

Big Numbers

Some big numbers

Write down the numbers

- one million
- one billion
- one trillion

What comes next? What is it called? quadrillion.

Can you write down the numbers in a googol? 10^{100}

What about a googolplex? 10^{googol}

Measuring distances in space

Astronomers have developed units for measuring distances in space to avoid having to put in all those zeros.

- Astronomical unit

This is the distance from the sun to the earth. How far is that?

150 000 000 km

- Light year

Find out how fast light travels in km/s.

300 000 km/s

If you could travel at the speed of light how long would it take to travel from Sydney to Perth?

About a tenth of a second

What about from the sun to the earth?

About 8 minutes

A light year is the distance travelled by light in a year.

Why do astronomers use light years for their measurements?

How “big” is a light year?

9 500 000 000 000 km

Our planet is in the Milky Way Galaxy which is 150 000 light years across.

The nearest galaxy to ours is the Andromeda Galaxy which is 2.3 million light years across.

- Parsecs

What is “parsec” an abbreviation for?

*The **par**allax of one **arc-second***

How big is a parsec?

About 3.36 light years or just under 31 trillion kilometres

What about infinity?

“To infinity, and beyond!” is Buzz Lightyear’s (from the movie Toy Story) cry as he launches himself into space.

How big is infinity? Why doesn’t Buzz’s cry make sense?