

1. Have Asteroids ever impacted on Earth?

- Technically asteroids have never impacted earth but Meteorites have ...
- When an object travels into the earth's atmosphere it is called a Meteor. If that object hits the earth it is called a Meteorite.
- Meteorites can come from space junk (bits of satellites for example), comets or asteroids, however most meteorites come from asteroids.

2. What is an Asteroid and why do they hit earth?

- Asteroids are small rocky bodies, which are also called Planetoids.
- Most asteroids were made at the same time as the creation of our solar system 4.6 billion years ago. Some were made when planets or moons collide.
- Asteroids are made up of the same materials as planets; rock, metals (nickel and iron) and other elements (such as silicone).
- Asteroids can range in size from 530km in diameter to smaller than 10m.
- The current known asteroid count is 1,111,243.
- Most of the asteroids in our solar system can be found in the main asteroid belt between Mars and Jupiter. Trojan asteroids share an orbit with a planet or a moon in the solar system.
- Why do asteroids hit earth? Asteroids that hit the earth are usually "near earth asteroids". These are asteroids whose orbit comes close to earth, and sometimes the orbits of objects in our solar system changes slightly, this can bring a near earth asteroid close enough to be pulled by the earth's gravitational force.



3. The biggest impacts of asteroids on earth

The Vredefort Crater

- The Vredefort crater was created around 2 billion years ago in the Free State Province of South Africa.
- The size of the impact crater is thought to have been 160km to 300km in diameter. Most of the crater has now eroded leaving a 70km ring of hills

The Chicxulub Crater

- The Chicxulub Crater is the most famous crater as it is the event Scientists think caused the death of the dinosaurs.
- The Chicxulub Crater was created around 65 million years ago (the cretaceous period) in the Yucatan Penninsular, Mexico.
- The Chicxulub crater is 100km wide and 900m deep.
- Geologists think that when the meteor hit the earth it sent out a huge blast wave, it was like a huge explosion. This caused a huge cloud of dust to be sent into the atmosphere, blocking a lot of the sunlight. This killed a lot of plant life which led to the death of the large plant eating dinosaurs. This meant there was not much for the carnivores to eat and they too died out.



Ora Banda Crater

- In Australia we have a significant asteroid crater as well. The crater is located in Western Australia nearing the town of Ora Banda.
- The crater is estimated to be around 100 million years old and is 5km in diameter.

Asteriod Impacts during human history.

- Most asteroids that have hit Earth during Human times have been very small.
- Here are a few that have been big enough to be recorded.

The Chelyabinsk Crater

- The Chelyabinsk meteor hit the earth on the 15th of February 2013 near Lake Chelyabinsk in the Ural Mountains in Russia.
- The main crater was 20m in diameter, however when the asteroid hit the earth's atmosphere, it exploded creating lots of smaller fragments that hit people and buildings around the main impact site.



The Murchison Meteorite

- The Murchison Meteorite exploded in the atmosphere over Murchison, Victoria on the 28th of September 1969. Pieces of the meteorite fell over an area of 35km².
- The Meteorite strike is rare because it was actually observed while it was falling rather than being found on the ground after it hit.
- This meteorite is very important to science as it is a carbonaceous chondrite which was full of organic molecules and water.
- Studies on the fragments of the asteroid have found Amino acids which are the compounds necessary for life on earth.
- It also contains particles that formed in supranovas before the formation of our sun. This helps scientists study how our solar system and other solar systems were formed.

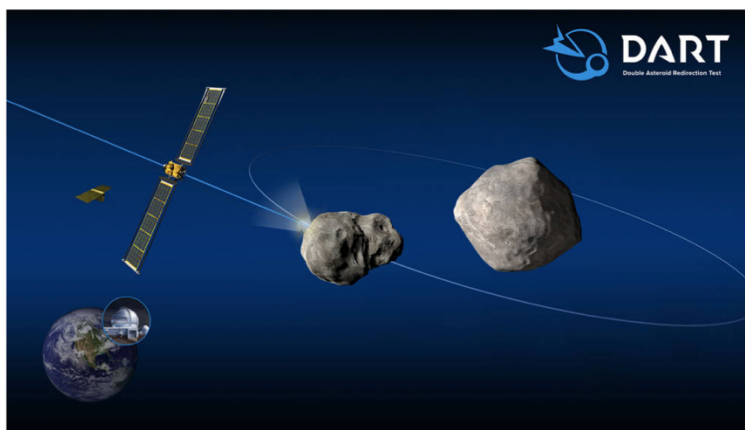


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Future Asteroids that may hit Earth

- There are other asteroids that may hit earth. NASA thinks that the next an asteroid that will hit earth is going to happen in 100 years
- To stop that from happening, NASA is going to test if they can change the path of an asteroid.
- The first mission to test this is the DART(Double Asteroid Redirection Test) mission
- This mission will launch in November 2021. The mission will fly to the asteroid Didymos and crash into its moon. NASA already the orbit of Didymos and its moon. When the spacecraft crashes into the moon, NASA will measure what happens and how much the moons orbit is changed.
- This will help NASA in their mission to redirect asteroids that would hit Earth.



Actual speech

Have Asteroids ever impacted on Earth?

- Technically no because objects that enter the earth's atmosphere are called Meteors, then when they hit the earth they are called Meteorites.
- Meteorites can be bits of space junk, parts of comets or asteroids.

But what is an Asteroid?

- Asteroids are small rocky bodies or Planetoids.
- Most asteroids were made at the same time as the creation of our solar system 4.6 billion years ago.
- Most of the asteroids in our solar system can be found in the main asteroid belt between Mars and Jupiter.
- Asteroids with orbits that come close to earth are called Near Earth Asteroids and these are the ones that could crash into earth.

Now I am going to tell you about some Asteroid impacts that have been discovered on Earth

The biggest known asteroid crater is The Vredefort Crater

- The Vredefort crater was created around 2 billion years ago in South Africa.
- The size of the impact crater is thought to have been 160km to 300km in diameter.

The most famous known asteroid crater is the Chicxulub Crater

- This is the event Scientists think caused the extinction of the dinosaurs, which is pretty lucky for us otherwise the earth may have been still inhabited by giant crocodiles!
- The Chicxulub Crater occurred around 65 million years ago during the cretaceous period in Mexico.

- The Chicxulub crater is 100km wide and 900m deep.

Have there been any Asteroid impacts in Australia?

- The Murchison Meteorite exploded in the atmosphere over Murchison, Victoria on the 28th of September 1969.
- This event was very important for science as
 - it was actually observed while it was falling
 - The asteroid contained Amino acids which are needed for life on earth,
 - It also contained supa nova particles from before the formation of the solar system.

What about asteroids that may hit earth in the future?

- NASA thinks that the next an asteroid that will hit earth is going to happen in 100 years
- To stop that from happening, NASA is going to test if they can change the path of an asteroid.
- They will do this with the DART mission which will launch in November this year.
- Dart stands for Double Asteroid Redirection Test.
- This will help NASA to develop systems to protect earth in the future.