

6 Worksheet on Statistics: Tables, Graphs, Charts

Text: websites containing relevant statistics

Source 1: <http://www.who.int/countries/ind/en/>

Source 2: <http://www.who.int/countries/deu/en/>

(Please copy and paste these hyperlinks into your browser.)

A HOW TO DEAL WITH STATISTICS

The word “Statistics” has two meanings. It can be a set of numbers which represent facts or measurements, but it is also a term for the science of collecting and examining such numbers (as a branch of mathematics).

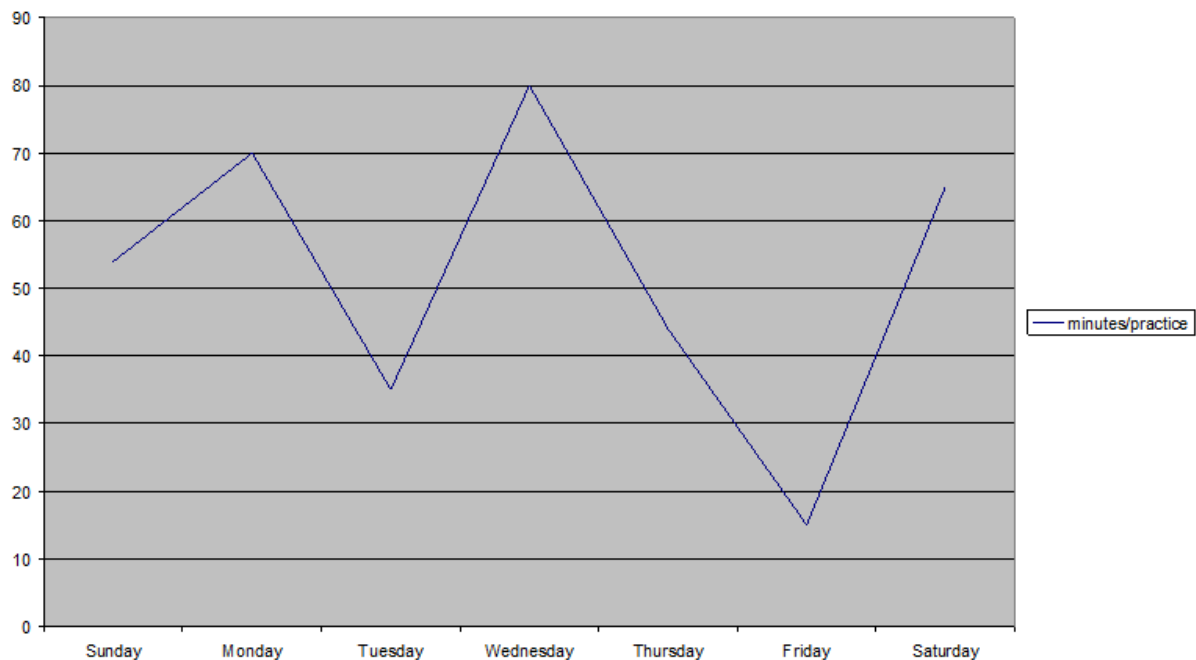
Scientific studies often produce an overwhelming amount of data, expressed in numbers. When they are displayed, they are arranged in tables, graphs or charts, ideally in such a way that even the non-expert reader can make sense of them.

The most basic form of arranging data is a **table**. The following example shows how many minutes per day a music student called Wolfgang practised the piano in a certain week.

| day | minutes/practice |
|-----------|------------------|
| Sunday | 54 |
| Monday | 70 |
| Tuesday | 35 |
| Wednesday | 80 |
| Thursday | 44 |
| Friday | 15 |
| Saturday | 65 |

The simplest graphical arrangement of a straightforward set of corresponding data that show a development during a certain period of time (as for Wolfgang's piano practice above)

minutes of piano practice per day



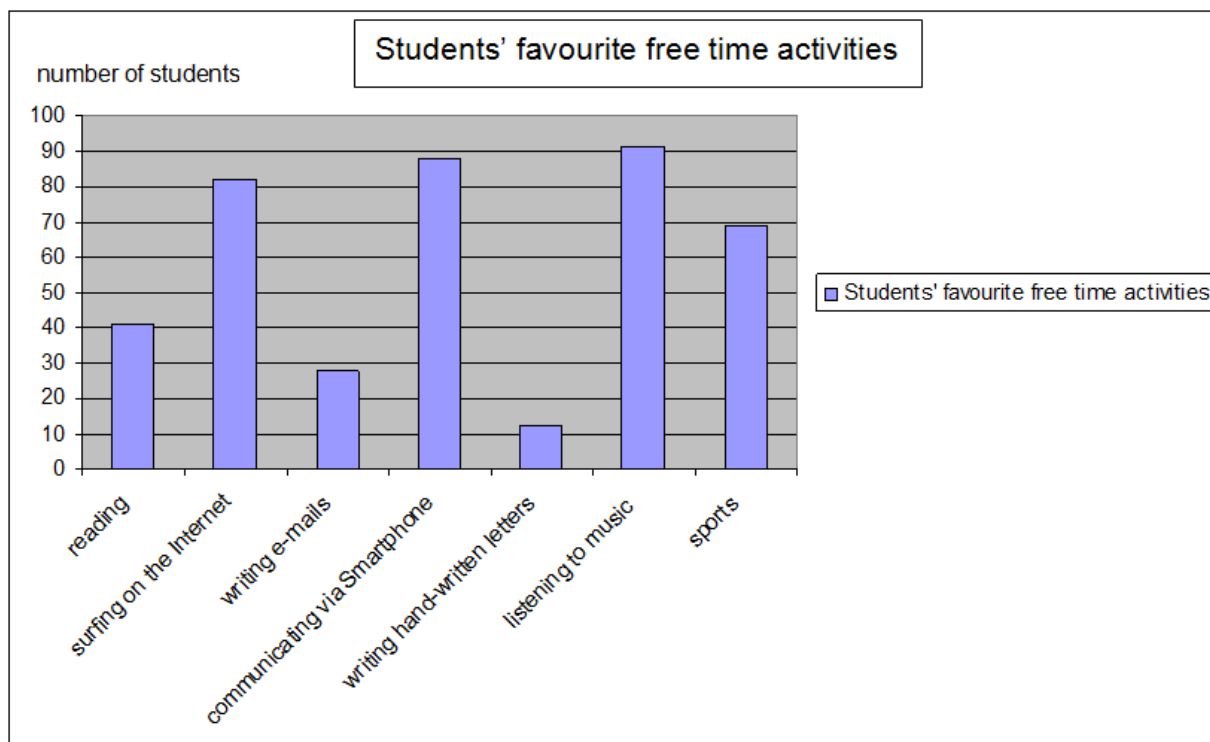
is a **line graph**. The following example uses the data in the table above.

If the data in a table do not change over time, but each quantity listed in the table corresponds to a particular category, a **bar graph** is a useful way to display them, either vertically or horizontally.

Example:

| Students' favourite free time activities (100 students) | |
|---|----|
| reading | 41 |
| surfing on the internet | 82 |
| writing e-mails | 28 |
| communicating via Smartphone | 88 |
| writing hand-written letters | 12 |
| listening to music | 91 |
| sports | 69 |

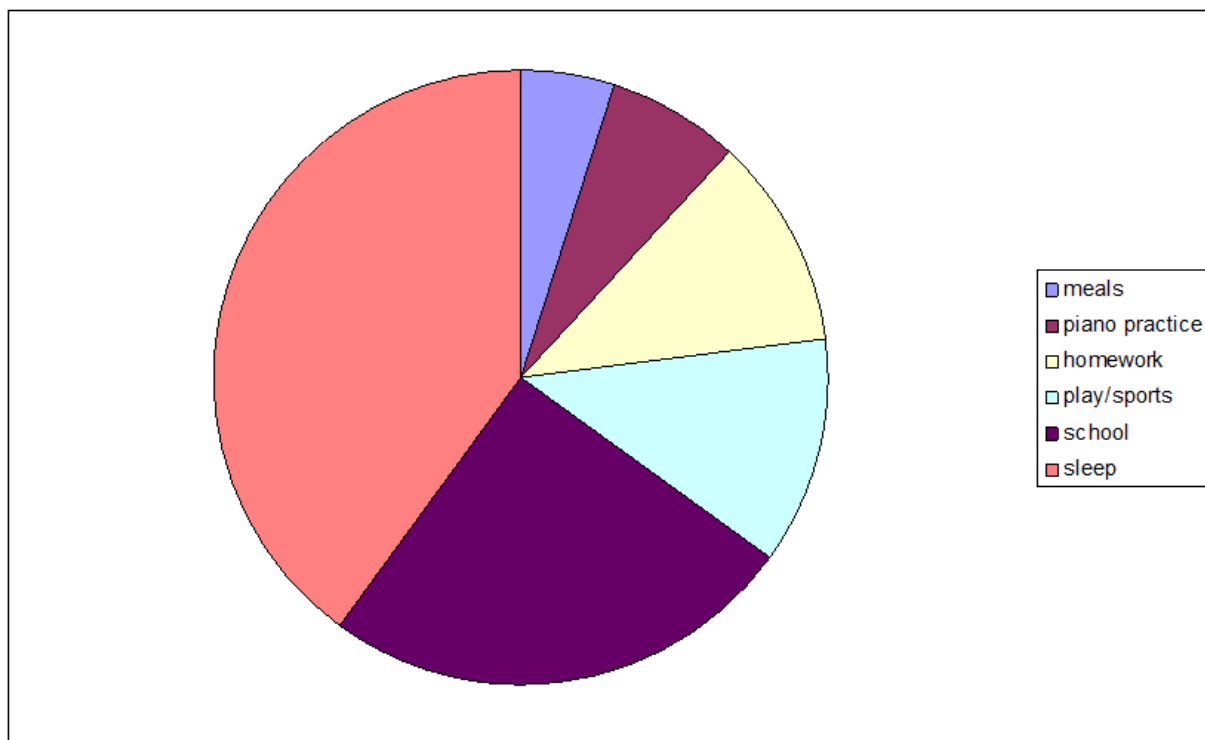
In the vertical bar graph below, each quantity is represented by a vertical bar.



A **circle graph** (also called **pie graph**, or **pie chart**) is used to show how the whole of something is divided into parts. The whole circle or pie graph stands for the entire sample. The pieces of the pie in the circle graph are called “sectors”.

In the example on the following page, the whole pie graph represents a day in Wolfgang's life, and the sectors show with what activities he spends a typical day; in the table, the numbers stand for how many per cent the activity takes up within the 24 hours of a day.

| activity | % / day |
|----------------|---------|
| meals | 5 |
| piano practice | 7 |
| homework | 11 |
| play/sports | 12 |
| school | 25 |
| sleep | 40 |



The fundamental rule to observe for interpreting tables, graphs and charts is to concentrate on the legend, i.e. the labels telling you what stands for what. Only if you know what the numbers in a column or the sectors in a pie graph stand for, and what measuring unit is used (centimetres, metres, or kilometres?), can you make sense of the information.

B TASKS

1. Look at the table of statistical data about India at the site of the World Health Organization (WHO) at this address: <http://www.who.int/countries/ind/en/> and then compare the data with those about Germany at this address, also provided by the WHO: <http://www.who.int/countries/deu/en/> (please copy and paste these hyperlinks into your browser). Please concentrate on the seven lines next to the maps of India and Germany.

Write a short text (coherent, in full sentences) in which you present the differences between India and Germany as they become apparent in these data.

Vocabulary and explanations:

gross - here: before taxes; **per capita** - for each person; **PPP** stands for “purchasing power parity”, a system that makes international currencies comparable; for more details, refer to http://en.wikipedia.org/wiki/Purchasing_power_parity ; **m/f** - male/female; **GDP** - gross domestic product, which is the total market value of all final goods and services produced in a country in a given year

2. Choose a way to visualise the data in the first two lines (total population and gross national income per capita). You can either do this by hand or in a computer program.

(Peter Ringeisen)