

LITTLE POSTER OF

SPACE ROCKS

Space is full of lumps of rocks and ice that are debris left over from the formation of the Solar System. Some are as small as grains of sand, others are the size of mountains. Sometimes they come to visit us here on Earth. What they are called depends on what they are made of, how big there are, and where they are.

ASTEROIDS

Asteroids are large chunks of rock, or metallic rock, left over from the formation of the Solar System. Most are located in the Asteroid Belt between Mars and Jupiter. It is thought that Jupiter's gravity prevented them from coming together to form a planet.

Asteroids range in size from as little as a metre to thousands of metres. The largest asteroids are known as planetoids.

METEOROIDS

Any chunk of rocky or metallic material that travels through space could be called a meteoroid, but the name is usually reserved for rocks that are much smaller than asteroids. Meteoroids can range in size from that of small pebble to a huge boulder weighing several tonnes.

Meteors get their name from the Greek *meteōros*, which means 'high in the air'.

METEOR, OID, OR ITE?

Whether a space rock is called a meteoroid, meteor, or meteorite, depends on where it is at any given time.

Meteoroid: While it is floating around in space, a space rock is called a meteoroid. Really small space rocks (space dust) are called micrometeoroids.

Meteor: When a meteoroid enters the Earth's atmosphere, friction heats it up and it begins to burn. The trail of light left behind by a burning meteoroid is called a meteor, or 'shooting star'.

Fireball: Some meteoroids create more light when they burn up. These extra-bright meteors are called fireballs and they can even be seen during the day.

Meteorite: Sometimes a meteoroid doesn't completely burn up as it travels through the Earth's atmosphere. If it makes it to the ground, it is called a meteorite.

Meteors burn with different colours depending on the chemicals they are made of.

- Nitrogen/oxygen
- Iron
- Calcium
- Sodium
- Magnesium

COMETS

Comets differ from asteroids because they are made up of mostly ice. Sometimes called 'dirty snowballs', most comets come from an icy region beyond Neptune called the Kuiper Belt.

Some meteoroids come from the debris left behind by comets

When their orbit brings them close to the Sun, comets heat up and vent gases and water vapour that form a huge glowing cloud called the 'coma'. The dust and gas form tails that stretch away for millions of kilometres.

Gas tail: Charged gas particles pushed from the comet by the solar wind

Dust tail: Larger dust particles trail behind the comet

Coma: A hazy cloud of dust and vapour that surrounds the nucleus

Nucleus: 'Dirty snowball', or 'icy dirtball' made up of rock, dust, water ice and frozen gases*

Millions of meteoroids travel through the Earth's atmosphere each day.
24% survive the journey through the atmosphere to become meteorites.

KILLER SPACE ROCKS!

Not all meteorites are harmless. Sometimes a space rock pays us a visit that is so large it has the potential to destroy a city or even wipe out most of the life on Earth.

65 million years ago a 10 km-wide asteroid smashed into the planet in modern-day Mexico. It formed a 180 km-wide and caused a global climate shift that helped to kill off 75% of the life on Earth – including the dinosaurs.

Big rocks don't often hit the Earth, but when they do the results can be catastrophic.

50m 160m

700m
(These strike about once in every 190,000 years)

1.7km
(About once every 1.5 million years)



50m: Most disintegrate in the upper atmosphere.

160m: Iron meteorites will leave craters. Stone meteorites produce violent airburst explosions.

700m: Land impact would destroy an area the size of Yorkshire. Ocean impact would create huge tsunamis.

1.7km: Land impact would destroy an area the size of France and create a global climate-cooling dust cloud.

TYPES OF METEORITE

Meteorites come from different parts of the Solar System and are formed in many different ways.

IRON



Iron meteorites are made of about 90-95% iron with the rest made up of mostly nickel and some trace elements. It is thought that they come from the metallic cores of asteroids. Iron meteorites are rarer than stony meteorites but their magnetism makes them easier to find.

STONY-IRON



Stony-Iron meteorites are made of a mix of both metallic and rocky material. They probably formed when the metal cores and the rocky magmas inside asteroids mixed together, which makes them extremely rare. There are two types of stony-iron meteorites: pallasites and mesosiderites.

STONY-IRON



Stony meteorites are the most common type of meteorite. They are made of rock, but can also contain small amounts of iron. There are two types of stony meteorites: chondrites and achondrites. Achondrite meteorites were once part of the outer crust of a planet or asteroid.



Science and Technology Facilities Council