Meteorites *rocks from space*

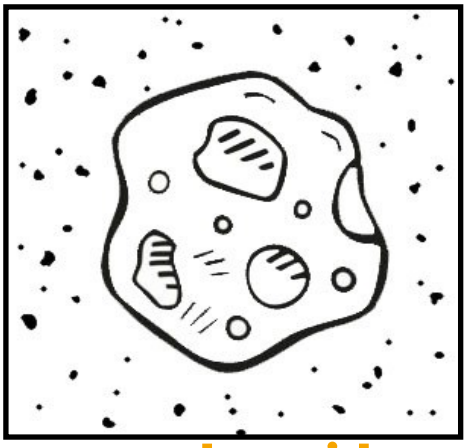
small pieces of rock or metal that fall to Earth from space

What Makes a Meteorite? *When a broken piece of asteroid, comet, moon, or planet makes it all the way to the ground, by being each one of these:*

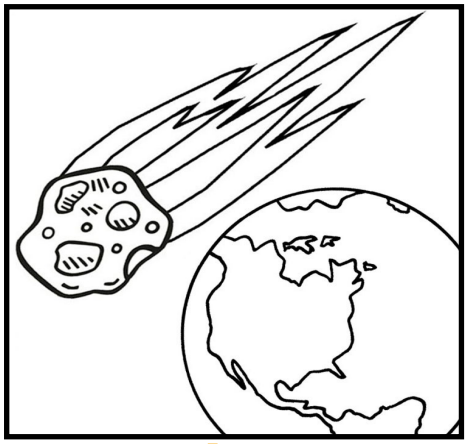
Meteoroid - a chunk of rock or metal—usually iron-nickel—orbiting the sun and moving in interplanetary space, which is too small to be an asteroid or comet (but is probably *a fragment* of an asteroid or comet).

Meteor - a meteoroid that enters Earth's atmosphere and burns (as a "shooting star") on its way through.

Meteorite - a meteoroid that does not completely burn up as it travels through our atmosphere, and lands on the surface of the earth. (Meteorites have also been found on the surface of the Moon and Mars!)

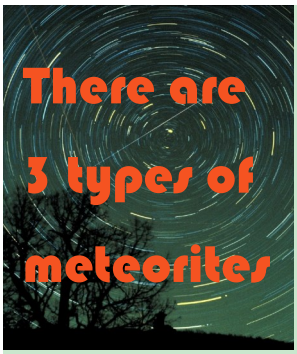


meteoroid



meteor

meteorite



Stony - The most common type of meteorite, composed of rocky material made of *silicate minerals* (containing silicon & oxygen). Based on melt history, there are two types of stony meteorites: *chondrites* and *achondrites*. *Chondrites* are some of the oldest rocks in the solar system (*4.5 billion years old*) and have never melted; *achondrites* have.

Iron - These consist of an *iron–nickel* alloy and are thought to be cores of asteroids. Although fairly rare compared to stony meteorites (making up only about 5% of Earth meteorites), iron meteorites are better represented in collections, as they're easier to find and more durable. Iron meteorites strongly attract a magnet (are *ferromagnetic*) and exhibit a distinctive crystalline structure called *Widmanstätten patterns.*

Stony-Iron - Containing similar amounts of silicate minerals and iron-nickel metal, these are the rarest meteorite type. There are two main varieties of stony-iron meteorites: *pallasites* and *mesosiderites*. *Pallasites* are thought to be some of the most beautiful meteorites; they contain olivine crystals suspended in the metal matrix. *Mesosiderites* are breccias, typified by broken fragments of rock and minerals cemented together.

The best places for hunting meteorites are large, barren expanses—like deserts or ice fields—where there are few terrestrial rocks, making the dark meteorites easier to spot.

Impactites - A large enough meteorite strike can alter the rocks, sand, and soil around the point of impact. When *terrestrial* (earth) material is physically transformed by the shock waves, heat, and pressure associated with a meteorite impact, it is called *impactite*. Impactites can be further classified into: shocked rock, breccias, and impact melts (including *impact glass* such as ***tektites***, like moldavite & Libyan desert glass).