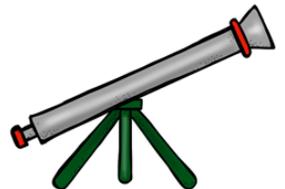


Physical Science Level 2



Scientists & the Scientific Method



By Bonnie Rose Hudson



SAMPLE

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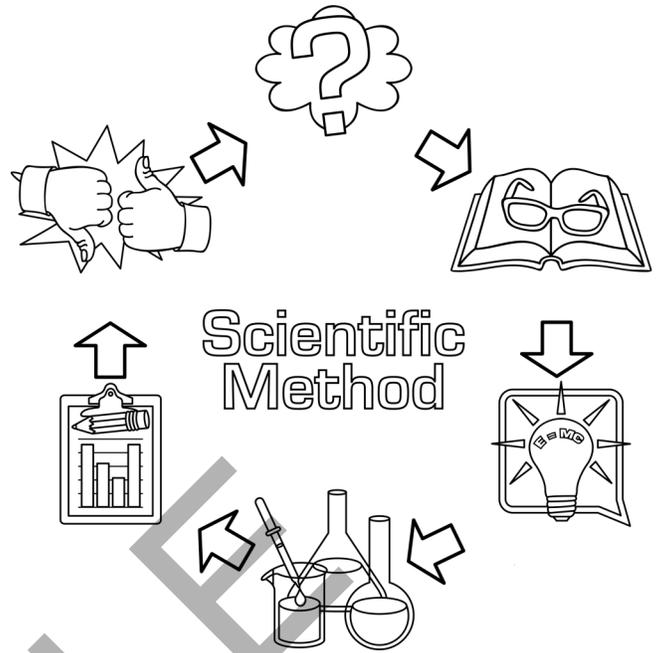
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Scientists and the Scientific Method

If you are reading this book, you are learning about science, but have you ever wondered just what exactly science is? Science is the study of why and how things happen, and a scientist is a person who studies science. There are different types, or branches, of science that we'll look at, but they all use a form of the **scientific method**. What is the scientific method? I'm glad you asked, because that is the first step!



Scientific Method



The scientific method starts by **asking** a question because that's what science is about—asking questions about how and why things work and then trying to find the answers.

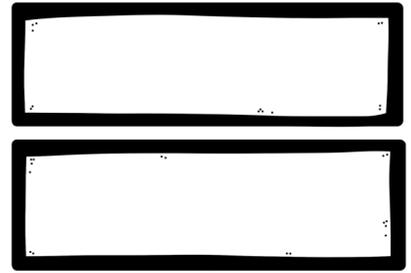
Ask

Once you know what you want to understand, the next step is **researching** and learning all you can about it. What can you learn from what other scientists have done?



Research

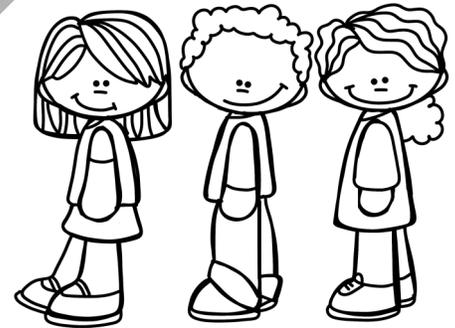
Now that we know more about what science is and what scientists do, let's look at the different types of sciences. We can break all the sciences down into four different groups—**mathematics**, **physical sciences**, **life sciences**, and **social sciences**.



Math might not sound like a science to you, but without math, scientists couldn't do their jobs. They rely on the absolutes in math to conduct their experiments. If $1 + 1$ didn't always equal 2, then there would be no way to get data from experiments that meant anything. Scientists also need math in order to communicate what they've learned to other people. If you couldn't use math or numbers to describe your problem $1 + 1 = 2$, how could you possibly explain it? Math also helps scientists predict patterns, analyze data, measure results, and just about everything else you can think of.

Mathematics

Social sciences are sciences that study people and why they do certain things. These scientists study things like how people buy and sell things they need, how people get along or don't get along, how a community changes over time, why they live where they do, how they feel about certain things, and other ways people behave.



Social sciences



Physical sciences study our world and the forces that affect it. These scientists study things like friction, gravity, chemicals, the stars and solar system, the rocks, what the earth is made of, how the oceans work, volcanoes, and much more.

Physical sciences

Galileo (1564-1642) was an Italian astronomer who discovered new things about the planets. He discovered craters on Earth's moon and that the planet Jupiter has moons. He also discovered that Venus passes through phases, much like the phases of the Earth's moon.



Galileo



Isaac Newton (1642-1727) was an English scientist who learned that sunlight actually has all the colors of light mixed together. He invented a new kind of math and discovered that the same force of gravity that holds us to the Earth also keeps the moon traveling around the Earth and the planets orbiting the sun.

Isaac Newton

Benjamin Franklin (1706-1790) was an American scientist who was also a statesman, inventor, writer, publisher, and speaker. He is the scientist who proved lightning is actually electricity.



Benjamin Franklin



Benjamin Banneker (1731-1806) was an American astronomer, farmer, mathematician, and surveyor. He hand-carved a clock made completely out of wood, and he was so good at astronomy that he wrote a yearly almanac that predicted the weather based on what he observed.

Benjamin Banneker

Caroline Herschel (1750-1848) was born in Germany and later moved to England. She was an astronomer who discovered several comets, which look like small stars with tails. She also kept very detailed records of what her brother, who was also an astronomer, observed in space. These records helped future astronomers learn and discover new things.



Caroline Herschel



Mary Somerville (1780-1872) was a British scientist who is best remembered for the special way she wrote about science. She studied many sciences, including mathematics, astronomy, botany, and geology. She became famous for being able to write about science clearly in a way other people could understand.

Mary Somerville

Thomas Alva Edison (1847-1931) was an American scientist and one of the most famous inventors of all time. He studied many things, including electricity, sound, chemistry, and mechanics. He invented the electric lightbulb and the phonograph (the first machine that could record and playback sound), and he improved inventions such as the telephone and motion pictures.

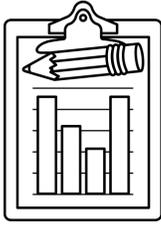


Thomas Alva

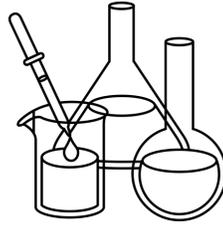
Edison

Review

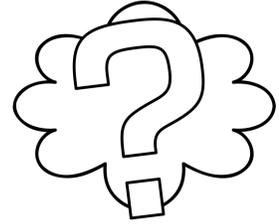
What is the first step in the scientific method? Draw a circle around it.



Analyze



Experiment

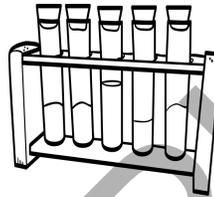


Ask

What is the name for a scientist who studies chemicals, how they interact, and how to make new things with them? Draw a circle around it.



Physicist

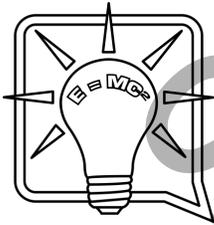


Chemist



Geneticist

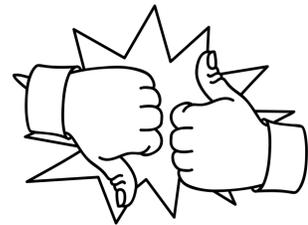
What is the name of the idea or opinion that you need to test? Draw a circle around it.



Hypothesis



Research

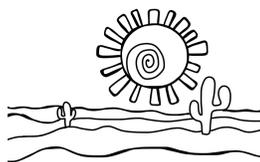


Conclusion

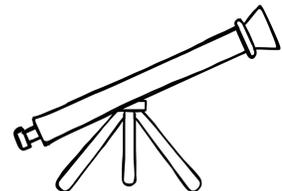
What is the name for a scientist who studies the universe and everything that is in? Draw a circle around it.



Geologist



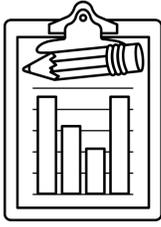
Ecologist



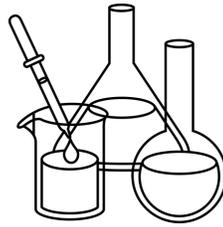
Astronomer

Review Answer Key

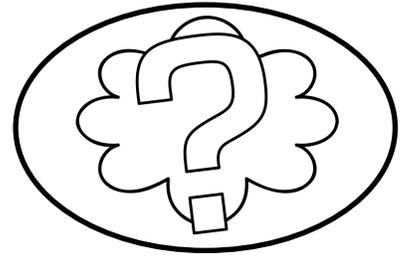
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Analyze



Experiment

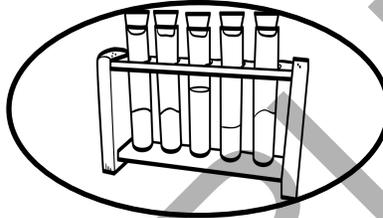


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Physicist

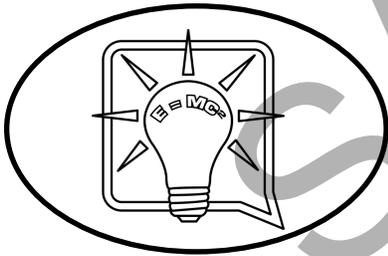


Chemist



Geneticist

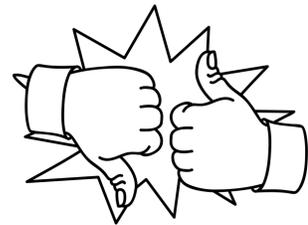
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Hypothesis



Research

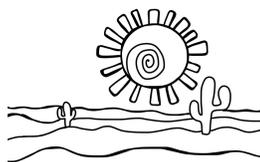


Conclusion

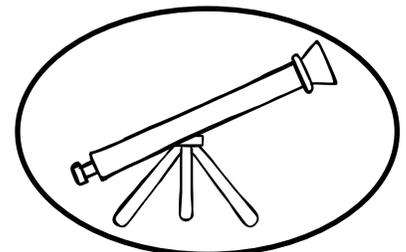
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Geologist



Ecologist



Astronomer