Finding the mean

Average

Population sigma

$$\mu = \frac{\Sigma x}{N}$$

Mu

# of data terms

Sample sigma

$$\overline{X} = \frac{\Sigma x}{n}$$

" X bar "

# of data terms

A **measure of central tendency** is a value that represents a typical, or central, entry of a data set. The three most commonly used measures of central tendency are the mean, the median, and the mode.

DEFINITION

The **mean** of a data set is the sum of the data entries divided by the number of entries. To find the mean of a data set, use one of the following formulas.

$$\text{Population Mean: } \mu = \frac{\Sigma x}{N} \qquad \text{Sample Mean: } \bar{x} = \frac{\Sigma x}{n}$$

The lowercase Greek letter μ (pronounced mu) represents the population mean and $\bar{x}$ (read as "x bar") represents the sample mean. Note that N represents the number of entries in a *population* and n represents the number of entries in a *sample*. Recall that the uppercase Greek letter sigma (Σ) indicates a summation of values.

Find the mean.

50, 75, 88, 92, 78 = 76.6

88, 93, 79, 85, 90 = 87

50 65, 60, 90, 95 = 72

Population

mean
"average"

$$\mu = \frac{\Sigma x}{N}$$

← sigma

mu

Sample

mean
"average"

$$\overline{x} = \frac{\Sigma x}{n}$$

← sigma

"x bar"

Population Mean: $\mu = \dfrac{\Sigma x}{N}$ Sample Mean: $\bar{x} = \dfrac{\Sigma x}{n}$

$\mu =$

$\overline{X}$

N = population
in the
population

n = sample
in sample

Mean : Avg. μ and $\bar{x}$

median : middle, put in numerical order

mode : # that occurs the most often

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median : 3, 5, 2, 8, 1, 6

~~3, 5, 2, 8, 1, 6~~

~~1~~, ~~2~~, | 3, 5 | 6, 8

$\frac{3+5}{2} = \frac{8}{2} = 4$

Test	40%
Quiz	30%
Hwk	5%
midterm	5%
FR	5%
MC	15%

Test	40%	60, 45, 80, 85, 90
Quiz	30%	40, 50, 100, 88, 100
Hwk	5%	0, 0, 100, 100
Midterm	5%	75
FR	5%	60
MC	15%	70

Test	40%	60, 45, 80, 85, 90	$\dfrac{60+45+80+85+90}{5} \cdot 40\%$
Quiz	30%	40, 50, 100, 88, 100	$\dfrac{40+50+100+88+100}{5} \cdot 30\%$
Hwk	5%	0, 0, 100, 100	$\dfrac{0+0+100+100}{4} \cdot 5\%$
Midterm	5%	75	$75 \cdot 5\%$
FR	5%	60	$60 \cdot 5\%$
MC	15%	70	$70 \cdot 15\%$

100%

(100 pts.)

Test	40%	60, 45, 80, 85, 90	$\frac{60+45+80+85+90}{5} \cdot 40\%$	28.8
Quiz	30%	40, 50, 100, 88, 100	$\frac{40+50+100+88+100}{5} \cdot 30\%$	22.68
Hwk	5%	0, 0, 100, 100	$\frac{0+0+100+100}{4} \cdot 5\%$ .05	2.5
Midterm	5%	75	$75 \cdot 5\%$	3.75
FR	5%	60	$60 \cdot 5\%$	3
MC	15%	70	$70 \cdot 15\%$	10.5

100%

100 pts.

100, 100, 100, 100

$100(.05) = 5$

71.23

$$\begin{array}{r} 71.23 \\ +\ 2.5 \\ \hline 73.73 \end{array}$$

≈ 74

midterm | 40% (70) [28] 40

Final exam | 60% 42 60

DEFINITION

A **weighted mean** is the mean of a data set whose entries have varying weights. A weighted mean is given by

$$\bar{x} = \frac{\sum (x \cdot w)}{\sum w}$$

where w is the weight of each entry x.

Test	40%	65, 78, 88	$\frac{(65+78+88)}{3} \cdot 40\% = 30.8$
Quiz	30%	50, 70, 90, 85	$(73.75) \cdot 30\% = 22.125$
Hwk	5%	0, 100, 100, 100	$(75) \cdot .05 = 3.75$
Midterm	5%	75	$= 3.75$
FR	5%	88	$= 4.4$
MC	15%	80	$= 12.0$

↗ 77
points

"A"

(100)?? change to 5

$= 76.825$

≈ 77

Test	40%
Quiz	30%
Hwk	5%
Midterm	5%
FR	5%
MC	15%

Test   90, 88, 75, 80   FR   65%

Quiz   95, 80, 60, 100   MC   70%

Hwk   100, 100, 100, 100

Midterm   60