

12A

31/03/2020

Grouped Data

Grouped data is data that has been bundled together in categories

Calculating the Sample Mean for Grouped Data

When you have a frequency table or other group of data, the original set of data is lost — replaced with statistics for the group. You can't find the exact [sample mean](#) (as you don't have the original data) but you *can* find an estimate. The formula for estimating the sample mean for grouped data is:

$$\bar{x} = \frac{\sum fx}{\sum f}$$

- \bar{x} is the sample mean,
- x is the class (or category) midpoint,
- f is the class frequency.

Example question: Find the sample mean for the following frequency table.

SCORE	FREQUENCY (F)
Between 5 and 10	1
$10 \leq t < 15$	4
$15 \leq t < 20$	6
$20 \leq t < 25$	4
$25 \leq t < 30$	2
$30 \leq t < 35$	3
TOTALS	20

Step 1: Find the midpoint for each class interval. the midpoint is just the middle of each interval. For example, the middle of 10 and 15 is 12.5:

SCORE	FREQUENCY (F)	MIDPOINT (X)
Between 5 and 10	1	7.5
$10 \leq t < 15$	4	12.5
$15 \leq t < 20$	6	17.5
$20 \leq t < 25$	4	22.5
$25 \leq t < 30$	2	27.5

$30 \leq t < 35$	3	32.5
TOTALS	20	

Step 2: Multiply the midpoint (x) by the frequency (f):

FREQUENCY (F)	MIDPOINT (X)	MIDPOINT X *	
		FREQUENCY F	
Between 5 and 10	1	7.5	7.5
$10 \leq t < 15$	4	12.5	50
$15 \leq t < 20$	6	17.5	105
$20 \leq t < 25$	4	22.5	90
$25 \leq t < 30$	2	27.5	55
$30 \leq t < 35$	3	32.5	97.5
TOTALS	20		405

Add up all of the totals for this step. In other words, add up all the values in the last column (you should get 405).

Step 3: Divide the last column ($f \cdot x$) by the second column (f):
 The mean of grouped data (\bar{x}) = $405 / 20 = 20.25$.
