Per Capita

In Statistics, Per Capita means the average per person in a population.

- Example 1 Many business, health, and economics statistics are expressed as per capita figures. In March 2008, the national wealth of Canada was \$5 702 000 000 000. The national debt was \$23 000 000 000. The population of Canada was 33 223 840.
 - a. What was Canada's per capita wealth?

b. What was Canada's per capita debt?

c. **Net worth** is calculated as total assets (wealth) minus total liabilities (debt). What was Canada's per capita net worth?

Percent Change

Percent change measures a change in value over time.

Democrat Chaman -	new value – old value	
Percent Change =	old value × 100	

Example 2 The table shows a company's profits each year for five years, as reported in a newspaper.

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

- a. Calculate the percent change in profit
 - i. from 2005 to 2006

ii. from 2008 to 2009

b. The company's financial report stated: "There was a 200% increase in profits from 2006 to 2007". Is this true?

c.

Percentile and Percentile Rank

A **percentile** is a number between 1 to 99 indicating the percent of the population with a score less than or equal to a specific value.

A **percentile rank** is the percent of the population with a score less than a specific score.

To find the percentile rank:

1. Sort the scores from least to greatest.

2. Use the formula
$$p = \left(\frac{L+0.5E}{n}\right) \times 100$$
 where

p is the percentile rank

L is the number of scores less than a particular score

E is the number of scores equal to the score (including itself)

n is the number of scores

Example 3 The table gives the scores on a high school math contest, ranked from lowest to highest.

Score	5	8	9	11	11	11	13	14	16	17	18	19
Rank	12	11	10	9	8	7	6	5	4	3	2	1

- a. Determine the percentile rank of each score
 - i. 14
 - ii. 11

To find the score that corresponds to a particular percentile:

- 1. Calculate $n \times p$
- 2. If $n \times p$ is a whole number: The position of the score is the mean or average of $n \times p$ and $(n \times p) + 1$

If $n \times p$ is a decimal number:

Round the number up to find the position of the score

- 3. Find the score using its position by counting from the lowest score
- Example 4 For the contest scores in Example 3, which score is in the
 - a. 75th percentile?
 - b. 95th percentile?

Weighted Mean

A weighted mean is used when each component in a calculation has a different weighting factor.

To calculate a weighted mean: Multiply each value by its weighting factor, add them up, then divide by the sum of the factors.

Example 5 The weightings for the 4 categories of achievement on assessments in this course are: Knowledge 40%, Application 30%, Thinking 15%, and Communication 15%. What is your overall mark if you get a test back with the following result:

K: 2- A: 3 T: 3+ C: 2