

AVERAGES FROM A TABLE

Statistics

Key Concepts

Modal class (mode)

Group with the highest frequency.

Median group

The median lies in the group which holds the $\frac{\text{total frequency}+1}{2}$ position.

Once identified, use the cumulative frequency to identify which group the median belongs from the table.

Estimate the mean

For grouped data, the mean can only be an estimate as we do not know the exact values in each group. To estimate, we use the midpoints of each group and to calculate the mean we find $\frac{\text{total } fx}{\text{total } f}$.

Examples

Length (L cm)	Frequency (f)	Midpoint (x)	fx
$0 < L \leq 10$	10	5	$10 \times 5 = 50$
$10 < L \leq 20$	15	15	$15 \times 15 = 225$
$20 < L \leq 30$	23	25	$23 \times 25 = 575$
$30 < L \leq 40$	7	35	$7 \times 35 = 245$
Total	55		1095

- a) Estimate the mean of this data.
step 1: calculate the total frequency
step 2: find the midpoint of each group
step 3: calculate $f \times x$
step 4: calculate the mean shown below

$$\frac{\text{Total } fx}{\text{Total } f} = \frac{1095}{55} = 19.9\text{cm}$$

- b) Identify the modal class from this data set. **“ the group that has the highest frequency ”**
Modal class is $20 < x \leq 30$

- c) Identify the group in which the median would lie. **Median = $\frac{\text{Total frequency}+1}{2} = \frac{56}{2} = 28\text{th value}$**
“ add the frequency column until you reach the 28th value ” Median is the in group $20 < x \leq 30$



130a

Key Words
Midpoint
Mean
Median
Modal

Cost (£C)	Frequency	Midpoint	
$0 < C \leq 4$	2		
$4 < C \leq 8$	3		
$8 < C \leq 12$	5		
$12 < C \leq 16$	12		
$16 < C \leq 20$	3		

From the data:

- a) Identify the modal class.
 b) Identify the group which holds the median.
 c) Estimate the mean.

ANSWERS: a) $12 < C \leq 16$ b) $\frac{25+1}{2} = 13\text{th value}$ is in the group $12 < C \leq 16$ c) $\frac{294}{25} = £11.76$