

# GROUPING DATA & TABLE OF VALUES

# TABLE OF VALUES - EXAMPLE

Let's consider the number of pets each of the 25 students in a Math class has. The **raw data** is in the box below.

2	3	1	0	2	1	2	3	1	0	0	3	
1	2	1	2	3	3	2	0	1	1	2	2	1

To group the data, we will make a simple **tallying table**.

In the left column of the **tallying table** we will write the four different answers that have appeared in the raw data; that is **0**, **1**, **2**, and **3**.

# of Pets	Tally
0	
1	
2	
3	

In the right column of the **tallying table** we will write the **tally** (how many times an answer was given) for each number of pets. **Remember that the symbol ||||| means that a value has occurred 5 times.**

# TABLE OF VALUES - EXAMPLE CONTINUED

The **tally table** tells us that **4** students have zero pets, **8** students have **1** pet, **8** students have **2** pets, and **5** students have **3** pets.

To better display the data in the **tally** column, we will add on another column to the right called the **frequency**. Notice that the **tally** and the frequency have the **same numerical values**.

# of Pets	Tally	Frequency
0		4
1		8
2		8
3		5

Next, we will add a row along the bottom that will display the total of both the tally and the frequency.

# of Pets	Tally	Frequency
0		4
1		8
2		8
3		5
Total	25	25

This confirms that we have the data from all 25 students in the Math class.

# ANALYSING DATA: RELATIVE FREQUENCY

The formula to calculate the **relative frequency** is:

$$\text{Relative Frequency} = \frac{\text{Frequency}}{\text{Total}} \times 100$$

**This means that the relative frequency is always written as a percentage.**

Let's calculate the relative frequency of a student having 2 pets.

Frequency of 2 pets = 8

Total number of students = 25

$$\begin{aligned}\text{Relative Frequency} &= \frac{\text{Frequency}}{\text{Total}} \times 100 \\ &= \frac{8}{25} \times 100 \\ &= 0.32 \times 100 \\ &= 32\%\end{aligned}$$

# ANALYSING DATA: RELATIVE FREQUENCY

Let's add a final column to our table to include the relative frequency.

# of Pets	Tally	Frequency	Relative Frequency
0	IIII	4	16%
1	IIII III	8	32%
2	IIII III	8	32%
3	IIII	5	20%
Total	25	25	100%

We used the same formula as above to calculate the remaining relative frequencies.

**Notice that the total for the relative frequency must add up to 100%.**

# CLASSES

Sometimes we will want to group raw data into **classes**. We will do this when there is a large amount of raw data and if the numbers are distinct (very few repeating data values).

Each **class** will be defined by an interval like **[ 0 , 10 [** ; where this means that this interval includes all of the data from including **0** to any number **less than 10**.

The next interval would be **[ 10, 20 [** ; where this means that the interval includes all of the data from including **10** to a number **less than 20**. That is, a number from **10** to **20**, but **not including 20**.

# CLASSES - EXAMPLE

Let's consider the number of minutes each of the students in a gym class can jog around a track. The raw data is in the box below.

35	45	49	48	29	65	48	38	25	28
40	52	55	36	17	41	33	69	47	37

First, we notice that none of the data values are repeated so we need to put them into classes.

Next, we see that the lowest number is **17** and the highest number is **69**.

This means that our first interval can be **[ 10 , 20 [** and that our last interval can be **[ 60 , 70 [**. Notice that the length of our intervals is always the same; in this case the interval length is **10**.

# CLASSES - EXAMPLE

So this time the left column will display the intervals and the right column will do a tally of the numbers that fall in that interval.

Class	Tally
[ 10 , 20 [	I
[ 20 , 30 [	III
[ 30 , 40 [	IIII
[ 40 , 50 [	IIII II
[ 50 , 60 [	II
[ 60 , 70 [	II

Now, we can add a frequency column and a total row.

Class	Tally	Frequency
[ 10 , 20 [	I	1
[ 20 , 30 [	III	3
[ 30 , 40 [	IIII	5
[ 40 , 50 [	IIII II	7
[ 50 , 60 [	II	2
[ 60 , 70 [	II	2
Total	20	20



# CLASSES - EXAMPLE

$$\text{Relative Frequency} = \frac{\text{Frequency}}{\text{Total}} \times 100$$

So for the class **[ 40 , 50 [** ,

Frequency = 7

Total = 20

$$\begin{aligned}\text{Relative Frequency} &= \frac{7}{20} \times 100 \\ &= 0.35 \times 100 \\ &= 35\%\end{aligned}$$

# CLASSES - EXAMPLE

Let's add a final column to our table to include the relative frequency.

Class	Tally	Frequency	Relative Frequency
[ 10 , 20 [	I	1	5%
[ 20 , 30 [	III	3	15%
[ 30 , 40 [	III	5	25%
[ 40 , 50 [	III II	7	35%
[ 50 , 60 [	II	2	10%
[ 60 , 70 [	II	2	10%
Total	20	20	100%