

## Scientific Notation

### 1. Calculate (**Give your answers in Scientific Notation**)

(a)  $(2.5 \times 10^5) \times (3 \times 10^4)$

(b)  $(2.2 \times 10^6) \times (4 \times 10^{-2})$

(c)  $(1.65 \times 10^{-4}) \times (7 \times 10^7)$

(d)  $(4.6 \times 10^4)^2$

(e)  $(5.6 \times 10^{-2}) \times 42\,000$

(f)  $34\,000\,000 \times (2.25 \times 10^4)$

(g)  $(7.8 \times 10^7) \div (3 \times 10^3)$

(h)  $(6.16 \times 10^5) \div (4 \times 10^3)$

(i)  $(4.23 \times 10^6) \div (7.5 \times 10^{-3})$

(j)  $(9.22 \times 10^8) \div 55\,000$

(k)  $42\,000\,000 \div (6.3 \times 10^4)$

(l)  $7.5 \text{ million} \div (2.2 \times 10^4)$

2. A test tube contains  $3 \times 10^4$  cubic millimetres of water. If each cubic millimetre of water contains  $1.75 \times 10^3$  bacteria, how many bacteria are in the test tube?

**Give your answer in Scientific Notation.**

3. A biologist is carrying out a study into coral on the Great Barrier Reef of Australia. He estimates 1 cubic metre of coral contains  $5.66 \times 10^5$  individual animals. How many individual animals would there be in 10 000 cubic metres of coral?

**Give your answer in Scientific Notation.**

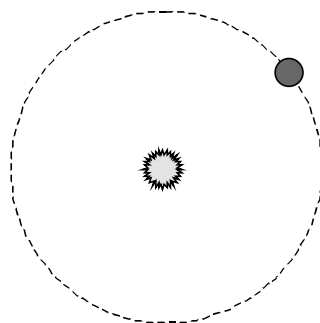


4. A new airport terminal has been open for 200 days. In total  $2.66 \times 10^7$  passengers have passed through the terminal. Calculate the average number of passengers passing through the terminal each day.

**Give your answer in Scientific Notation.**

5. In one orbit of the Sun the planet Mercury travels approximately  $3.48 \times 10^8$  kilometres. This orbit takes 88 days. Calculate the speed of Mercury, in kilometres per **hour**, as it travels round the Sun.

**Give your answer in Scientific Notation.**



6. A comet travels a distance of  $5.33 \times 10^8$  kilometres in one year. Calculate the speed of the comet in kilometres per hour.

**Give your answer in Scientific Notation.**



7. A space telescope discovers a new galaxy, a distance of 125 million light years from Earth. One light year is approximately  $9.46 \times 10^{12}$  kilometres.

Calculate the distance of the galaxy from Earth in kilometres.

**Give your answer in Scientific Notation.**



8. There are  $6.02 \times 10^{23}$  particles in one mole of carbon.  
How many particles are there in 700 moles of carbon. **Give your answer in Scientific Notation.**

9. A stagnant fish pond is estimated to contain  $4.77 \times 10^{14}$  bacteria.  
The volume of the pond is  $600 \text{ m}^3$ .  
Calculate the average number of bacteria in each cubic metre of the pond.  
**Give your answer in Scientific Notation.**



10. The speed of light in a vacuum is approximately  $2.998 \times 10^8$  metres per second.  
How far does light travel in one day?  
**Give your answer in Scientific Notation.**

11. In the year 2005, British Petroleum posted profits of 16.2 billion dollars.  
Calculate the profit BP made per minute in 2005.  
**Give your answer in Scientific Notation.**

12. The radius of the Earth at the equator is approximately  $6.38 \times 10^6$  metres.  
Assuming the earth is circular at the equator, calculate its circumference.  
**Give your answer in Scientific Notation.**



13. A full grown adult female blue whale weighs about  $1.65 \times 10^5$  kilograms.  
This is 60 times as heavy as a newborn blue whale calf.

Calculate the weight of a newborn blue whale calf.  
**Give your answer in Scientific Notation.**



14. In June 2008, a census by the US state department estimated the population of Denmark to be  $5.47 \times 10^6$ .  
The same census put the population of China at 240 times that of Denmark.  
Calculate the population of China. **Give your answer in Scientific Notation.**

15. The total number of visitors to an exhibition was  $3.465 \times 10^5$ .  
The exhibition was open every day from 3<sup>rd</sup> April to 26<sup>th</sup> August inclusive.  
Calculate the average number of visitors per day to the exhibition.  
**Give your answer in Scientific Notation.**

16. In Astronomy, distances can be measured using different units.  
For example

$$1 \text{ parsec} = 3.08 \times 10^{13} \text{ kilometres}$$

Calculate the number of kilometres in  $4.2 \times 10^3$  parsecs.  
**Give your answer in Scientific Notation.**

17. Calculate

(a)  $\frac{(4.2 \times 10^5) \times (3.4 \times 10^{-2})}{6.7 \times 10^2}$

(b)  $\frac{(1.3 \times 10^{-2}) \times (2.33 \times 10^9)}{7.5 \times 10^3}$

(c)  $\frac{(4.5 \times 10^5)^2}{2.88 \times 10^{-4}}$

(d)  $\frac{9.32 \times 10^6}{(1.2 \times 10^{-3})^2}$

**Give your answers in Scientific Notation.**

18. The mass of water on the Earth's surface is  $1.41 \times 10^{18}$  tonnes.

The total mass of the Earth is  $5.97 \times 10^{21}$  tonnes.

Express the mass of water on the Earth's surface as a percentage of the total mass of the Earth.

**Give your answer in Scientific Notation.**

19. A major British company made  $\pounds 1.9 \times 10^3$  profit each **minute** in the year 2007. The company had 78 400 employees that year.

Calculate the **annual** profit made per employee in the year 2007.

**Give your answer in Scientific Notation.**

20. A human body contains approximately  $2.6 \times 10^{13}$  blood cells.

At any one time the number of these which are white blood cells is about  $7.5 \times 10^9$ .

Express the number of white blood cells in the body as a percentage of the total number of cells.

**Give your answer in Scientific Notation.**

