

1.1 Number Formats and Conventions

A million has 6 zeroes: 1 000 000

A billion/milliard has 9 zeroes: 1 000 000 000

A trillion has 12 zeroes: 1 000 000 000 000

Sometimes one can become confused between the use of a comma and the point. In South Africa the decimal comma separates the whole number from the fraction.

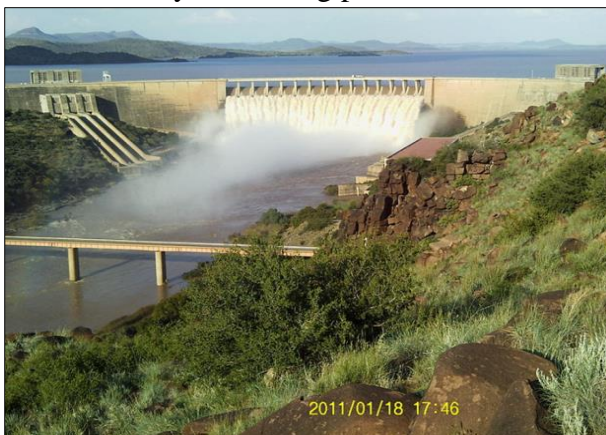
e.g. 3 000 000,453

Note, however, that some calculators use a comma to separate the thousands and the point to separate the fractions, e.g. 3,000,000.453 while others use spaces e.g. 3 000 000.453; it can also be represented as 3'000'000,453

To indicate an amount of money, separate the Rand from the cents with a comma and use spaces to indicate thousands e.g. R123 345,45

1 Exercise 1: Large Numbers

- (a) The Gariep Dam is the largest water reservoir in South Africa. This dam has a total storage capacity of approximately 5,3 trillion litres. It has a surface area of more than 370 square kilometres.
- (i) The capacity of one Olympic standard swimming pool is 2,5 million litres. How many swimming pools will fill the Gariep Dam?



Ref: Wikipedia



Ref: Wikipedia

- (ii) A factory uses about 287 458 kl of water to manufacture a product. How many Olympic standard swimming pools will this factory empty in the process?

(iii) The wall of the Gariep Dam is 88 m high and contains approximately 1,73 million cubic metre concrete. One concrete truck takes 6 m^3 . How many trucks of concrete did they order to build this wall?



(iv) The surface area of South Africa is $1\,221\,037 \text{ km}^2$. What percentage of South Africa's surface area is taken by the Gariep Dam with a 370 square kilometres surface?

(b) South Africa's population is estimated at 48 million people. If the average household has more or less 6 members, how many households are in the country?



(c) The surface area of South Africa is $1\,221\,037 \text{ km}^2$ and its population is estimated at 48 million people. What is the average number of people per square kilometre?

(d) The sun is 148 million km from the earth and a space shuttle can reach a height of 207 thousand km above the earth. How many times more will it have to travel this distance in order to reach the sun?

Ref: Wikipedia

(e) The average distance between the earth and the moon is 384 392 km. How much further is the sun from the moon?

(f) $300\,000\,000 \text{ m/s}$ is the speed of light. Write this speed in words.

(g) In 1996, researchers found that 5,6 million adults in England had taken illegal drugs in the previous year. By 2009, this number had fallen substantially, to 4,4 million. What was the difference in the number of people between 1996 and 2009?

