Histograms

Histograms are a way of presenting continuous data.

> *Remember*
>
> *Continuous data is where the scale of measurement has meaning at all points e.g. heights, distance, age.*
>
> *Discrete data is where the units of measurement cannot be split up e.g. shoe size, number of students in a class.*

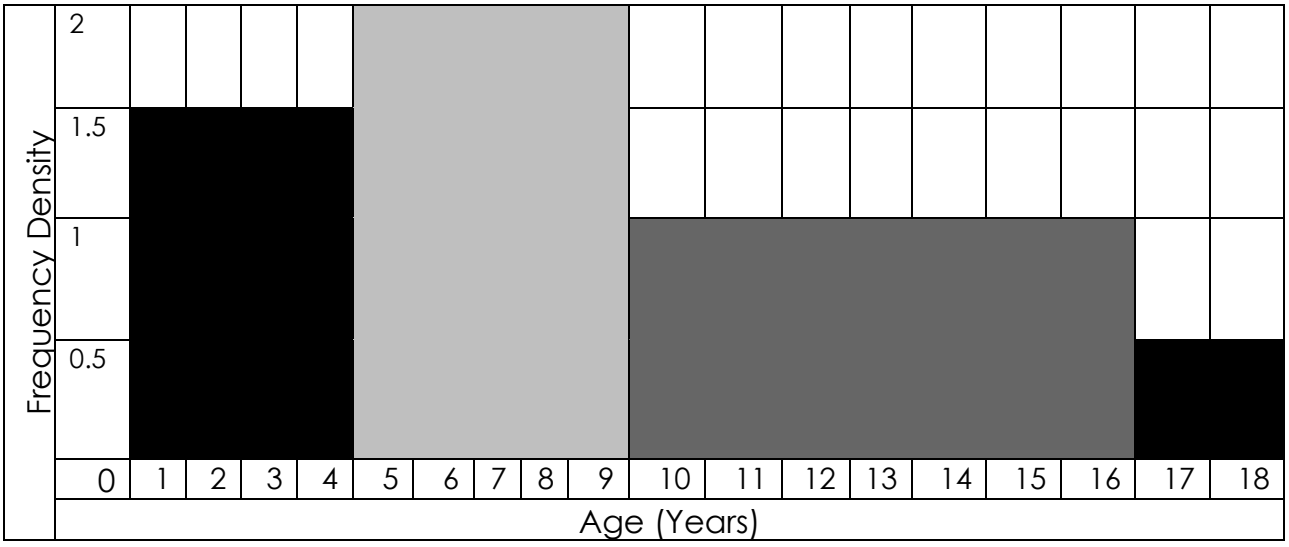
The area of each bar in a histogram represents frequency

Area = Frequency = Frequency density x Class Width

Example

This histogram provides data about the ages of children living in a particular street.

Ages of Children on Oak Street



(i) How many children between the ages of 4 and 8 live on Oak St?

The second bar represents children who are aged between 4 and 8 (that is, four-year-olds to eight-year-olds). Then

Frequency = Frequency density x Class Width = 2 x 5 = 10 children

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(ii) How many children aged 16 or over live on the street?

These children are represented by the fourth bar in the histogram
Frequency = 0.5 x 2 = 1 child

Therefore 1 child aged 16 or over lives on the street.

(iii) What percentage of children on the street are of pre-school age?

Pre-school age children are those aged under 4, and are thus represented by the first bar in the histogram
Frequency = 1.5 x 4 = 6 children

To calculate the percentage that these children represent, we need to know the total number of children living in the street. The only bar we haven't calculated so far, is the third bar (for children aged between 10 and 17)
Frequency = 1 x 7 = 7 children

Therefore the total number of children living on this street is
6 + 10 + 7 + 1 = 24 children

The percentage of children who are pre-school age is then
6 / 24 x 100 = 25%

The answer is therefore 25.

> *Remember*
>
> *When you have completed a question, have a quick check of the question wording – have you presented the answer as you have been asked?*

Note

The difference between histograms and bar charts is that the bars in a bar chart are always of the same width, and height then denotes frequency – so data frequency can be simply be read from the height bar.

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In histograms, height denotes frequency density, and it is the area of the bar that denotes frequency.

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