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Meteor Showers and Shooting Stars: A Primer

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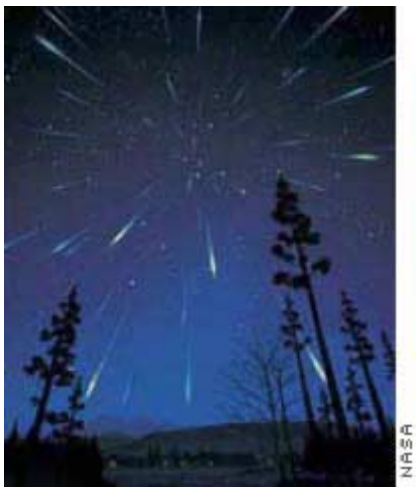
Shooting stars are a bonus of stargazing. If you watch the sky on a dark night for half an hour you should spot several brief streaks of light -- meteors. All you need is a blanket to lie on, a clear view of the sky on a dark, a moonless night and patience. Of course, kids don't usually have much patience, but it is amazing how they react when they see their first shooting star. So be prepared with a few things to talk about while the family is lying down staring up at the sky. Here are some "facts" that you can throw into the conversation.

What are shooting stars?

Shooting stars are mostly grit from space colliding at very high speed with air molecules high up in the sky.

As Earth travels in its orbit around the sun it runs into clouds of grit – generally pulverized rock – that also orbits the sun. Many shooting stars are produced by grit no larger than a grain of sand. Some of the more spectacular ones are pea-sized and the really stunning (but very rare) fireballs are the size of an orange or larger. These objects collide with air molecules some 60 miles (95 kilometers) above Earth's surface and, due to their very high speed, they begin to glow white hot. We see a streak of light as they burn up. The scientific name is meteor but shooting star will do fine (just tell the kids that they are not really stars).



As Earth slowly rotates, the side facing the direction of its orbit around the sun tends to run into more grit. This

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direction is directly overhead at dawn (at right angles to the sun) and this is why there tends to be at least twice as many shooting stars observable in the few hours before dawn, compared with just after sunset.

Occasionally a lump of rock survives the fiery journey and reaches the ground. These rocks are known as meteorites. They tell us a lot about the composition of the solar system.

How many are there?

Millions of shooting stars occur each day, including during daylight hours. When you stare up at the night sky, however, you can only see about 0.005 percent (one twenty-thousandth) of the total area of the sky. This translates to just a dozen or so shooting stars per hour.

Meteor showers and storms

On a typical night a shooting star can be seen every 10 to 15 minutes, but on some nights of the year a spectacular "meteor shower" occurs and shooting stars can be seen every few minutes or less. The peak of the next "shower" – the Perseids -- occurs on August 12. Incredibly, the grit that forms the Perseid meteors comes from a comet. Though it happens less frequently, a "meteor storm" occurs when space debris falls at an even greater rate per hour.

How does a comet produce shooting stars?

Comets have been described as giant, dirty snowballs – a mixture of grit and ice. Comet Swift-Tuttle orbits the sun once every 134 years and last visited our region of the solar system in 1992. Its orbit stretches from near Neptune to inside the orbit of Earth. Around August 12 each year the Earth crosses the comet's path. (Fortunately, the Swift-Tuttle won't be at the same point at the same time in the foreseeable future, so a collision is very unlikely!)

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