

Meteorite Investigators

Meteorites have very specific characteristics that distinguish them from rocks on Earth.

Meteorite!	Not a Meteorite
<p>Dark on the outside. Meteorites have black or rusty brown outer layer – a fusion crust - formed when the meteoroid was heated as it fell through Earth’s atmosphere.</p>	<p><u>Bubbly or with holes.</u> If the rock outside looks bubbly or frothy, or if there are holes inside, it’s not a meteorite.</p> <p><u>Round.</u> Most meteorites are very irregular in shape. They rarely are round or shaped like a projectile (bullet).</p>
<p>Finger pokes on the outside. Got regmaglypts? Great word, yes? Meteorite surfaces usually are smooth and don’t have features. But some have regmaglypts; this just means deep circular pits in the surface of the meteorite. <u>They look like someone has poked their finger in soft playdoh.</u></p>	<p><u>Quartz crystals.</u> Quartz only occurs on Earth, because of our unique geologic processes. If you see quartz – or fossils – it is not a meteorite. If you see lots of other bright crystals, it also is probably not a meteorite.</p>
<p>HEAVY! Many meteorites have iron or nickel in them, so they are <i>relatively</i> much heavier (actually, more dense) than Earth rocks.</p>	<p><u>Color.</u> If you can make a colored streak of black or red on a piece of unglazed tile, it probably is not a meteorite. Unless the meteorite is very weathered, it will not leave a streak.</p>
<p>Shiny inside! Some meteorites are nearly all iron and they have a silvery inside. Others have small flecks of shiny metal on their insides.</p>	
<p>Magnetic! Most meteorites have some iron or nickel in them, so they attract a magnet easily.</p>	<p>Some Earth rocks are magnetic, too.</p>
<p>Little stoney balls inside. Most meteorites are chondrites . They contain small balls of stony material called chondrules that are about a millimeter (1/25 inch) across</p>	

Characteristics modified from: <http://epswww.unm.edu/iom/ident/index.html>

If your rock has most or all of the characteristics of a meteorite, it is a good candidate to be a meteorite. Sometimes laboratory tests are necessary to determine if it is a meteorite once all of the characteristics are demonstrated.

In this activity, you and your child will investigate several different samples of meteorites and Earth rocks to determine which are likely meteorite candidates.

What You Need:

- ❑ Samples of meteorites (can be bought online; but consider requesting touchable samples from your local museum, planetarium, university, or astronomy club)
- ❑ Samples of Earth rocks and minerals (quartz, basalt, gabbro, magnetite, others that look like meteorites)
- ❑ Meteorite Investigator sheets
- ❑ Pencil or markers
- ❑ For each sample:
 - One piece of bright card-stock
 - 1 magnifying glass or hand lens
 - 1 magnet
 - 1 unglazed ceramic tile (backside of glazed tile)

What to Do:

- ❑ Create a station for each meteorite and for each rock; mix the samples so that the children do not view all of one group before the other. Label the stations with unique numbers.
- ❑ Invite your child to share what they think the differences are between a meteorite from space and a rock or mineral made on Earth. Share with them the list of meteorite characteristics.
- ❑ Prompt your child make observations of the samples and use the table of meteorite characteristics to determine which samples most likely are meteorites, based on their characteristics.



Meteorite or Not?

Make observations about each sample. Interpret your observations to make a conclusion about which samples are meteorites and which are Earth rocks or minerals.

Sample Number:

Yes	No	Characteristic
		Does it have a dark outside crust?
		Is the surface smooth?
		Is the surface bubbly or frothy?
		Does the surface have pits like finger pokes?
		Is it relatively heavy (dense)?
		Is it shiny on the inside or does it have shiny metal pieces?
		Is it magnetic?
		Does the inside have tiny round balls of stone?
		Is it irregular in shape?
		Are there holes on the inside?
		Does it make a streak? What color? _____
		Are there quartz crystals?

My Conclusion (circle): Meteorite Not a Meteorite

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