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Ask Me Anything

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The Universe is everything we can see, and a lot that we can't see. It was created

How to: create the Universe

02.

that is 76 per cant hybrogin

or the first adopted to form a min

How old is the Universe?

The Universe is about 13.7 billion years old. At its beginning it looked nothing like it does today. Yet. everything in today's Universe did exist in some form back then. It all started with the Big Bang, a kind of explosion that would not only go on to produce all the matter in the Universe but also marked the start of time.



WHAT'S

IN A NAME?

The term "Big Bang"

was coined by Fred

Hoyle in 1950 to illustrate

to his radio listeners the

difference between it and his

01. Start tene with

a Elio Eang - a materia

explosion that lasts for

less than one trillorth.

of a second that will

mate line particles of

radiation smaller than

the size of a full stop.

in the Big Bang explosion and has been changing and expanding ever since.

Looking back

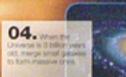
We see objects in space because of their light. Stars produce their own but others, such as the Moon and planets, shine by reflecting light.

Light travels at 299,800 km per second (186,287 miles per second) faster than anything else.

Distant stars are seen as they were in the past - when the light left them.

The most distant galaxies we see are about 13 billion light years away, and as they were in 4 the early Universe.





Bigger and bigger



Planets Stars Earth may leel big to Planets arbit stars - our star is the Sun Without it 07.905 milest across d Every would be no tile if it just a speck in at measures 1.4 million Arts expanding Universe dt70.000 milesi across



and shapes. Earth is in the Malky Way Colory

externation 1

3		
La manda	Duster	

the Milky Way Gallery II, IA The Local Group cluster, stretching 10 mbain light

Universe

02: In one-thousandth

radiation particles produced tiny particles of matter. These combined to form the first ever chemical elements, hydrogen and helium.

of a second, tiny

Creation of

61: At the start the

the Universe

FAST

FACTS a

4

A.4

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0041210×1080

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03: Some regions of the

04: Nuclear reactions inside the stars produced many other chemical elements, including carbon and oxygen.

05: the Universe today. write produced

03. 40-1 1000 otars have tormed, and there are deart only en TYRUSTON THE Universal

> Everything in the Universe produces energy - you produce energy when you exercise, and light energy is produced by

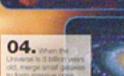
nuclear reactions inside stars.

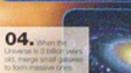
yours check that the four

where the Universe has no beginning."

Hot stuff!

In the first tellorith of a second of its orienton, the temperature of the Universe was ten billion trillion trillion degrees Celsius





Miky Wey Genter.



Human origins

5 billion years ago

4.5 billion years ago

The Sun formed from hydrogen

Control of the material rest used.

up in the Sun toned together

About 3.7 billion

1 million years ago

years ago

printitive life.

Near, far... and really far

Kilometres or miles

Astronomical units Doot for resizoing paratan distances within the Sciar System.

Light years

What about me? All the elements on Earth,

including all the elements in your body, were produced in stars.

Why were some dinos so huge?

With necks as long as 11 m (36 ft) and bodies the size of buses, sauropods were the most distinctive dinosaurs to roam throughout the Jurassic and Cretaceous Periods, 200 to 65 million years ago. These giant vegetarians were able to browse leaves high up in trees and their huge size deterred predators.

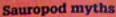
ow to: survive as a Jurassic plant-eater

Dinosaur skults are made up of descate bones which do not often toestare Scientists did not find a skull of the most famous sauropod, Aputosaurus for Brontosaurus as it was known then) until a hundred years ofter the first skeletors. had been found.

01.000 thick play like Eleronautur - R will help protect you from predation.

02. eid a long, musoular which like tail for balance and protection.

> 03. Large angefart like her will here support your heavy body.



MyThe it was such believed. New Par sampler and it water because they water so have Taly would not have been able to support their everyin on land

TRUTH Scientists can lell now from their footprints that they did not live in water, but were land-living animals.

MYTHE IT WHO DODG TROUGHT that they reacks could rates been used as provide, so they crude to see a state submitting of the submitting of uncles water TRUTH. The long neck as anorkel idea would never have worked, as water pressure would not have allowed the lungs of the submerged animal to expand, leading to breathing problems.

SAUROPOD SALAD

munchy) conifers flow-calonel cycads (sionous) gingko studius) seed ferms (mushy) moss

> 04. Yas stated when meets to be tarking anough to dignal arge arrearts of low-cashing states. Swalow stones. to help much up the food. riside the stomach.



any of the Jurassic sauropods. It measured 11 m (36 ft), and consisted of 19 vertebrae bones.

05. Una your long wok and lightweight head to browse very high. parts of trees for food.

> Camarasaurus 18 m (50 m) Probably ted by swinging its strong nack stilly skieways and down to ship tough locaves from shullby brids

Super sauropods

Brachiosaurus 30 m 66 to Long, spoon-shaped teeth capable of pulling twigs and needes from the highest coniter trees

Mind your step

As the smallest Jurassic

Compsognethus had to be

capeful it was not equashed

in the land of giants. It was

about the size of a chicken.

and may have travelled in groups to acavenge the

kills of larger animals.

dinosaur, the tiny

Paralititae 27 m 50 m its neck accounted for one-third of its entire body langth; entimated to have weighted 80 tonnes

06. Tau food

are perfect for reking

keying from branches.

I don't believe it

The sauropod Diplodocus used a

When thrashed, the tip of the tail

long whip-like tail for defence.

could break the sound barrier,

producing a thunderous crack to signal to other dinosaurs.

pep-like teeth. You won't

be able to others, but they

Saltasaurus 27 m (19 ft) Like many of the boar saucpods, Satasaurus had thick, armour-like skin along its back

Ceratosaurus could grow up to 6 m (20 ft) long. It had large. powerful jaws and sharp teeth.

(30 ft) long As well as hunting

Megalosawus (pew up to 9 m sauropods, it is likely that it also scevenged already dead animals







12-m- (38-ft-) long predator.

It walked on two legs, had a

(6 in) in length:

massive tail, and a bulky body.

It had sharp claws up to 15 cm.

How many people live in cities?



Cities with the most skyscrapers