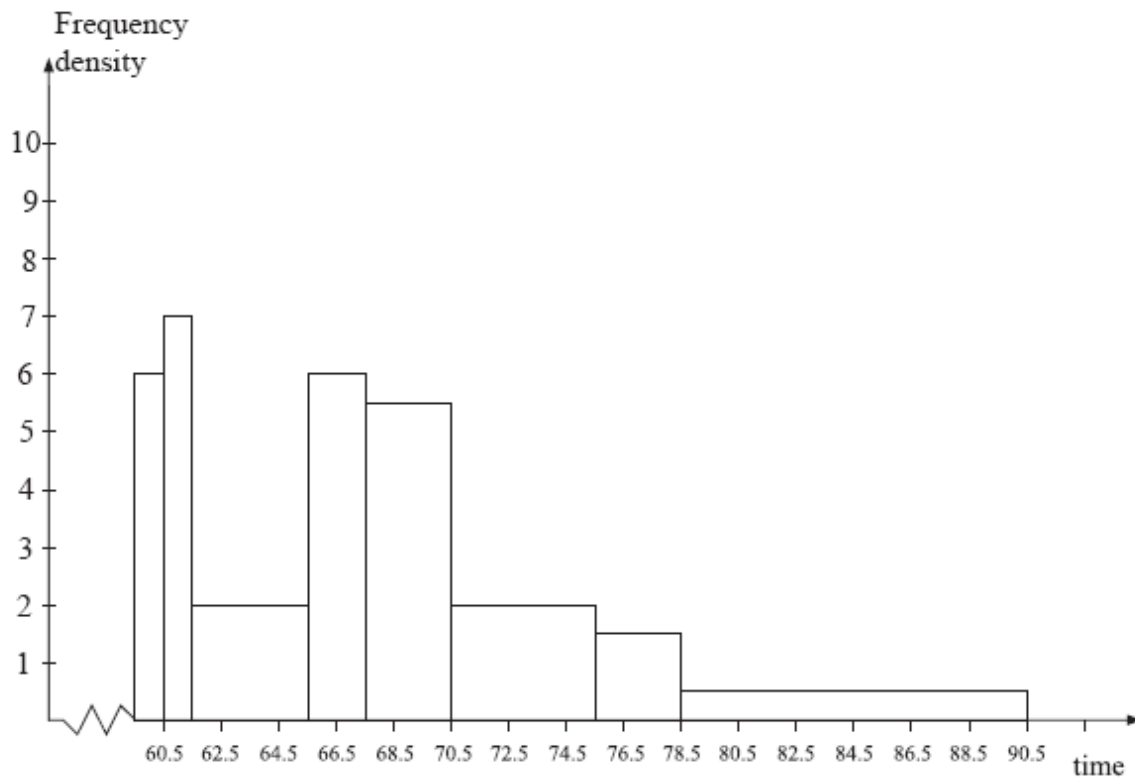
(3)

(e) Find the median and quartiles for  $t$ .

(4)

**June 07 Q5 (edited)**

3. The histogram shows the time taken, to the nearest minute, for 140 runners to complete a fun run.



Use the histogram to calculate the number of runners who took between 78.5 and 90.5 minutes to complete the fun run. (5)

**Jan 08 Q3**

4. In a shopping survey a random sample of 104 teenagers were asked how many hours, to the nearest hour, they spent shopping in the last month. The results are summarised in the table below.

Number of hours	Mid-point	Frequency
0 – 5	2.75	20
6 – 7	6.5	16
8 – 10	9	18
11 – 15	13	25
16 – 25	20.5	15
26 – 50	38	10

A histogram was drawn and the group (8 – 10) hours was represented by a rectangle that was 1.5 cm wide and 3 cm high.

- (a) Calculate the width and height of the rectangle representing the group (16 – 25) hours. (3)
- (b) Use linear interpolation to estimate the median and interquartile range. (5)
- (c) Estimate the mean and standard deviation of the number of hours spent shopping. (4)
- (d) State, giving a reason, which average and measure of dispersion you would recommend to use to summarise these data. (2)

**Jan 09 Q5 (edited)**

5. The variable  $x$  was measured to the nearest whole number. Forty observations are given in the table below.

$x$	10 – 15	16 – 18	19 –
Frequency	15	9	16

A histogram was drawn and the bar representing the 10 – 15 class has a width of 2 cm and a height of 5 cm. For the 16 – 18 class find

- (a) the width, (1)
- (b) the height of the bar representing this class. (2)

**June 09 Q3**

6. A class of students had a sudoku competition. The time taken for each student to complete the sudoku was recorded to the nearest minute and the results are summarised in the table below.

Time	Mid-point, $x$	Frequency, $f$
2 – 8	5	2
9 – 12		7
13 – 15	14	5
16 – 18	17	8
19 – 22	20.5	4
23 – 30	26.5	4

(You may use  $\sum fx^2 = 8603.75$ )

- (a) Write down the mid-point for the 9 – 12 interval. (1)
- (b) Use linear interpolation to estimate the median time taken by the students. (2)
- (c) Estimate the mean and standard deviation of the times taken by the students. (5)

**June 11 Q5(*edited*)**