

Data, Theory or Opinion?

Names:

Purpose

The goal of this activity is for you to identify different statements as data (aka, “fact”), a theory, or an opinion.

For each of the following statements, identify whether it is data, a theory or an opinion. For reference:

- **Data** — Data are “facts”, things that have been observed directly or measured and can be independently verified. (That is, you could, in principle, measure them yourself if you felt the need to.)
- **Theory** — Theories are statements that speculate about the cause of observed behaviors. Theories can be tested and especially, shown to be false.
- **Opinions** — Opinions are statements that cannot be verified and are unique to each person. Here are the statements. Be prepared to defend your choices to the rest of the class.
- “The Sun rose north of east this morning.”
- “The Sun will rise north of east tomorrow.”
- “The Sun will rise south of east tomorrow.”
- “The Earth orbits about the Sun, not the other way around.”
- “Humans are causing the Earth’s temperature to rise.”
- “The Earth’s temperature has increased over the past century.”
- “Global warming is bad for the planet.”
- “The planet Mars once had a liquid water ocean.”
- “If Mars is shown to have once had life, it would be the greatest discovery mankind has ever made.”
- “Mars’s current temperature is too cold for liquid water.”
- “Saturn is the prettiest planet.”
- “Mars’s moons are not spherical.”

- “Mars’s moons must be captured asteroids.”
- “Mars’s moons aren’t worth studying.”
- “Everyone should see a total solar eclipse.”
- “Solar eclipses happen more often than lunar eclipses.”
- “Eclipses are scary.”
- “Eclipses are caused by a great wolf taking a bite out of the Sun.”
- “Kepler’s laws must be true.”
- “NASA should send people to Mars.”
- “The scientific benefits would make a manned trip to Mars worth the price tag.”
- “Men walked on the surface of the Moon.”
- “Martians once visited Earth.”
- “A large impact event wiped out the dinosaurs.”
- “We should watch out for asteroids and comets which might strike the Earth and kill off humanity.”
- “Mars is smaller than Venus.”
- “The ‘face’ on Mars was created by aliens.”
- “Mercury is hotter than Pluto.”
- “Jupiter is more impressive than Venus.”