Learn

It's The Time Now To

&

STATISTICS

Enjoy

WHAT IS STATISTIC ?

A branch of mathematics that deals with the :

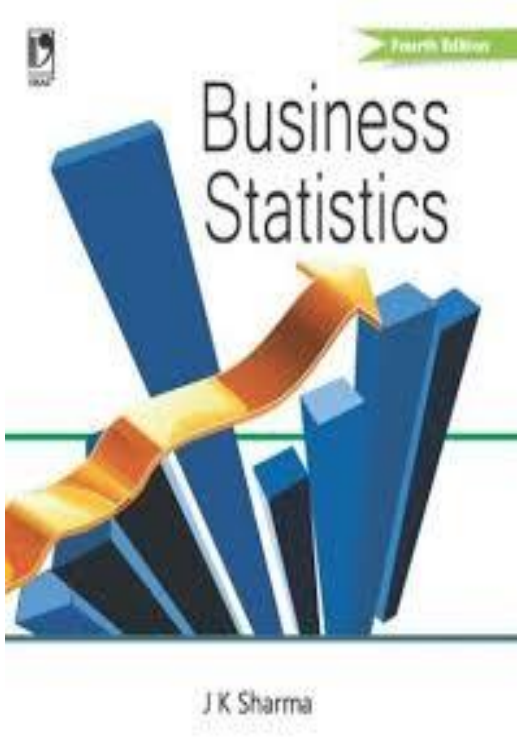
Collection
Organization
& Analysis
} *of numerical data*

What is the importance of statistics?

- *People use statistics as tools to understand information.*
- *Learning to understand statistics helps a person react intelligently to statistical claims.*
- *Statistics are used in the fields of business, math, economics, accounting, banking, government, astronomy, and the natural and social sciences.*

The Benefits of Using Business Statistics

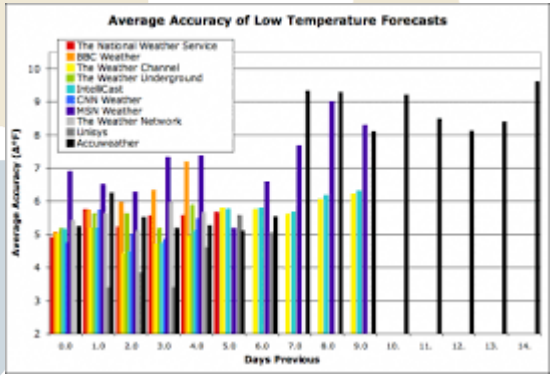
- *Business statistics can consist of historical data of competitive companies in an industry.*
- *They can consist of answers from questionnaires passed out to customers in a geographical region that use a specific product.*
- *Gathering statistics can be done in many ways, such as over the web, through email, in person,…*
- *It is a good idea to review business statistics prior to making a big decision with a company.*

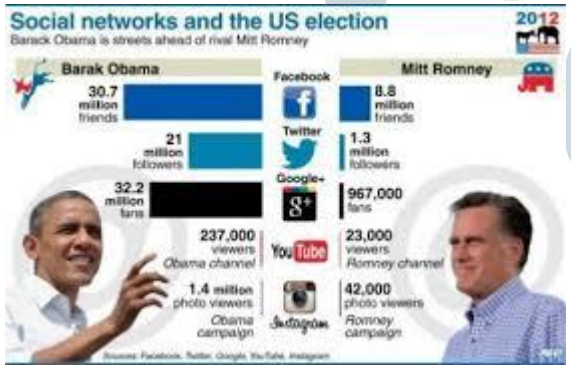


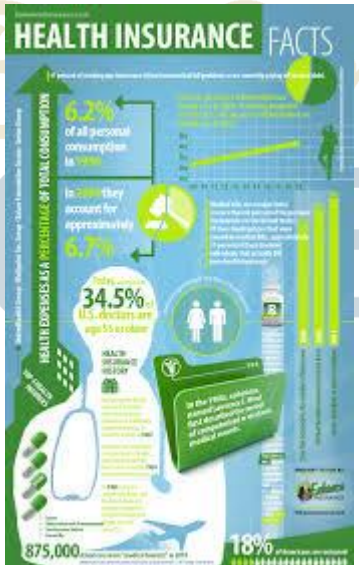
What is the importance of statistics in people's daily lives?

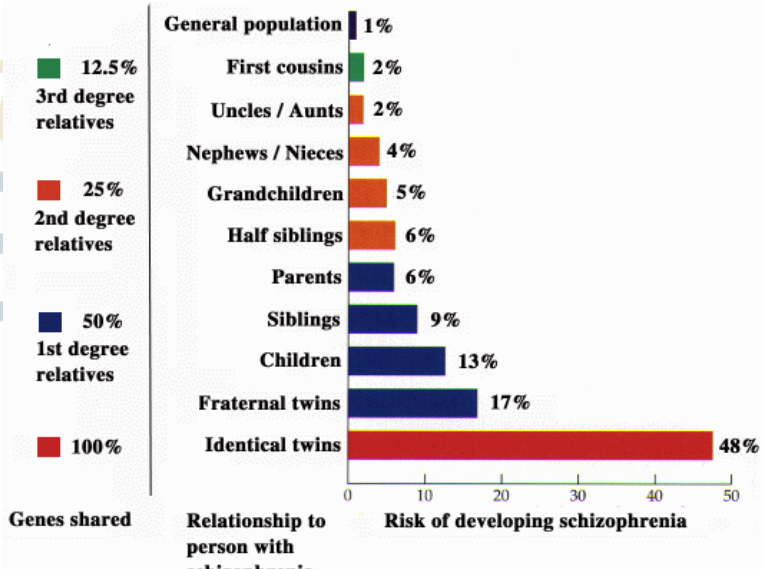
People use statistics daily for:

- *weather forecasts*
- *predicting disease*
- *preparing for emergencies*
- *medical research*
- *political campaigns*
- *tracking sales*
- *genetics*
- *insurance*
- *stock market*
- *quality testing.*

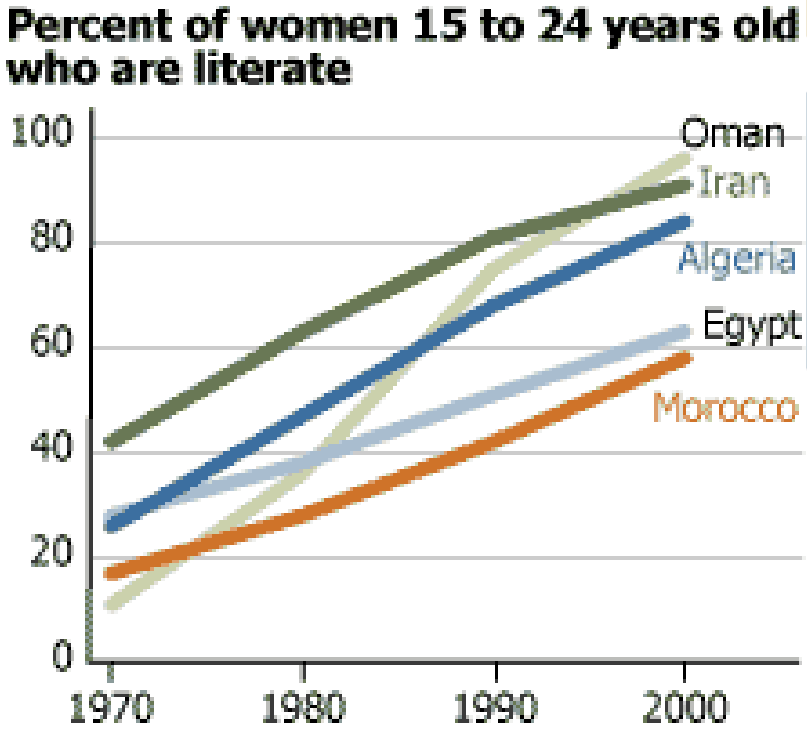






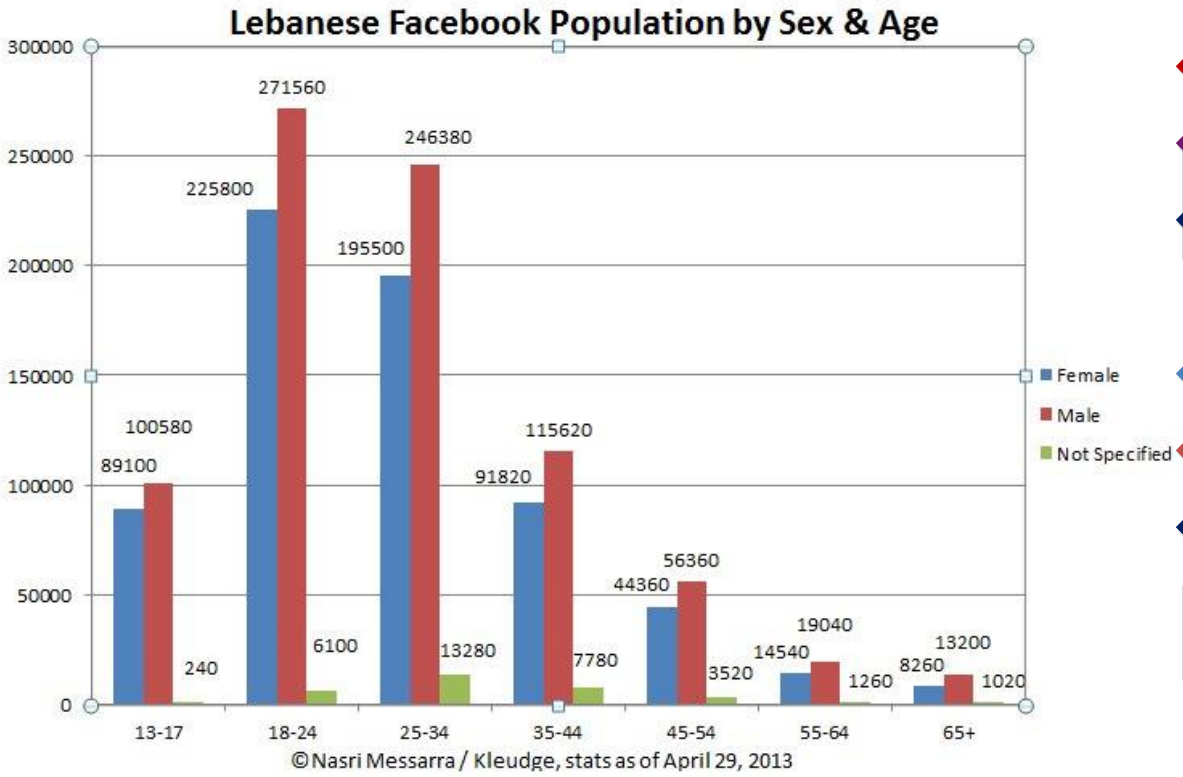


EXAMPLES ON SOME STATISTICAL STUDIES



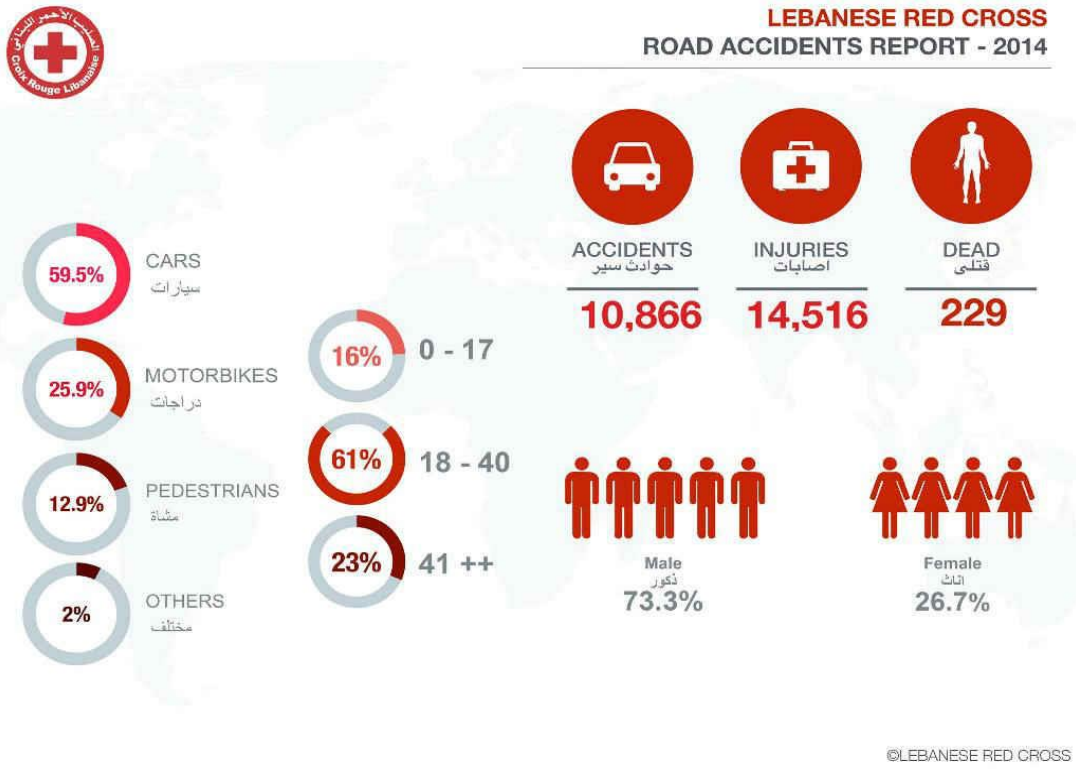
- *What is the studied character ?*
- *Which country had the highest record in 1970 ?*
- *Was the percentage of literate women increasing or decreasing during the 30 years ?*
- *What conclusion can be drawn ?*
- *Interpret the variation in the percent of literate women in Oman during years 1970 and 2000 .*
- *Formulate a hypothesis that explains this great improvement .*

EXAMPLES ON SOME STATISTICAL STUDIES



- What is the studied character? Nature?
- What is the population ?
- What is the model class for male ? female?
- Analyze the results obtained for male .
- Analyze the results obtained for female
- In your opinion , give two advantages and two disadvantages of using Facebook .

EXAMPLES ON SOME STATISTICAL STUDIES



- In each of the studied domains , mention the one with highest record
- Formulate a hypothesis to explain the highest records in the adjacent figure

STATISTICAL VCOBLUARIES

- *Population* : *is the group on which a statistical study is carried*
- *Individual* : *each element of the population*
- *Character* : *the phenomenon studied on a population . Its nature is one of the following :*
  - *Quantitative : measurable, like : age , mass , number of children , …*
  - *Qualitative : words , like : favorite food , hobby , nationality , …*
- *Total frequency : is the number of individuals in a population*
- *Frequency : is the number of individuals that verifies the value of a character*
- *Relative frequency* : $\frac{frequency}{Total}$, *it's a number between 0 and 1*
- *Percentage frequency* : $\frac{frequency}{Total} \times 100$
- *Angular frequency* : $\frac{frequency}{Total} \times 360$

For Quantitative Studies Only

- *Mean (Average)* : $\bar{x} = \frac{\sum x_i n_i}{N}$ *where :* x_i *is the character value*

  n_i *is the corresponding frequency*

  N *is the total frequency*

- *Increasing Cumulative Frequency : corresponding to value* x *of the character , is the sum of the frequencies whose value of character is less than or equal to* x

What is your age ?

Ages	14	15	Total
Frequency	12	8	20
Relative Frequency			
% Relative Frequency			
Angle			

Character :_____ **Nature :** _____

Population : _____

What is your age ?

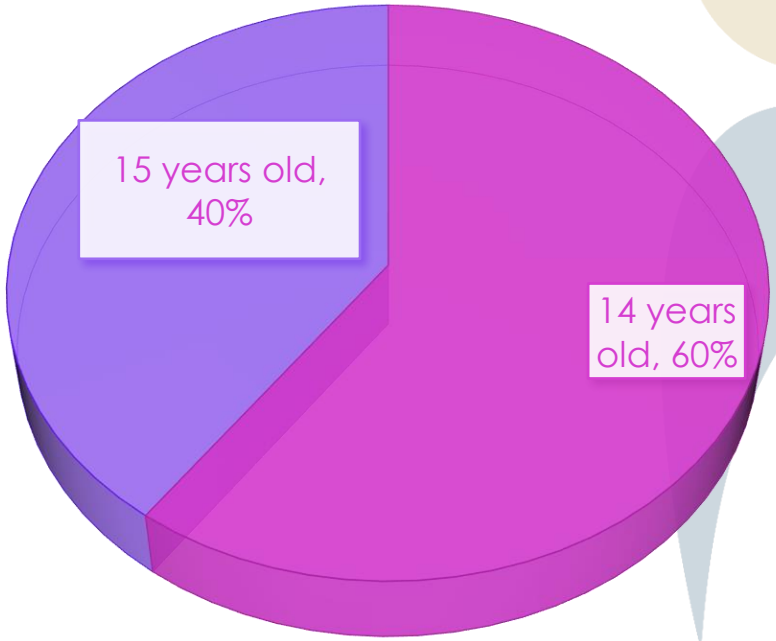
Ages	14	15	Total
Frequency	12	8	20
Relative Frequency	$\frac{12}{20} = 0.6$	$\frac{8}{20} = 0.4$	1
% Relative Frequency	$\frac{12}{20} \times 100 = 60\%$	$\frac{8}{20} \times 100 = 40\%$	100
Angle	$\frac{12}{20} \times 360 = 216°$	$\frac{8}{20} \times 360 = 144°$	360

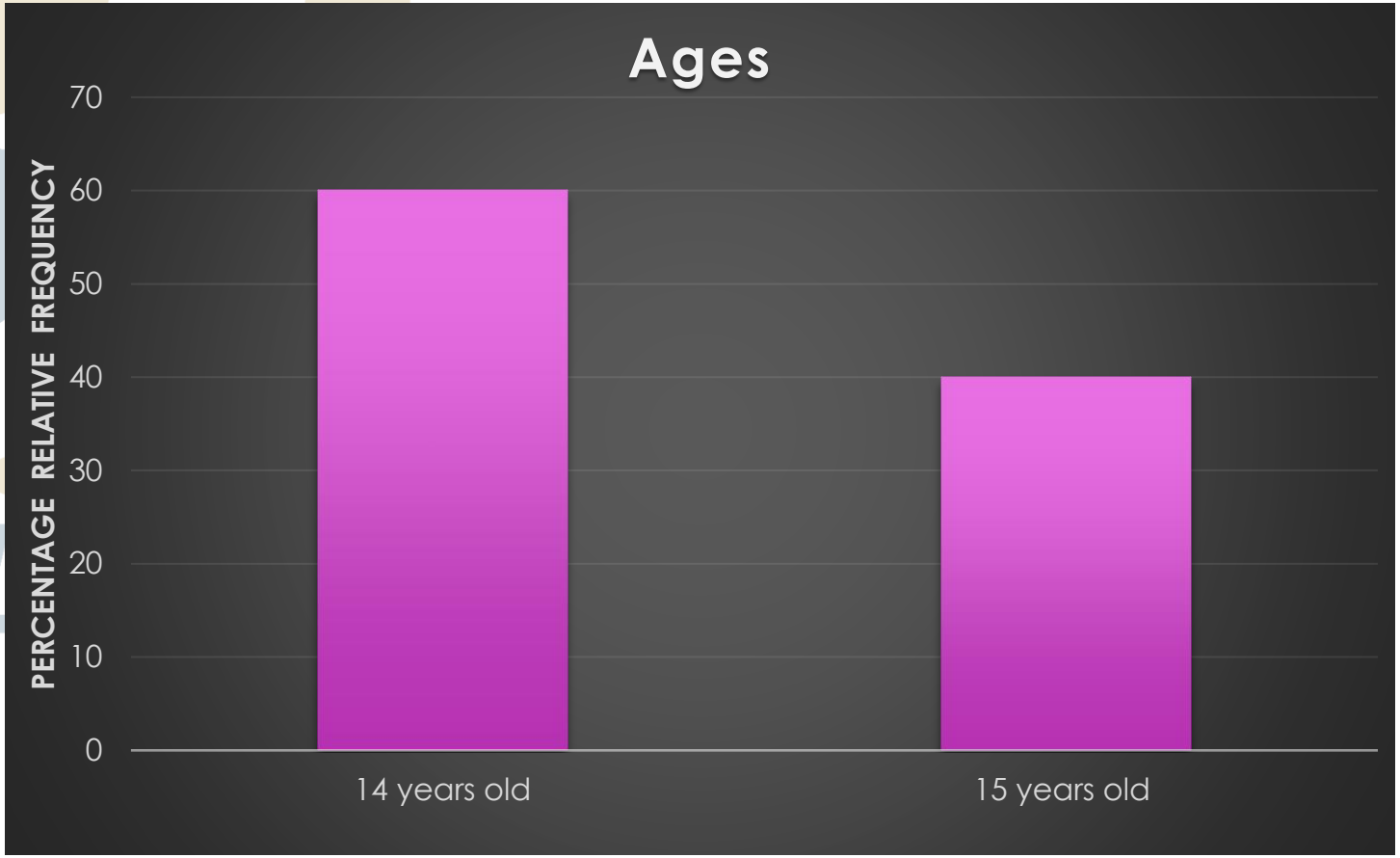
Character : Age of the student **Nature : Quantitative**

Population : ninth graders at FHS

What is your age ?

AGES OF NINTH GRADERS





What is your mass ?

Mass(kg)	[40,50[	[50,60[	[60,70[	[70,80[	[80,90[	[90,100[	Total
Frequency	5	5	3	3	2	2	20
% Relative frequency							
Angle							

Character : _____ **Nature :** _____

Population : _____

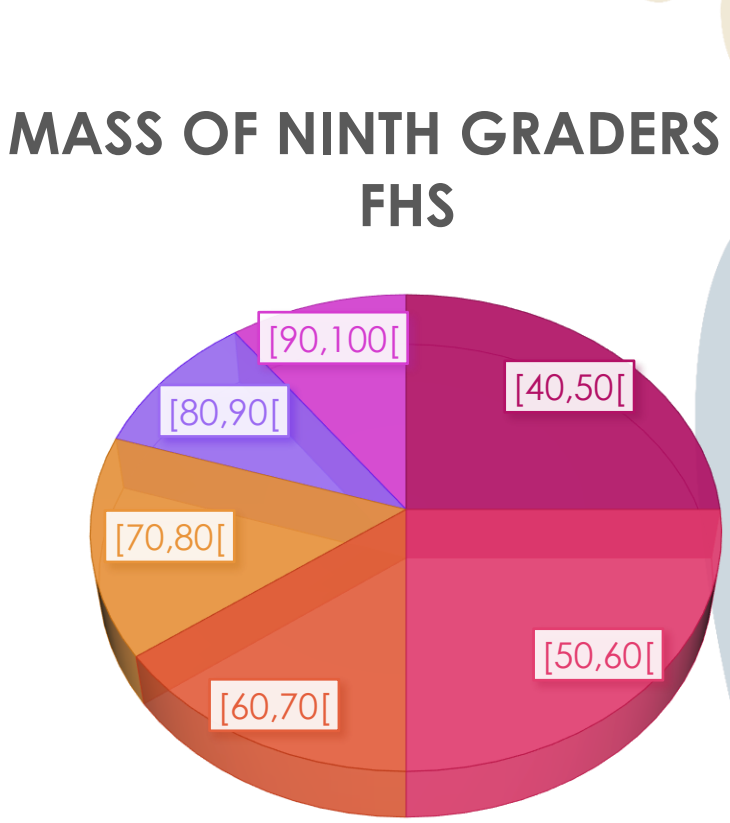
What is your mass ?

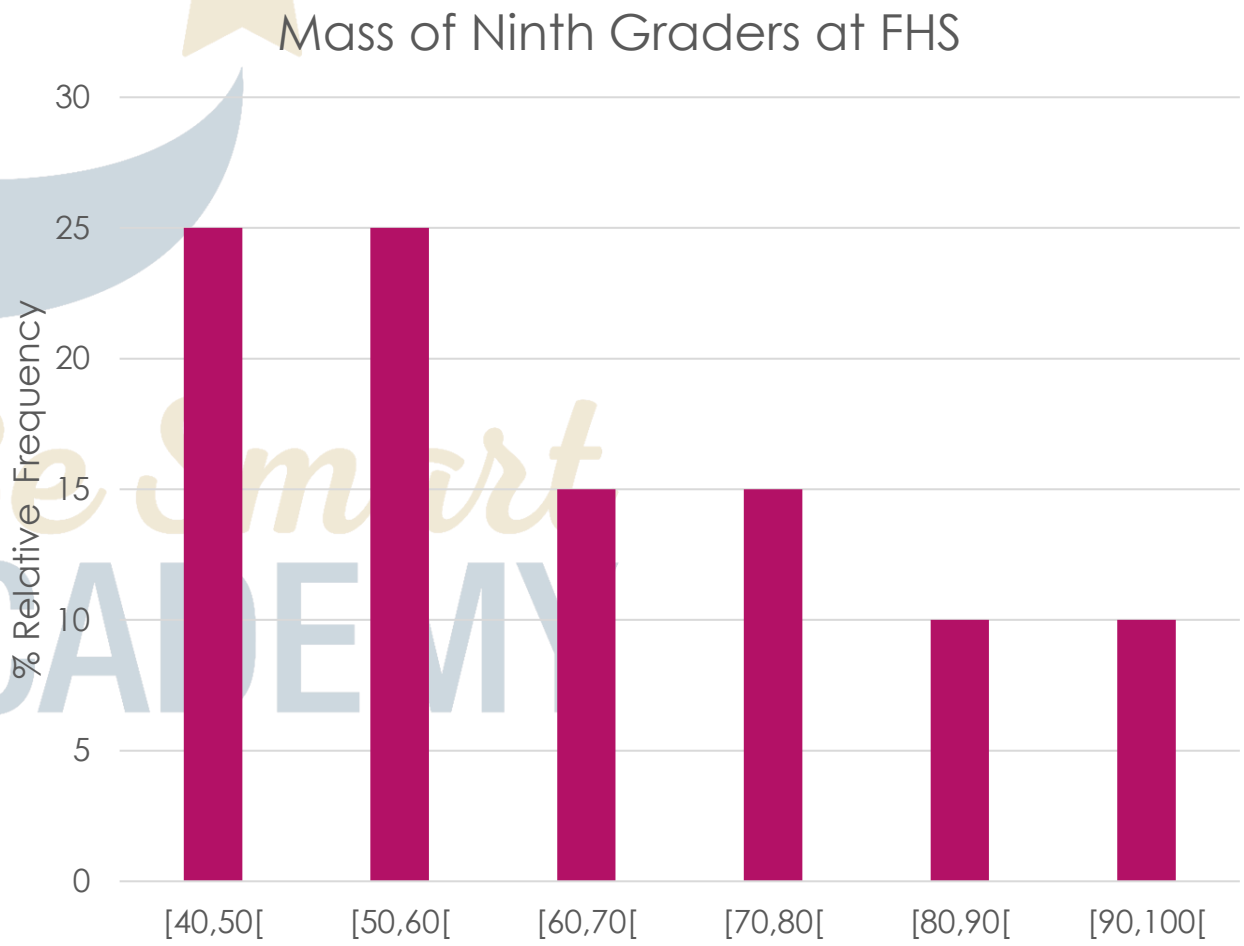
Mass(kg)	[40,50[	[50,60[	[60,70[	[70,80[	[80,90[	[90,100[	Total
Frequency	5	5	3	3	2	2	20
% Relative frequency	$\frac{5}{20} \times 100 = 25\%$	$\frac{5}{20} \times 100 = 25\%$	$\frac{3}{20} \times 100 = 15\%$	$\frac{3}{20} \times 100 = 15\%$	$\frac{2}{20} \times 100 = 10\%$	$\frac{2}{20} \times 100 = 10\%$	100
Angle	$\frac{5}{20} \times 360 = 90°$	$\frac{5}{20} \times 360 = 90°$	$\frac{3}{20} \times 360 = 54°$	$\frac{3}{20} \times 360 = 54°$	$\frac{2}{20} \times 360 = 36°$	$\frac{2}{20} \times 360 = 36°$	360

Character : Mass of the student **Nature : Quantitative**

Population : ninth graders at FHS

What is your mass ?





How many rooms are there in your home?

Number of rooms	2	3	4	5	6	7	Total
Frequency	1	4	1	8	3	3	20
Increasing Cumulative Frequency							

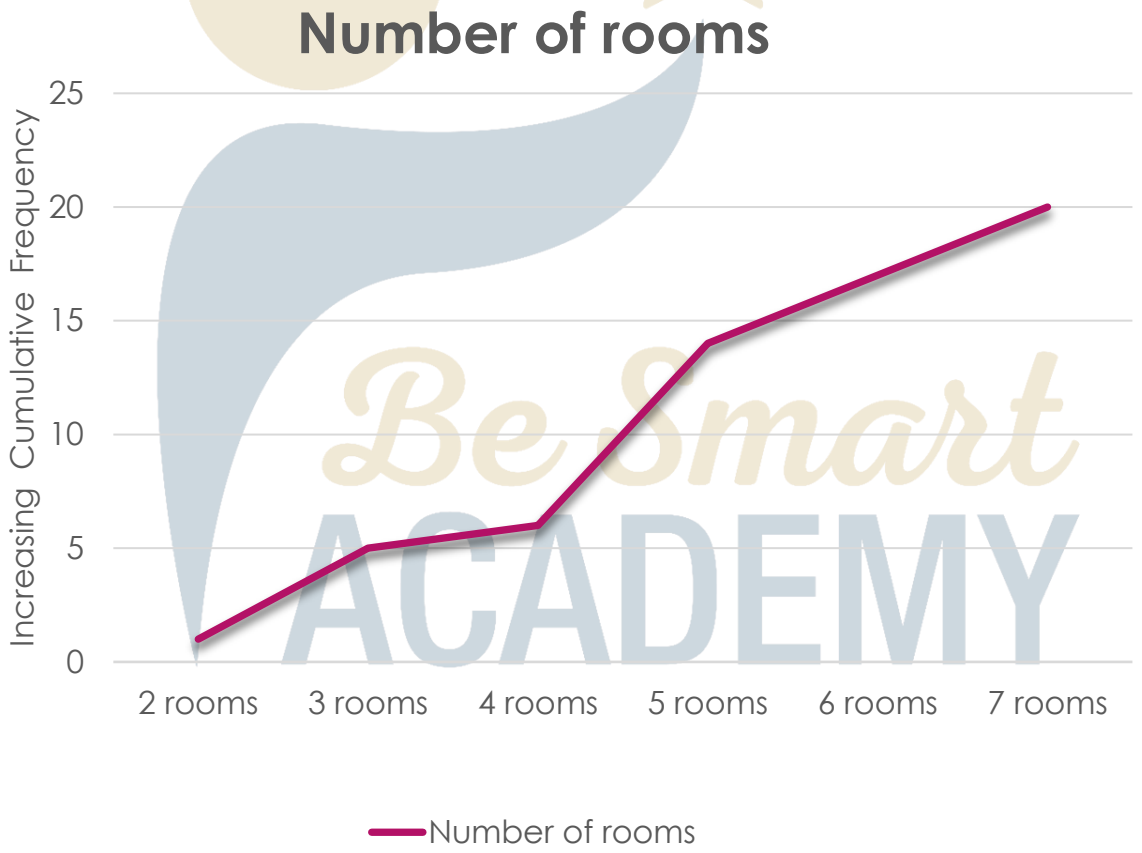
- What is the studied character ? Its nature ?
- What is the difference between F(4) and ICF(4) ?
- What is the number of students that have at most 5 rooms in their homes ?
- Find the percentage of students that have 4 rooms or less in their homes .

How many rooms are there in your home?

Number of rooms	2	3	4	5	6	7	Total
Frequency	1	4	1	8	3	3	20
Increasing Cumulative Frequency	1	5	6	14	17	20	

- Character is the number of rooms Nature : quantitative
- F(4)=1 :only one student has 4 rooms @ home
- ICF(4)=6 : there are six students having at most 4 rooms @ home
- There are 14 students that have at most 5 rooms in their homes
- %ICF(4)=$\frac{ICF(4)}{total} \times 100 = \frac{6}{20} \times 100 = 30\%$

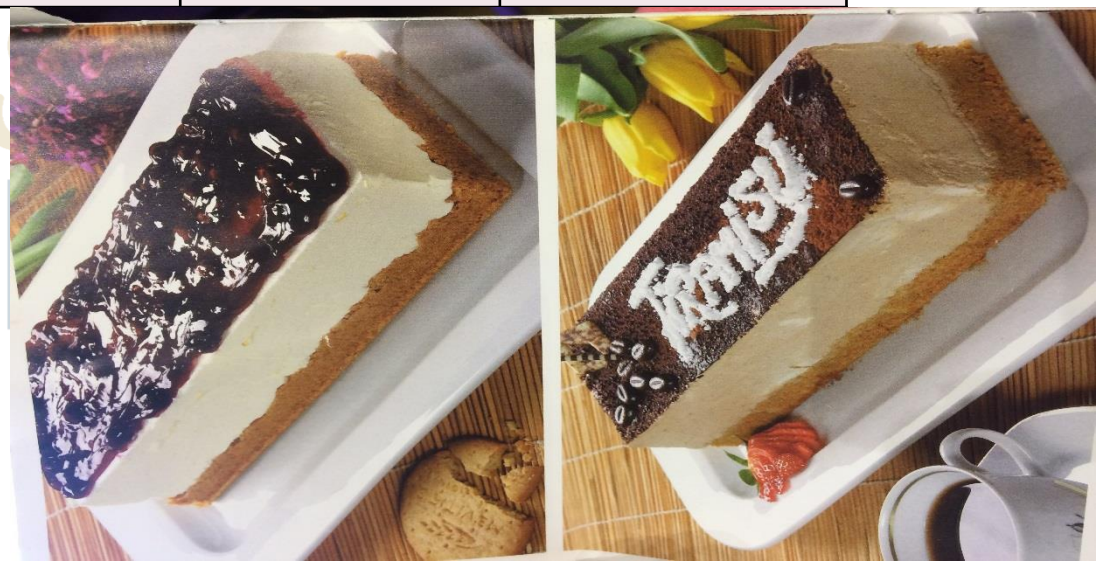
How many rooms are there in your home?



How many meals do you take in the day ?

Number of meals (x_i)	2	3	4	6	Total
Frequency(n_i)	1	12	4	3	20
$x_i n_i$					

$$\overline{x} = \frac{\sum x_i n_i}{N} = \_\_\_\_\_$$



How many meals do you take in the day ?

Number of meals (x_i)	2	3	4	6	Total
Frequency(n_i)	1	12	4	3	20
$x_i n_i$	2	36	16	18	72

$$\overline{x} = \frac{\sum x_i n_i}{N} = \frac{72}{20} = 3.6$$

What is your favorite color ?

Color	Red	Black	Blue	Green	Pink	Purple	Total
Frequency	3	5	7	1	2	2	20
Relative Frequency							
% Relative Frequency							

Character : _____ **Nature :** _____

Population : _____

What is your favorite color ?

Color	Red	Black	Blue	Green	Pink	Purple	Total
Frequency	3	5	7	1	2	2	20
Relative Frequency	$\frac{3}{20} = 0.15$	$\frac{5}{20} = 0.25$	$\frac{7}{20} = 0.35$	$\frac{1}{20} = 0.05$	$\frac{2}{20} = 0.1$	$\frac{2}{20} = 0.1$	1
% Relative Frequency	$\frac{3}{20}\times 100 =$ 15%	$\frac{5}{20}\times 100 =$ 25%	$\frac{7}{20}\times 100 =$ 35%	$\frac{1}{20}\times 100 =$ 5%	$\frac{2}{20}\times 100 =$ 10%	$\frac{2}{20}\times 100 =$ 10%	100

Character : Favorite Color **Nature : Qualitative**

Population : ninth graders at FHS

What is your favorite color ?