

## Calculations using Scientific Notation

1) The total number of visitors to an exhibition was  $2.925 \times 10^7$ .

The exhibition was open each day from 5 June to 29 September inclusive.

Calculate the average number of visitors per day to the exhibition.

June 26 days (30 days - 4 = 26 days)  
July 31 days  
Aug 31 days  
Sept 29 days

first 4 days of  
June not  
included.

$$26 + 31 + 31 + 29 = 117 \text{ days } \checkmark$$

$$2.925 \times 10^7 \div 117 \checkmark$$

$$= 250000 \text{ visitors } \checkmark$$

$$\text{OR, } 2.5 \times 10^5 \text{ visitors}$$

## Calculations using Scientific Notation

- 2) Large distances in space are measured in light years.  
A camera on a space telescope photographs a galaxy, a distance of 50 million light years away.  
One light year is approximately  $9.46 \times 10^{12}$  kilometres.  
Calculate the distance of the galaxy from the space telescope in kilometres.  
**Give your answer in scientific notation.**

$$9.46 \times 10^{12} \times 50\,000\,000 \checkmark$$

$$= 4.73 \times 10^{20} \text{ km } \checkmark$$

## Calculations using Scientific Notation

- 3) The annual profit (£) of a company was  $3.2 \times 10^9$  for the year 1997.  
What profit did the company make per second?  
Give your answer to **three significant figures**.

$$3.2 \times 10^9 \div 365 \div 24 \div 60 \div 60 \quad \checkmark$$

$$= 101.47133 \dots \quad \checkmark$$

$$= \pounds 101 \quad \checkmark$$

## Calculations using Scientific Notation

4) A newspaper report stated:

“Concorde has now flown  $7.1 \times 10^7$  miles.  
This is equivalent to 300 journeys from the earth to the moon.”

Calculate the distance from the earth to the moon.

Give your answer in **scientific notation correct to 2 significant figures.**

$$7.1 \times 10^7 \div 300 \quad \checkmark$$

$$= 236666.666\dots \quad \checkmark$$

$$= 2.4 \times 10^5 \text{ miles} \quad \checkmark$$

## Calculations using Scientific Notation

- 5) 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**.

$$\frac{1.41 \times 10^{18}}{5.97 \times 10^{21}} \times 100 \quad \checkmark$$

$$= 0.02361\dots \% \quad \checkmark$$

$$= 2.36 \times 10^{-2} \% \quad \checkmark$$
