

140X203MM

unbelievable  
SCIENCE

10 Years +



## INSTRUCTIONS

1. Choose a clear, easy-to-clean surface and cover it with a large piece of paper. Place your meteor dig site on it.
2. Use the chisel provided in your kit to gently chip away at the block.
3. Once you see the object in the block, carefully dig away the surrounding material to loosen it before you attempt to remove the item from the block.
4. Remove any excess material on the object with the brush provided. Wash the item with water if needed. You've found your first meteorite!
5. Get a closer look at the space treasure with the magnifying glass!



PLASTER DUST MAY IRRITATE THE EYES, NOSE AND THROAT. HANDLE WITH CARE. IF IRRITATION OCCURS, STOP USING THE PRODUCT. IN THE CASE OF CONTACT WITH EYES, FLUSH WITH WATER. CONSULT YOUR PHYSICIAN IF DISCOMFORT PERSISTS. DO NOT PLACE PLASTER IN THE MOUTH OR APPLY IT TO THE BODY. USE THE BRUSH TO REMOVE PLASTER DUST. DO NOT BLOW ON THE PLASTER. A WATER SPRAY BOTTLE MAY BE USED TO DAMPEN THE PLASTER AND DECREASE DUST IN THE AIR. WET PLASTER MAY STAIN CLOTHING. WEARING A SMOCK OR OLD CLOTHES IS RECOMMENDED. DISPOSE OF PLASTER IN THE BIN. DO NOT PUT PLASTER IN THE SINK AS IT MAY CLOG THE DRAINAGE SYSTEM.

ADULT SUPERVISION REQUIRED. PRODUCT MAY VARY SLIGHTLY FROM IMAGE SHOWN. PLEASE KEEP PACKAGING FOR FUTURE REFERENCE.

⚠ WARNING! Not suitable for children under 3 years due to the presence of small parts which may present a choking hazard.

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## METEOROID, METEOR, OR METEORITE?

These three similar terms: meteoroid, meteor and meteorite are names for the space rock at different times in its cycle.

### METEOROID

Our solar system is full of debris and rocks floating around space. Most of this comes from the asteroid belt between Jupiter and Mars, when massive asteroids collide and rocks break off.

### METEOR

When a meteoroid enters a planet's atmosphere it begins to burn up in a fireball. If you look up at the sky on a clear night you will eventually see one. These are known as Meteors. They are also sometimes called 'Shooting Stars'!

### METEORITE

If a meteor survives this fiery journey through the atmosphere and lands on the planet's surface, this is when they become a meteorite. Humans have been lucky enough to have found thousands of these on our planet's surface.

## IMPORTANT DATES

#### 4.55 billion years ago

Considered the age of the solar system when most meteorites are thought to have been formed.

#### 65 million years ago

The Chicxulub impact resulted in the death of 75 percent of the animals on Earth, including dinosaurs.

#### 50,000 years ago

The age of Barringer in Arizona, one of the most famous impact craters on earth.

#### 1478 BC

First recorded observation of meteors.

#### 1969

In Antarctica, meteorites were discovered. This leads to yearly expeditions by US and Japanese teams. Some of these rocks were later identified to be from Mars and the Moon. May have contained microfossils (tiny fossils only visible with a microscope) but this isn't confirmed.

#### 2005

The Mars rover 'Opportunity' discovers a large meteorite on the surface of Mars and yet again in 2009.



When a number of meteors occur in the same part of sky at night this is called a meteor shower.



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# DINO POOP DIG!

BREAK INTO THE PAST!

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5. Get a closer look at the bugs with the magnifying glass!

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## COPROLITE

In 1829, a scientist named William Buckland coined the phrase Coprolite for fossilized poo after working with Mary Anning and studying her collection.

## COPROLITE STUDIES

Coprolite is incredibly important to scientists that study the lives and nature of dinosaurs. With close examination, coprolites can teach us about the eating habits of the dinosaur they came from and the environments they lived in.

Unfortunately, it is very difficult to figure out what type of dinosaur produced the coprolites that have been found. An educated guess can be made from studying things such as where they were found and if any skeletal remains have been found nearby.

Coprolites have been found in many shapes and sizes. They have also been discovered on all of Earth's continents. These fossilized faeces do not smell bad, like you might imagine. In fact, they can easily be mistaken for normal stones. It takes an expert to see the differences.

## COPROLITE FACTS

If you are a scientist that studies coprolites, you are called a "Paleoscatologist."

Coprolites are an excellent source for finding and studying the DNA of dinosaurs.

One of the oldest fossilized faeces was found in Saskatchewan, a Canadian Province. It measured about 44 cm long and is thought to be from a T-rex, although some scientists do not agree with this. Coprolites can also be called fossilized excrements or trace fossils.

Coprolites are quite rare because animal faeces often decay too rapidly to undergo the fossilization process.

**DID YOU KNOW?** The name Coprolite comes from the Greek words "kopros lithos," which translates to "dung stone."

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# RARE GEMS DIG!

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5. Get a closer look at the gemstones with the magnifying glass!



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## TYPES OF GEODES

Just like your fingerprint or a snowflake, no two geodes are exactly the same. The color, shape and size of the crystals inside are all determined by the amount and type of minerals brought into the cavity with the groundwater. The only way to truly know its beauty is to open it up!

### NODULES

Nodules occur when the crystals grow together and fill the cavity.

### DRUSE

Druse are when the crystals are tiny.

### THUNDER EGGS

Thunder eggs occur when there is no crystal inside the geode and it is instead filled with agate, a form of the mineral chalcedony.

### VUGS

Vugs are long tube shaped geodes. These are more often formed in cracks or fissures of much larger rocks.

## GEODE FACTS

You've found a small rock whilst hiking, but it doesn't seem as heavy as you think it should be. You decide to break it open and discover colorful crystals inside! You have discovered a geode! How did they get there? Let's find out...

Geodes are found in either volcanic or sedimentary rock. In volcanic rock, geodes start out as bubbles. In sedimentary rock, geodes might start out as animal burrows, mud or possibly tree roots. Over time, the air, mud and tree roots create a hollow cavern within the rock, while the outer edges around it harden into the spherical shape creating a cavity. Groundwater begins to seep its way through holes in the porous surface of these rocks. The groundwater brings with it all the minerals it has picked up on its way such as quartz and amethyst. They dissolve in the water and settle on the inside of the cavity, slowly developing the geode over a very long period of time. In fact, it may take thousands or even millions of years.



The name for geode comes from the Greek word Geoides, which means "earth-like."



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