



The Speed of Light

The universe's speed limit, and how far away everything really is

How fast is fast?

186,282

miles per second

7.5

trips around Earth in
one second

1.3

seconds from the
Moon

8 min 20 s

from the Sun

Nothing with mass can reach this speed. It's the universe's speed limit.

Light-years: distance, not time

Object	Distance	Its light left...
The Moon	1.3 light-seconds	A moment ago
The Sun	8.3 light-minutes	Before you finished your coffee
Proxima Centauri (nearest star)	4.2 light-years	About four years ago
Center of our galaxy	About 26,000 light-years	Before farming began
Andromeda Galaxy	About 2.5 million light-years	Before modern humans existed

One light-year is about 5.9 trillion miles, the distance light travels in a year.

Looking back in time

Every view is old news

- You see the Sun as it was 8 minutes ago
- You see stars as they were years ago
- Some stars you see may no longer exist

Why it matters

- Telescopes are time machines
- The farthest light shows the young universe
- Radio to Mars takes 3 to 22 minutes each way

Remember

Look up at night and you're seeing the past.