SCIENCE

NAME: PERIOD: DATE:

THE NATURE OF SCIENCE

THEORY vs. OPINION

Theory – an idea, based on evidence, used to explain a situation.

A theory isn't right or wrong, because no one has proven it yet.

"What do you think is wrong with the pool water?"

"Well, it has been really sunny for three days and the water is green. My theory is that algae is growing in the pool."

If someone proves a theory is correct, it becomes a law.

Opinion – an idea, based on feelings, used to explain a situation.

"This new drink is called Zerp. Do you think it will taste good?"

"It sounds stupid. I bet it will be terrible."

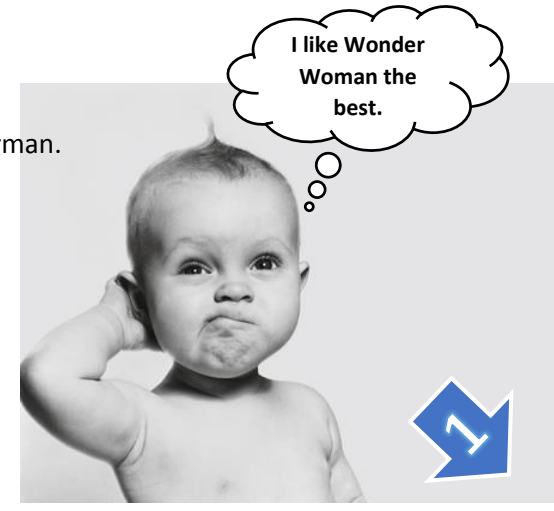
An opinion could be right or wrong, but it isn't based on any evidence, just feelings or personal experience.

What's the difference?

A theory has evidence to support it. An opinion does not.

Label the following statements as **theory** or **opinion**. (T or O).

1. _____ Based on these test results, we should try gerbil feed X instead of gerbil feed Q.
2. _____ Gerbils are more fun than hamsters.
3. _____ I think dinosaurs are cool.
4. _____ Fossil records show that there were dinosaurs on the Earth about 150 million years ago.
5. _____ I think we are out of gas. The gas gauge is on "E."
6. _____ I'd rather push a Ford than drive a Chevy.
7. _____ According to the stats in the video game, the Hulk can beat Superman.
8. _____ Captain America would kick Batman's butt any day.



Over time, theories can change. New evidence or information can be discovered that changes people's thinking. (And that's okay.)

For example, thousands of years ago, people believed in *spontaneous generation*, which is the idea that certain living things simply appeared from non-living matter.

For example, people believed that rats or flies would simply appear from piles of garbage. The evidence was that whenever there was a large pile of garbage, flies and rats would simply show up.

Over time, scientists proved that flies and rats reproduced in other ways, and didn't simply pop out of piles of garbage. It seems stupid today, but people back then didn't have as much information or scientific skill as people in the future.

Another theory that was widely accepted was the *geocentric model* of the universe. Since the Sun, Moon, and visible planets appear to rotate around the Earth, people believed that the Earth was the center of the universe.

Later, scientists and mathematicians proved that the Earth is rotating around the Sun, and that we are not even at the center of our own galaxy.

So theories are based on evidence, but they are limited to what people can observe and understand during the time they live. As people grow and learn, new ideas and facts can come to light that change our thinking and alter our theories.

What does that say about people right now, and people 1,000 years from now…