

Statistical Measures

Per Capita - Means for each head

- In statistics, it is the average per person

- Calculated as:

$$\frac{\text{your statistic}}{\text{total number of people}}$$

1,000 burgers for 375 people

$$\text{per capita value} = \frac{1000}{375} = 2.67 \text{ burgers/person}$$

Percent Change - Measures a change in value over time

- Calculated as:

$$\frac{\text{new value} - \text{old value}}{\text{old value}} \times 100$$

Year	Profit (\$)
2005	186,000
2006	364,000
2007	728,000
2008	212,000
2009	-22,000

$$= \frac{728,000 - 364,000}{364,000} \times 100$$

Calculate

% change: 05-07

$$\frac{542,000}{186,000} \times 100$$

= 291%

% change: 08-09

$$\frac{-22,000 - 212,000}{212,000} \times 100\%$$

$$\frac{-234,000}{212,000} \times 100$$

$$= -1.10 \times 100$$

$$= -110\%$$

$$= \frac{364,000}{364,000} \times 100$$

$$= 1 \times 100$$

$$= 100\%$$

Student	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Grade	52	39	70	68	50	83	83	86	76	90	61	87	74	80	87	35	56	69	51

Percentile - A number between 1 and 99 indicating the percent of the population with a score less than or equal to a specific value.

used to determine the score of a given percentile

- Calculated as:

$$\frac{(n \times p) + 1}{2}$$

when $n \times p$ is a whole number
 $n \times p$ rounded up when $n \times p$ is a decimal

"What is the score of the 75th percentile"

n is number of entries

p is percentile as decimal (75th is 0.75)

Percentile Rank - The percent of the population with a score less than a specific score.

Used to calculate the percentile rank of a given score

- Calculated as:

$$P = \left(\frac{L + 0.5E}{n} \right) \times 100$$

L is # less than given score

E is # of scores equal to given score
 (*never less than 1)

n is number of entries/scores

Weighted Mean - A mean in which each component has a different weighted factor.

- To calculate a weighted mean, multiply each value by its weighted factor, then divide by the sum of the factors.

In MPM1D, your term mark is worth 70%, EQAO is worth 10%, your culminating is worth 5% and your exam is worth 15%.

A grade 9 gets 223/280 for their term mark, 76/90 on EQAO, 122/130 on their culminating and 112/140 on their exam.

What is their final mark?

① Determine % on each component

$$\text{Term} \rightarrow \frac{223}{280} = 79.6\%$$

$$\text{EQAO} \rightarrow \frac{76}{90} = 84.4\%$$

$$\text{Culm} \rightarrow \frac{122}{130} = 93.8\%$$

$$\text{Exam} \rightarrow \frac{112}{140} = 80\%$$

$$\frac{79.6 \times 70 + 84.4 \times 10 + 93.8 \times 5 + 80 \times 15}{70 + 10 + 5 + 15}$$

$$\frac{5572 + 844 + 469 + 1200}{100}$$

$$= \frac{8045}{100} = 80.45\%$$