Think Like a Disciplinarian Dictionary

Curated by Krisa Muller
GATE Program Specialist, PYLUSD
Spring 2019

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Think Like an Anthropologist

Definition

Anthropologists study human culture. Human culture is the development of traditions, customs, and arts of a group of people or a nation at a given time. Anthropologists also examine the diverse ways that people live in different environments. They analyze material products of a culture such as the artwork, houses, tools, and other products. They also analyze the beliefs and values of a culture. Anthropologists do comparative research. That means that they compare different groups of people or cultures to determine their differences and similarities. For example, anthropologists have studied the customs and rules of African farm villages and of the villages in New Guinea. Then, they made comparisons to see how they were alike and different. Anthropology can make major contributions to international harmony because it helps provide an understanding of various cultures.

Thinking/Learning Skills:

- Written communication
- Analytical and critical thinking skills
- Ability to gather, assess, and interpret data
- Oral communication and presentation skills
- Time management
- Discussion and group work skills

Questions an Anthropologist Asks:

- When, where, and how did humans evolve?
- How do people adapt to different environments?
- How have societies developed and changed from the ancient past to the present?


I am an...
ARCHAEOLOGIST

Definition

Archaeologists investigate the lives of early people by studying the cultural remains they left behind. Such remains can include buildings, artwork, tools, or pottery. Archaeologists also examine the context and associations of the remains, which can provide information about how the remains were used. The preserved residues from food items, such as bones and plant parts, can also reveal much about how ancient people lived. Archaeologists use special techniques and equipment to gather archaeological evidence precisely and accurately. They also maintain detailed written records, photographs, maps, and plans of sites because archaeological research actually destroys much of the site. Archaeologists look for information about how, where, and when cultures developed. Like other social scientists, they search for reasons why major changes have occurred in certain cultures. Some archaeologists try to understand why ancient people stopped hunting and started farming. Others develop theories about what caused people to build cities and set up trade routes. In addition, some archaeologists look for reasons behind the fall of early civilizations, such as the Roman Empire, or examine why large cities of the Maya were abandoned around A.D. 850.

Thinking/Learning Skills:

- Excellent research skills
- Good knowledge of and interest in history
- Ability to work methodically
- Planning/project management skills
- Ability to analyze artifacts and information
- Photography

Questions an Archaeologist Asks:

- Who were these people? When did they live? What were they and their families like?
- Where did they live, and in what kind of environment?
- What did they eat?
- What tools and equipment did they use?
- What contact did they have with other people?
- How did they organize themselves and their society?

Think Like an Astronomer

Definition

Astronomers study planets and the sun in our own solar system, as well as other stars, solar systems, galaxies, and the whole universe. Astronomers try to understand how the universe works. They study the evolution of stars in an attempt to understand how our own star, the sun, and our solar system of planets were created and what will happen to them as they age. Astronomers must learn physics, chemistry, computer science, and mathematics. Astronomers use physics to help them understand what they are seeing in all the pretty pictures that come off the telescopes. Astronomers have helped physicists discover all kinds of exciting things like relativity, black holes, and nuclear fission. Physics has helped astronomers to understand what makes spiral galaxies have spiral shapes, how stars form, and even how to detect other planets around other stars! Astronomers must rely on their observation skills, and they must be able to reason and make sense of what they see. Because distances in space are so huge, astronomers may actually be studying a star that no longer exists. Astronomers work on analyzing pictures from the telescope and writing computer programs to help them with that work. They plan what kind of pictures they need for their next trip to the telescope. They work at a computer analyzing data or making computer models. Most astronomers work at colleges and universities, combining teaching with research.

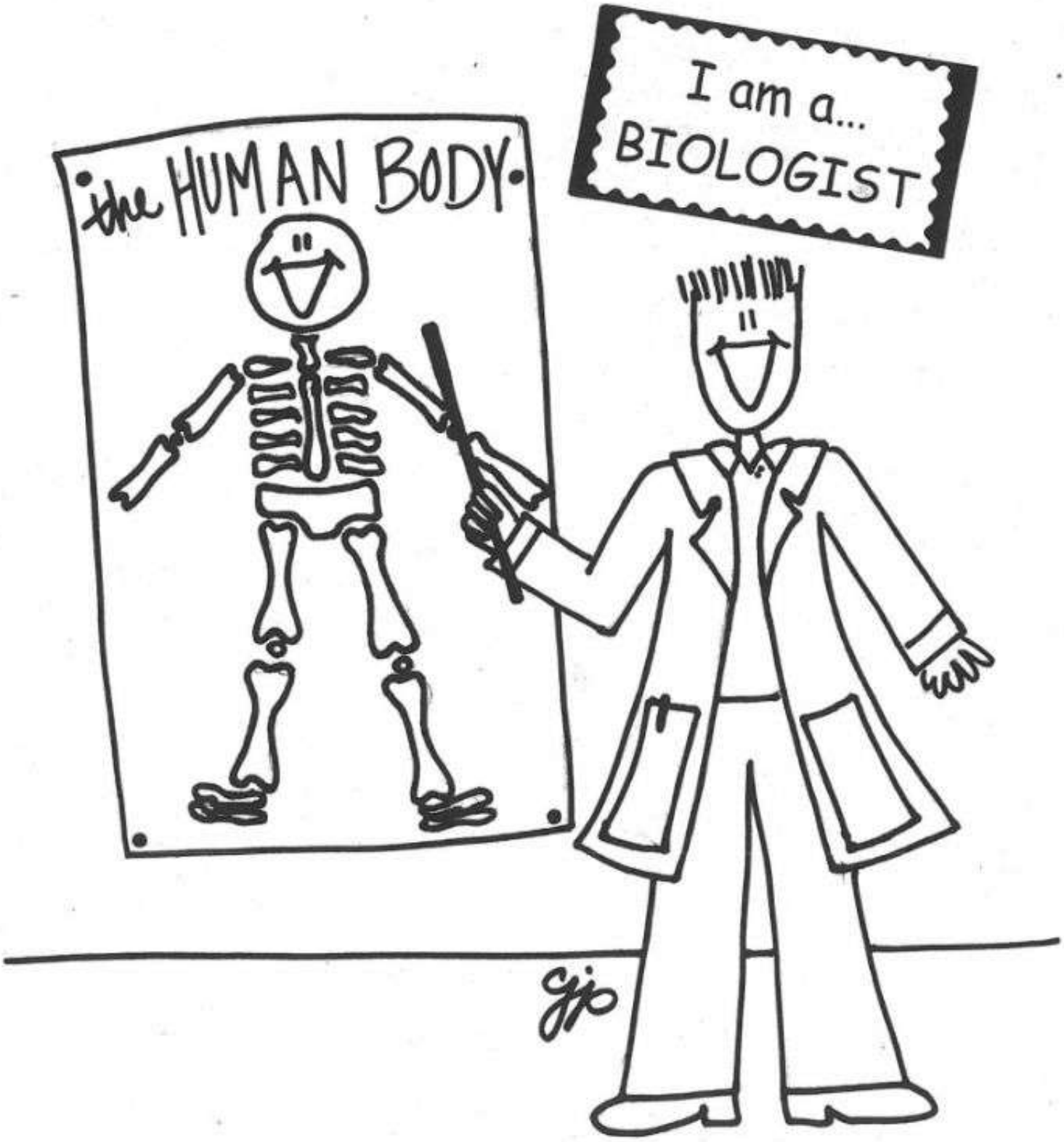
Thinking/Learning Skills:

- Ability to solve complex problems
- Conduct research
- Ability to analyze data
- Strong math and science skills
- Collaboration

Questions an Astronomer Asks:

- What is dark matter?
- What is dark energy?
- What came before the Big Bang?
- What's inside a black hole?
- Are we alone?

Think Like a Biologist



Definition

Biological science is one of the broadest and most important subjects in the world today. Put simply, biology is the study of life. Biology encompasses everything from the molecular study of life processes right up to the study of animal and plant communities. Depending on individual interests, biology careers can lead you on to study living organisms such as animals, plants, humans or even bacteria, to help develop biological knowledge and understanding of living processes for a number of different purposes, including treatment of disease and sustaining the natural environment. Traditionally, biologists pursue research, environmental management and conservation, or life science education. Some new fields in biology include: biotechnology, forensic science, science writing and communication, and art. Biologists may work with disciplinarians in other fields such as: politics, business, economics, mathematics. Biologists may split their time being in an office or laboratory in order to study living organisms in controlled and natural environments.

Thinking/Learning Skills:

- Critical and logical thinking
- Ability to gather, assess, and interpret data
- Oral communication and presentation skills
- Discussion and group work skills
- Management and leadership skills

Questions a Biologist Asks:

- What characteristics do living things share?
- How do living organisms respond to environmental changes?
- How do living organisms grow and develop?
- How do living organisms use energy?

Think Like a Botanist

Definition

Botanists study the biology of all types of plants. There are different kinds of botanists. Some are interested in how plants interact with other species. They carefully study the symbiotic relationships plants establish with each other and other animals. This helps botanists establish how plants adapt and survive in their own environments. For example, many flowering plants supply bees with food, in the form of pollen and nectar. The bees help the plants by carrying pollen from one flower to another to fertilize plants. Botanists are also interested in how these relationships change over time. Other botanists study the relationships between plants and their environment. This may include investigations into the effects of rainfall, temperature, sunlight, soil, terrain, pollution, and diseases on plants. Other botanists are interested in how plants grow. These botanists study internal plant functions and their chemical basis to learn how they grow, use nutrients, and reproduce. Many botanists do experiments to determine how plants convert simple chemical compounds into more complex chemicals and do experiments to discover how plants grow under different conditions. They also study the genetics of plants to determine the patterns of plant evolution. Other field botanists search to find new plant species, or they may work with other scientists to develop medicines and other products from plants.

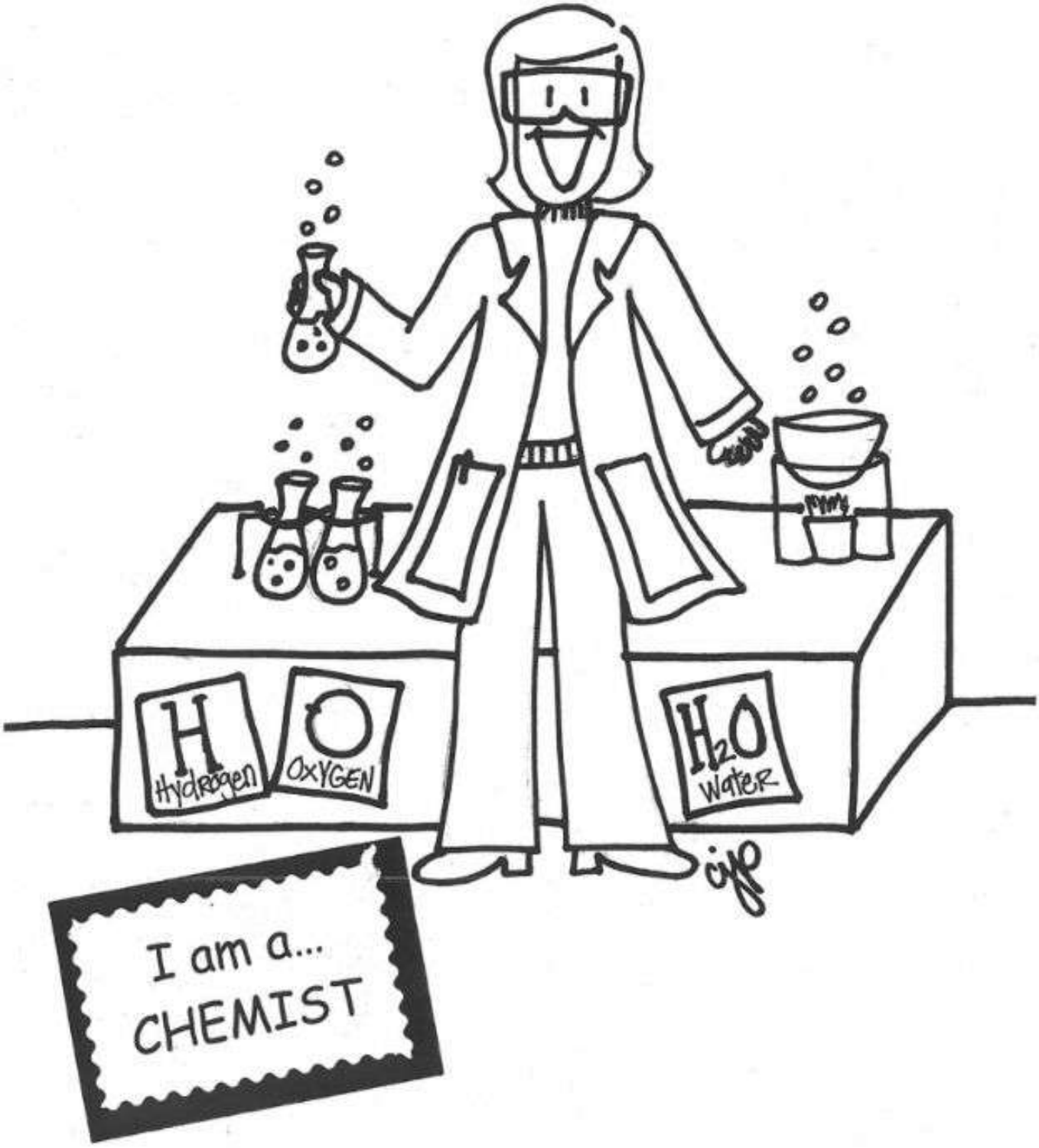
Thinking/Learning Skills:

- Interest in the natural world
- Scientific skills particularly in biology and chemistry
- Research and analytical skills
- Problem-solving skills
- Communication skills
- Systematic approach

Questions a Botanist Asks:

- What characteristics of a new plant allow it to be classified in a particular category?
- What is the relationship between plants and their habitats?
- How has climate change impacted the biodiversity of a particular area?
- What is unique about the structure of this plant? What is similar to another plant?
- How might this plant be used?

Think Like a Chemist



Definition

A chemist is a scientist who studies the area of science known as chemistry. Chemistry focuses on chemical substances and how they interact with each other. A chemical substance is a form of matter. Matter is anything that takes up space. There are some forms of matter that are pure, which means they cannot be easily broken down into separate parts. These are chemical substances, and that is what a chemist studies. While reading and writing are very important in learning about chemistry, this area of science focuses especially on math. Chemists have to measure chemical substances with accuracy to make sure their research is correct, and because even a small mistake could mean a big error in their work. Often their research and experiments are conducted in a laboratory. It is the responsibility of the chemist to make sure that dangerous substances in the laboratory are stored properly, and that procedures are followed to keep people safe. Most chemists use databases, scientific software, graphics, and design and photo imaging tools in their work. Chemists work with many different materials in different fields, from energy development to medicine and food processing. They have invented and improved products like medicines, fibers, paints, adhesives, cosmetics, and electronic components, to name just a few. Chemical manufacturing plants employ many chemists in production and quality control, where safety is critical. Interdisciplinary fields, like biochemistry and geochemistry, are also growing. Besides manufacturing, chemists work in colleges and universities, government, and independent testing and research laboratories.

Thinking/Learning Skills:

- Critical thinking
- Complex problem solving
- Communication skills
- Quality control
- Judgment and decision making
- Time management

Questions a Chemist Asks:

- Why did that react the way it did?
- Can we unravel the puzzle of life's origins?
- Can we ever beat photosynthesis?
- How do we make chemistry environmentally friendly?


I am an...
ECOLOGIST

Definition

Ecologists study the relationships between living things and their environment. Ecologists often have to study and explain how human actions affect other living things and their environment. Ecologists can be teachers or research scientists. They can work for environmental organizations like The Nature Conservancy or for the government. They may work at museums, zoos and aquariums or you may get to spend time working outside. One cool thing about being an ecologist is that you get to spend time working outside! Someone who wants to become an ecologist should have a strong science background and enjoy life sciences, such as, botany, zoology, and biology. It is also important to have good computer and math skills. Because a large part of ecology is communicating with other researchers and consultants, it is also important to develop writing and speaking skills, as well as to work well in teams and groups. For some ecologists it is also important to know about economics, social sciences and engineering. Some ecologists work outside doing field research on land or underwater. Others work in labs, or work in the community with natural resource managers or government officials who develop policies. Some work in offices where they analyze data and build computer models. Ecologists work for educational and other nonprofit organizations, government agencies, research centers and private companies.

Thinking/Learning Skills:

- Interest in the natural environment
- Taxonomic skills
- Analytical skills
- Problem-solving skills
- Communication skills
- High standards of accuracy and attention to detail

Questions an Ecologist Asks:

- How many _____ are there?
- Is the number of _____ increasing or decreasing? Why?
- How does _____ interact with _____?


DEMAND
SUPPLY
I am an...
ECONOMIST

Definition

Economists study how goods and services get produced and how they are distributed. By goods and services, economists mean everything that can be bought and sold. By produced, they mean the processing and making of goods and services. By distributed, they mean the way goods and services are divided among people. The field of economics studies how the things people need and want are made and brought to them. It also studies how people and nations choose the things they buy from among the many things they want. Economists use the terms *supply* and *demand* to help explain how consumers influence production. Some economists may study the laws associated with monopolies and trusts. Research in economics generally centers around understanding relationships between various parts of the economy. Economists base their findings on observation, on case studies, and on other methods of research. Many economists emphasize the use of mathematics and statistics in testing economic theories.

Thinking/Learning Skills:

- Analytical skills
- Communication skills
- Critical thinking skills
- Detail oriented
- Math skills

Questions an Economist Asks:

- What kind and how much of a product should be produced?
- For whom should the product be made?
- To what extent should the government intervene in the market?
- What is the difference between micro and macro economics? What can we learn from each?
- Does globalism help or hinder developing countries?

Think Like an Engineer

Definition

Engineers apply the principles of science and mathematics to develop economical solutions to technical problems. Their work is the link between scientific discoveries and the commercial applications that meet societal and consumer needs. Many engineers develop new products. During the process, they consider several factors such as: specifying the functional requirements, designing and testing components, integrating the components to produce the final design, and evaluating the overall effectiveness, cost, reliability, and safety of the design. This process applies to the development of many different products, such as chemicals, computers, power plants, helicopters, and toys. Engineers use computers extensively to produce and analyze designs; to simulate and test how a machine, structure, or system operates; to generate specifications for parts; to monitor the quality of products; and to control the efficiency of processes. Nanotechnology, which involves the creation of high-performance materials and components by integrating atoms and molecules, also is introducing entirely new principles to the design process. Most engineers specialize in a field, and each of the major branches of engineering has numerous subdivisions. Civil engineering, for example, includes structural and transportation engineering, and materials engineering includes ceramic, metallurgical, and polymer engineering. Engineers also may specialize in one industry, such as motor vehicles, or in one type of technology, such as turbines or semiconductor materials.

Thinking/Learning Skills:

- Data modeling
- Probability and statistics
- System design
- Communication
- Critical thinking and problem-solving

Questions an Engineer Asks:

- How does that work and what is it used for?
- Does the math support the design?
- How does that look in 2D? 3D?
- How can _____ be upgraded?
- What can we learn from nature's design?

Think Like a Fine Artist

Definition

A Fine Artist is a person who creates fine art. Originally, the term fine artists only referred to those people who worked with oil or watercolor paint, stone sculpture, and pencil or charcoal drawing. The definition has expanded to include artists who work in a variety of mediums which include; metal, paper, clay, film, and wood. The term Fine Art has not changed though. It is a visual art considered to be created primarily for aesthetic, imaginative, and intellectual purposes and judged for its beauty and meaningfulness, rather than its functional value. Fine Art is created for its own sake. They strive to develop new methods or ideas for making art. Fine Artists may create art to send a message through their work, spark controversy, or simply provoke a feeling in the person observing their work. They may use live people or objects as reference to work from and guide their work or work from instinct. Visual elements like space, color, composition, and perspective is used to get the creative effect they wish to convey. Some fine artists have other jobs such as with art museums or art galleries. Others may teach art in schools or workshops.

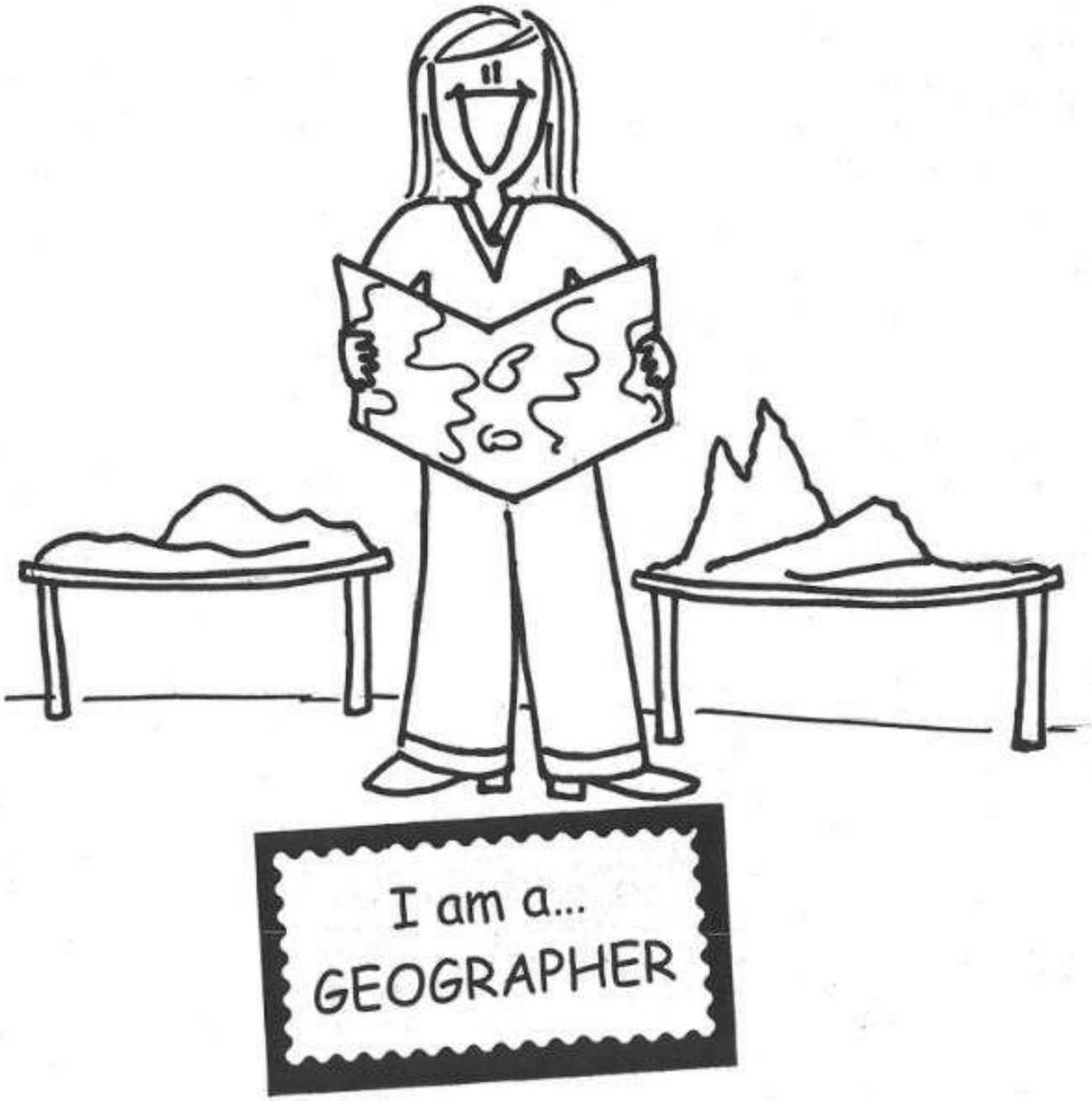
Thinking/Learning Skills:

- Creativity
- Communication
- Collaboration
- Critical thinking
- Self-direction/project management
- Networking

Questions an Fine Artist Asks:

- What inspired this work of art?
- How did this idea come to be?
- What message does this piece share?
- Is this original or have other ideas contributed to this piece?
- How should this be shared with the public?

Think Like a Geographer



Definition

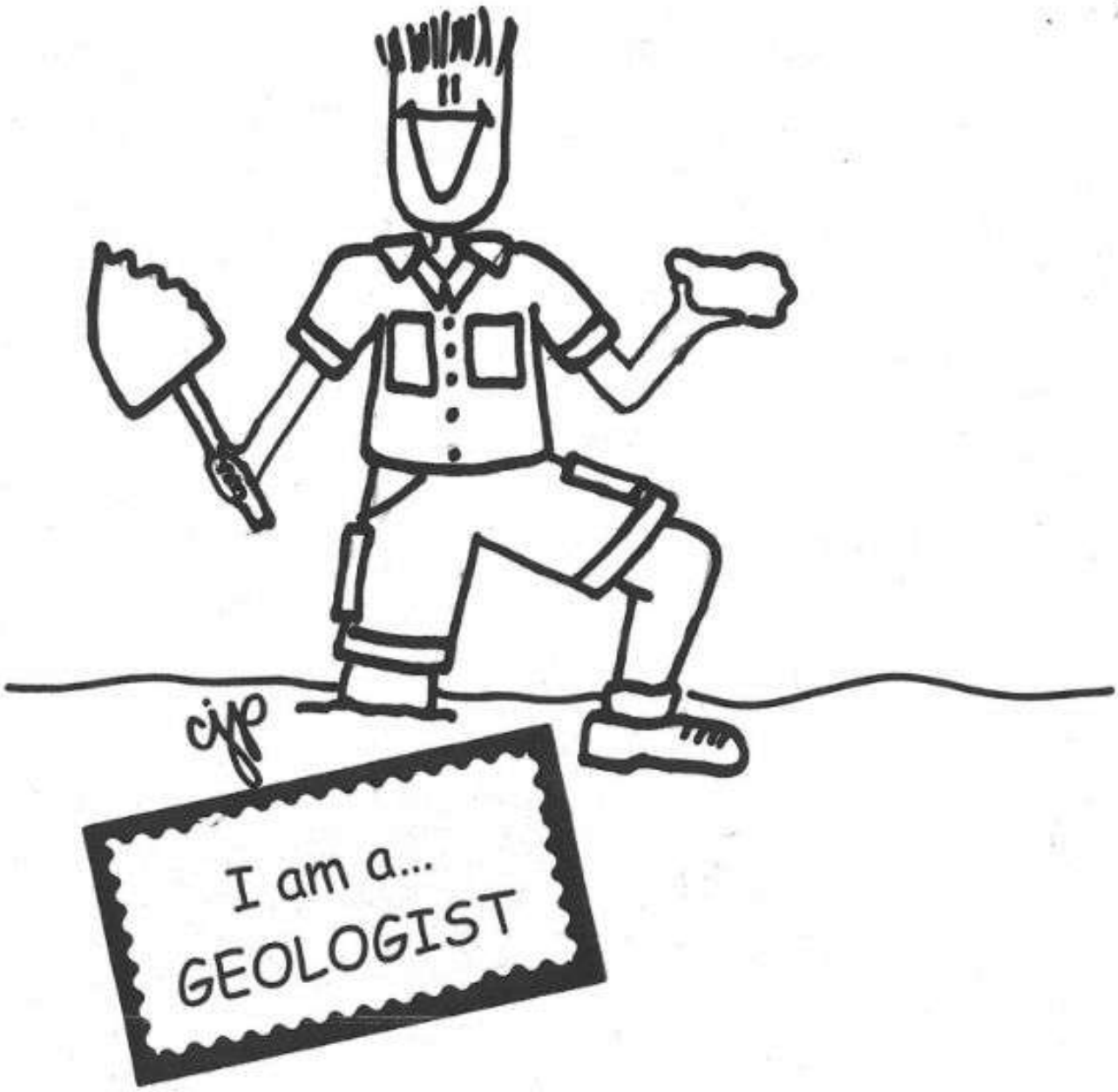
Geographers study the location and distribution of living things and the earth features among which they live. They study where people, animals, and plants live and their relationships with rivers, deserts, and other earth features. Geographers examine where earth features are located, how they came to be there, and why their location is important. A geographer searches for patterns in the distribution of features over the earth's surface and seek to discover the reasons for the patterns. Geographers also search for patterns in human economic, political, and social activities and try to find out why these patterns exist. They want to know about the forces that create an change the landscape. Geographers are also interested in how human beings change the earth and the ways in which the surface of the earth has changed over time. Geographers use information gathered by scientists in many other fields, including geology, biology, anthropology, economics, physics, and sociology. They combine this material with data from their own research to answer questions about the earth's surface. They often record the results of their research on maps, which serve as their most basic tool. Geographers also rely on such other techniques as travel, photography, surveying, interviewing, and the use of statistics.

Thinking/Learning Skills:

- Analytical ability
- Communication skills
- Computer skills
- Critical thinking skills
- Collaboration skills

Questions a Geographer Asks:

- How are we changing the physical environment of Earth's surface?
- What is the significance of the location?
- How will we sustainably feed everyone in the coming decade and beyond?
- How is the movement of people, goods, and ideas changing the world?
- How might we better observe, analyze, and visualize a changing world?


I am a...
GEOLOGIST

Definition

Geology is a study that encompasses all the materials that make up the earth, the forces that act upon the earth, as well as the biology of ancestral inhabitants based on fossil records. A geologist is someone who works to understand the history of the planet we live on, to better predict the future and explain current occurrences. Geologists study earth processes such as earthquakes, landslides, floods, and volcanic eruptions to survey land and draw up safe building plans. When geologists investigate earth materials, they not only investigate metals and minerals, but also look for oil, natural gas, water and methods to extract these. Overall, geology is concerned with the changes of the earth over time, such as climate change and land formation. All divisions of geology provide highly useful information towards understanding the earth and its inhabitants. Depending on the particular specialization in geology, a geologist may study and map rock formations, collect rock samples and fossils, or measure the physical properties of the earth. This helps geologists interpret the active geological processes during the past several million years of earth's history. Geology plays a vital role behind the success of many other different disciplines, such as climatology, civil engineering, and evolutionary biology. A general geologist works with mineralogy, petrology, geological mapping, economic geology, and petroleum geology. Geological mapping consists of documenting geological formations on a map, such as rock patterns and distribution. Geology reports can range from brief daily site updates to large documents of several hundred pages concerning economic assessments and environmental impacts of potential exploration projects. of documenting geological formations on a map, such as rock patterns and distribution.

Thinking/Learning Skills:

- Analytical skills
- Communication skills
- Basic engineering principles
- Mapping techniques
- Enthusiasm, patience, and perseverance

Questions a Geologist Asks:

- How did Earth and other planets form?
- Why does Earth have plate tectonics and continents?
- How does Earth’s interior work, and how does it affect the surface?
- Can earthquakes, volcanic eruptions and their consequences be predicted?


I am a...
HISTORIAN

Definition

Historians study history, a branch of knowledge concerned with the study of past events. To examine past events, historians begin with a question about the past. For example, “How were societies formed, governed, or destroyed? How did law, religion, education, and art change, and how did they influence life? How did people create wealth, and how was it distributed?” The question focuses and directs the research. In order to understand the past, historians need to examine clues or evidence from the past. The evidence could be objects or documents that people left behind. Once historians have examined these objects, they interpret them and write a historical narrative. A historical narrative is a story-like description of events unfolding over time. They include descriptions of characters and their actions. They also include details and explanations of the causes and effects of events. Historical writings, unlike fiction writing, must tell events that are true and based on reliable information. Historians use primary sources and secondary sources to learn basic information. They are skillful in deciphering and interpreting documents and objects. A historian may read documents in their original languages, and routinely master skills from other disciplines, ranging from art history and archaeology to statistics and economics.

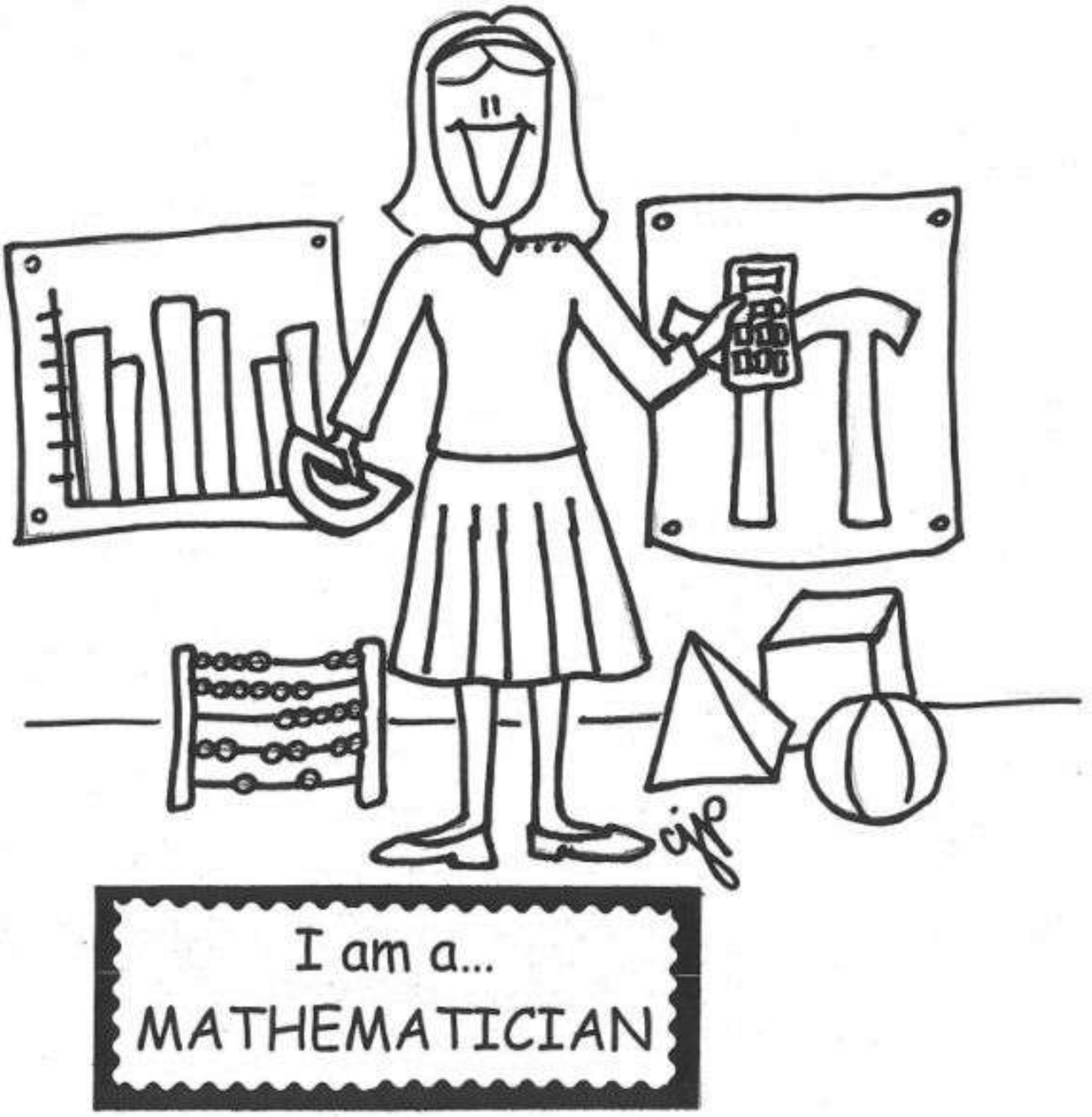
Thinking/Learning Skills:

- Thorough investigative and research skills
- Ability to analyze and interpret information
- Communication skills
- An enquiring mind
- Problem solving skills

Questions a Historian Asks:

- How have groups or societies interacted? What were the results?
- How have leaders governed societies?
- How have belief systems developed and/or changed?
- How are societies similar and different?

Think Like a Mathematician



Definition

Mathematics is one of the oldest and most fundamental sciences. Mathematicians use mathematical theory, computational techniques, algorithms, and the latest computer technology to solve economic, scientific, engineering, and business problems. The work of mathematicians falls into two broad classes: theoretical (pure) mathematics and applied mathematics. These classes, however, are not sharply defined and often overlap. Theoretical mathematicians advance mathematical knowledge by developing new principles and recognizing previously unknown relationships between existing principles of mathematics. Applied mathematicians use theories and techniques, such as mathematical modeling and computational methods, to formulate and solve practical problems in business, government, engineering, and the physical, life, and social sciences. They often use computers to analyze relationships among the variables, and they solve complex problems by developing models with alternative solutions. Mathematicians often are part of interdisciplinary teams that may include economists, engineers, computer scientists, physicists, technicians, and others. For jobs in applied mathematics, training in the field in which mathematics will be used is very important. Mathematics is used extensively in physics, actuarial science, statistics, engineering, and operations research. Computer science, business and industrial management, economics, finance, chemistry, geology, life sciences, and behavioral sciences are likewise dependent on applied mathematics. Mathematicians also should have substantial knowledge of computer programming, because most complex mathematical computation and much mathematical modeling are done on a computer. Mathematicians need to have good reasoning to identify, analyze, and apply basic principles to technical problems. Communication skills also are important, because mathematicians must be able to interact and discuss proposed solutions with people who may not have extensive knowledge of mathematics.

Thinking/Learning Skills:

- Information processing skills
- Reasoning skills
- Inquiry skills
- Creative thinking skills
- Evaluation skills

Questions a Mathematician Asks:

- How do I know that this answer is correct or true?
- What would happen if I took this question a step further?
- What are some more examples that show the same result?
- What happens if…?


I am a...
METEOROLOGIST

Definition

Meteorology is the science of the atmosphere. It takes its name from the Greek word meteoron - something that happens high in the sky. The ancient Greeks observed clouds, winds, and rain and tried to understand how they are connected to one another. The weather was important in their relatively simple society because it affected the farmers who raised their food and their seamen who sailed the oceans. Today, our society and our environment are affected by events and changes in the atmosphere. We must address many complicated issues and answer difficult questions about the behavior of the atmosphere and its effects on the people of our planet. A meteorologist as a person with specialized education "who uses scientific principles to explain, understand, observe, or forecast the earth's atmospheric phenomena and/or how the atmosphere affects the earth and life on the planet." (American Meteorological Society) Many meteorologists have degrees in physics, chemistry, mathematics, and other fields. Basically, meteorologists study and predict the weather and climate and its relationship on other environmental processes and the impact on our lives and economy. Specifically, meteorologists can have many different jobs including daily weather forecasting, atmospheric research, teaching, broadcasting and supporting clients through private sector meteorological companies.

Thinking/Learning Skills:

- Aptitude for computers and technology
- Aptitude for precision and methodical work
- Oral and written communication skills
- Math and physics knowledge
- Problem solving skills

Questions a Meteorologist Asks:

- What is the long-term weather pattern for this area?
- What can we learn about future climate trends based on this data?
- How might the weather impacted this particular event (past or present)?


I am a...
PHYSICIST

Definition

A physicist applies themselves to the discovery and study of the ways that energy and matter interact. Physicists often times conduct, investigate, and conclude to solutions or theories in science. They also design scientific equipment for example electron microscopes, particle accelerators, and lasers that can be used to perform experiments. A physicist is curious about the properties of the natural world like atom formations or the force of gravity and develop scientific theories and models that helps them understand and explain it. They may study the evolution of the universe and the fundamental properties of molecules and atoms. In the case of the application of practical areas, a physicist may develop medical equipment and advanced materials. There are physicists that do basic research to increase scientific knowledge by working in teams with other scientists, engineers, and technicians. Physicists can work on applied physics which has a focus on fiber optics, medical, or nuclear physics. Those who work in theoretical physics are more focused on what could be. They use abstract thinking and mathematical equations to explain physical properties that interact with the world or universe, thus having a less direct effect the general public. Physicist mostly work in laboratories for private industries, hospitals, research centers or universities. Many physicist present their research findings at conferences and lectures and also write scientific reports that are sometimes published in scholarly journals. This occupational field primary focus is designing, implementing, and drawing conclusions on scientific experiments which in turn will hopefully advance of science and industry.

Thinking/Learning Skills:

- Scientific reasoning skills
- Proficiency in mathematics
- Problem solving skills
- Technical knowledge
- Data analysis skills

Questions a Physicist Asks:

- How may I model the data so others can understand?
- What question(s) am I looking to answer?
- What principles or laws verify my answer? Which don't?
- What is the best approximation of the answer?
- What caused … to happen? What is the effect of …?

Think Like a Political Scientist

Definition

Political science is the systematic study of political life. Political scientists seek answers to such questions as, “What reasons justify the actions of the government?” and “Whose interests do governments want to address?” They study various forms of government as well as political parties, pressure groups, elections, and international relations. All these are activities of individuals and groups and involve basic human relationships. Political science deals with values such as equality, freedom, justice, and power. Political science is closely related to economics, history, law, philosophy, and sociology. Political scientists usually influence the world by: educating citizens and political leaders, contributing to debates on political issues, and by encouraging different ways of looking at the world. Political scientists try to understand stability and revolution, repression and liberty, equality and inequality, war and peace, and democracy and dictatorship. They try to explain and understand recurrent patterns in politics, rather than specific political events.

Thinking/Learning Skills:

- Analytical skills from other disciplines (law, history, sociology, etc.)
- Research skills
- Communication skills
- An international perspective
- Generalization skills (combining knowledge from humanities, social sciences, and natural sciences)

Questions a Political Scientist Asks:

- Why are there different types of governments?
- What are the effects of different electoral rules?
- Why do some countries have more political parties than others?
- What government actions tend to increase or decrease …?


I am a...
SCIENTIST

Definition

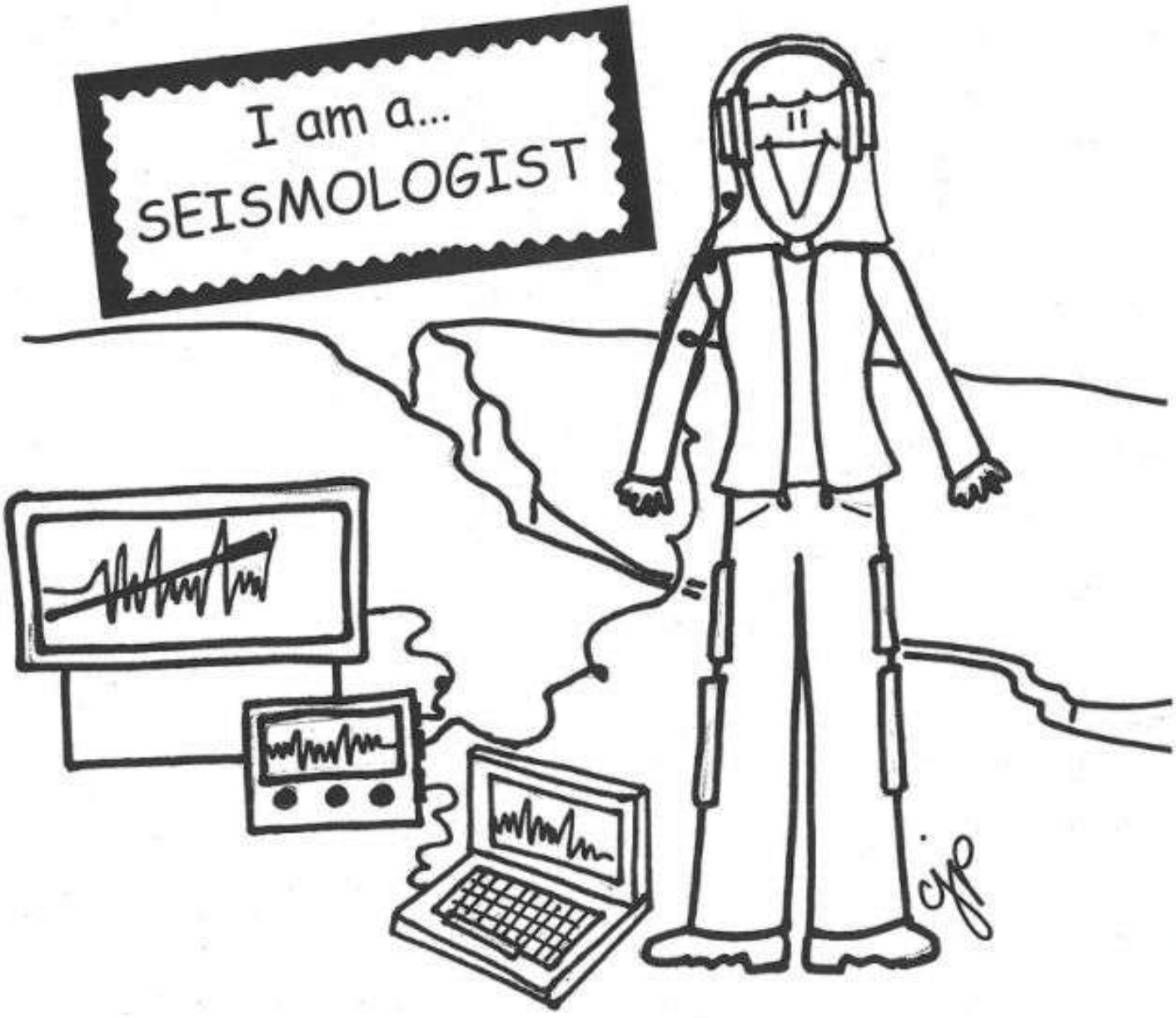
The word scientist is a general term, used to describe someone who researches and examines various aspects of the physical world in order to attain a better understanding of how things work and function. There are many specializations of 'scientist', and depending on which field of study one chooses to follow, the work can vary greatly. Each scientist, however, follows 'the scientific method', which is a strict set of rules that ensure all new discoveries are factual and not just speculation. The steps include: asking a question, doing background research, constructing a hypothesis, testing the hypothesis by doing an experiment, analyzing the data to draw a conclusion, and communicating your results. Scientists work in every field imaginable, and can therefore be found working for an expansive range of employers. Large and small companies will hire scientists to work on products and research projects. Universities will hire scientists to do research work or to teach. Governments and hospitals issue research grants and hire scientists to work on funded projects. Regardless of the path the scientist decides to follow, the ultimate goal is to always add knowledge and insight to the larger scientific community, as well as to help ignite new discoveries for the future.

Thinking/Learning Skills:

- Analysis skills
- Synthesizing skills
- Evaluating skills
- Generating and expressing ideas
- Problem solving skills

Questions a Scientist Asks:

- What can I observe?
- What have others learned about this …?
- Based on my observations, what questions do I have? What might be a question I can test?
- How do I set up a testable experiment?
- What do my results mean?
- Can I get the same results if I do this experiment again?


I am a...
SEISMOLOGIST

Definition

Seismology is the study of seismic waves, energy waves caused by rock suddenly breaking apart within the earth or the slipping of tectonic plates. Seismology also studies seismic waves deliberately induced by controlled explosions, large trucks, and construction equipment, usually to search for underground sources of petroleum and natural gas. Seismologists study earthquakes and their results, like tsunamis, and landslides. They may also monitor active volcanoes for tremors and signs of an impending eruption. They use seismographs and computer equipment to collect and analyze data on seismic events. Most seismologists plan and conduct field studies, where they collect samples and conduct site surveys. They then test the samples they collect in the lab. They also analyze air photos, well logs (geological notes made during drilling), rock samples, and other data to locate and assess underground oil and mineral resources. They make geologic maps, write reports, and present their findings to clients and colleagues.

Thinking/Learning Skills:

- Critical thinking skills
- Problem solving skills
- Ability to work independently
- Interpersonal skills
- Communication skills

Questions a Seismologist Asks:

- How are we going to define location (epicenter, rupture area, area close to major exposure)?
- How deep is this event?
- What is/should be the construction quality?
- What data can we collect to better make predictions?

Think Like a Sociologist

Definition

Sociology is the study of the individuals, groups, and institutions that make up human society. A society is a group of people who have a similar cultural background and live in a specific geographical area. Sociologists study the relationships among groups in a society. A sociologist studies the formation of groups of people and their behavior and the causes of their different types of behaviors. Sociologists also study the attitudes and different points of views people have in a society. They use surveys, controlled experiments, and field observations to study people in a society. Surveys are a list of questions prepared by sociologists. These surveys consist of clearly worded questions about the participant's background and his or her attitude or point of view on the subject being studied. They observe and record their data. The data they collect can help explain the causes of crime, poverty, and other social problems. Then, sociologists can help develop solutions or theories for such problems. Sociology is a social science and is closely related to anthropology, psychology, and other social sciences.

Thinking/Learning Skills:

- Reading critically
- Interpreting data
- Reasoning logically
- Working on a team
- Articulating and/or defending a position
- Conveying complex information and ideas

Questions a Sociologist Asks:

- What happened?
- Did this event happen everywhere? Why or why not?
- What changed over time to this individual, group, institution, or society?
- What can explain the relationship between … and …?


'00 '02 '04 '06
I am a...
STATISTICIAN

Definition

Mathematicians and statisticians apply theories and techniques, such as mathematical or statistical modeling, to solve practical problems. Typically, they work with individuals in other occupations to solve these problems. For example, they may work with chemists, materials scientists, and chemical engineers to analyze the effectiveness of new drugs. Others may work with industrial designers to study the aerodynamic characteristics of new automobiles. To work on these problems, mathematicians and statisticians must first collect data. Statisticians design surveys, questionnaires, experiments, and opinion polls to collect the data they need. Surveys may be mailed, conducted over the phone, collected online, or gathered through some other means. After the data are collected, mathematicians and statisticians use specialized statistical software to analyze data. In their analyses, mathematicians and statisticians identify trends and relationships within the data. Mathematicians and statisticians present the findings from their analyses using methods such as written reports, tables, charts, and graphs to other team members and to clients. Mathematicians and statisticians work in many fields, such as education, marketing, psychology, sports, or any other field that requires the collection and analysis of data. In particular, government, healthcare, and research and development companies employ many statisticians.

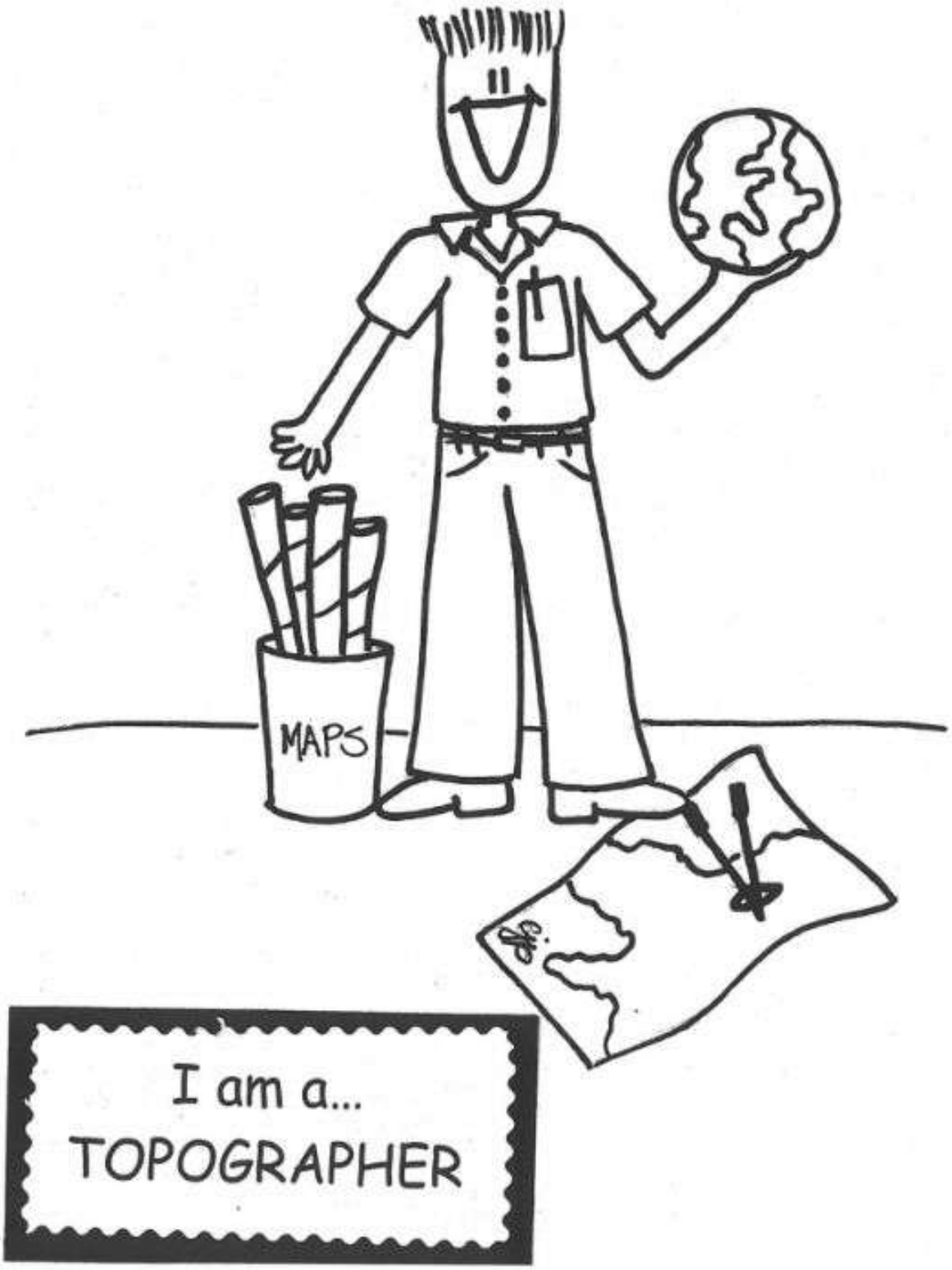
Thinking/Learning Skills:

- Expertise in applied and theoretical statistics
- Data mining, cleaning, and visualization skills
- Proficiency in computer languages
- Strong communication skills
- Objective reasoning skills

Questions a Statistician Asks:

- What trend and/or pattern is important in the data?
- What are the outliers, missing data points, or other inconsistencies?
- What size is the data set?
- In what context (how was the data collected, when was the data collected, what was going on at the time) was the data collected?

Think Like a Topographer



Definition

A topographer is a specific type of cartographer. Topographers use contour lines to create 2-dimensional representations indicating the 3-dimensional aspects of portions of the earth's surface. Increasingly, these maps may be created digitally as well as on paper. Topographers collect, analyze and plot data into the form of a map. They might gather data from surveys, photographs, geographic information systems (GIS), and other remote sensing technology, such as satellites and light imaging resources. While it's possible for maps to contain both spatial and non-spatial data, topographers primarily use spatial information such as latitude, longitude and elevation. Topographers should have strong visualization skills and a high degree of accuracy in their work. Topographers usually work at a computer in an office, though they may travel to view areas being mapped.

Thinking/Learning Skills:

- Communication skills
- Complex problem solving
- Knowledge of principles and methods found in geography
- Knowledge of computer programs
- Attention to detail

Questions a Topographer Asks:

- What story do I want to tell with the visuals?
- How does scale or projection work to improve or distort the information?
- What data do I need? How am I going to get the data?
- What can be learned about the culture, country, economy, and/or social systems from this map?

Think Like a Volcanologist

Definition

A volcanologist is a geologist who studies volcanoes and volcanic activity. A volcanologist is employed by governments, universities, and research institutes to visit active and dormant volcanoes around the world. The goal is to collect physical samples and data, which is analyzed in labs. By studying volcanic rock, ash, and debris – as well as data about seismic activity, atmospheric gases, and geological composition – volcanologists set out to understand why and how volcanoes erupt, and to predict when and where they'll erupt so you can protect populations that live near them. There are specialists in volcanology. A physical volcanologist studies the eruption process and erupted deposits, which can help scientists learn volcanoes' histories and predict their future behaviors. Petrologists study the rocks and minerals volcanoes emit, which can help scientists understand more about the pressure and temperature of magma chambers in the earth's crust. A geodist studies the physical changes that volcanoes go through during eruptions. Finally, geochemists are interested in volcanoes' gaseous emissions, which impact climate change and are the best predictors of future eruptions.

Thinking/Learning Skills:

- Passion for adventure, travel, and working outdoors
- Persistence
- Analytical skills
- Computer literacy
- Team-working skills
- Project management skills

Questions a Volcanologist Asks:

- What happened leading up to the volcanic activity?
- What happened as a result of the volcanic activity?
- How do we define the different stages of volcanoes?
- Why does the Ring of Fire effect exist only in the Pacific Ocean?


I am a...
ZOOLOGIST

Definition

Zoologists study animals and other wildlife, and how they interact with their ecosystems. They study the physical characteristics of animals, animal behaviors, and the impacts humans have on wildlife and natural habitats. Zoologists perform a variety of scientific tests and experiments. For example, they take blood samples from animals to assess their levels of nutrition, check animals for disease and parasites, and tag animals in order to track them. Zoologists use geographic information systems (GIS), modeling software, and other computer programs to estimate wildlife populations and track the movements of animals. They also use these computer programs to forecast the spread of invasive species, diseases, changes in the availability of habitat, and other potential threats to wildlife. Zoologists conduct research for a variety of purposes. For example, many zoologists work to increase our knowledge and understanding of wildlife species. They also work closely with public officials to develop wildlife management and conservation plans that protect species from threats and help animal populations return to and remain at sustainable levels. Most zoologists work on research teams with other scientists and technicians. For example, zoologists may work with environmental scientists and hydrologists to monitor the effects of water pollution on fish populations. Many zoologists study specific species. Some study animals based on where they live. Other zoologists study evolution and animal behavior.

Thinking/Learning Skills:

- Understanding of scientific rules and methods
- Understand computer applications
- General knowledge of other sciences (cellular biology, anatomy, ecology, etc.)
- Complex data analysis skills
- Critical and logical thinking skills
- Communication skills

Questions a Zoologist Asks:

- How can we maintain wildlife health?
- How does human activity impact wildlife?
- What is the origin, interrelationships, distribution, etc. of …?
- Is this animal native to this area? Why or why not? What is its impact to the region?
- How should this animal be categorized?

Think Like a Disciplinarian (Examples within Core Content Areas)				
Language Arts	Mathematics	Social Studies	Science	Fine Arts
Author	Statistician	Historian	Geologist	Artist
Editor	Engineer	Geographer	Biologist	Musician
Journalist	Computer Technician	Judge	Medical Doctor	Conductor
Linguist	System Analyst	Politician	Registered Nurse	Composer
Advertising Director	Accountant	Sociologist	Chemist	Architect
Translator	Economist	Curator	Veterinarian	Sculptor
Teacher	Treasurer	Archeologist	Environmentalist	Actor
Publisher	Banker	Anthropologist	Botanist	Graphic Artist
Printer	Mathematician	Criminologist	Oceanographer	Photographer
Librarian	Stock Broker	Political Scientist	Astronomer	Web Designer
Broadcaster	Entrepreneur	Public Administrator	Rocket Scientist	Dancer
Photojournalist	Appraiser	Social Worker	Forest Ranger	Fashion Designer
Orator	Computer Engineer	Cartographer	Zoo Keeper	Film Director
Attorney	Programmer	Psychologist	Astronaut	Animator

Disciplinarian Research - Example and Blackline Master

Disciplinarian I am investigating: Political Scientist	
Big Ideas	Supporting Details
Examine relationships	International relations Political parties Pressure groups
Interested in ethical issues	Equality Freedom Justice Power
How knowledge cuts across disciplines	Economics History Law Philosophy Sociology
Contributions to the world through different perspectives	Educate citizens Educate and/or become political leaders Educate public on political issues
Study patterns over time of world events	Stability versus revolution Repression versus liberty Equality versus inequality War versus peace Democracy versus dictatorship
Unanswered questions in my field of study:	

Disciplinarian I am investigating: _____	
Big Ideas	Supporting Details
Unanswered questions in my field of study:	

The disciplinarian I selected:

Interesting details I learned about this disciplinarian:

Ethical issues this disciplinarian might address in his/her work:

How this disciplinarian contributes to a greater understanding of the content I am learning:

Questions I might ask if I were this disciplinarian:

Examine the big idea of either ***conflict*** or ***adaptation*** and relate it to your disciplinarian.

Is this discipline one you might consider as a career? Why or why not?

Resources:

- https://www.edhelper.com/ReadingComprehension_37_131.html
- https://academics.pnw.edu/biology/student-resources/
- https://study.com/academy/lesson/what-does-a-chemist-do-lesson-for-kids.html
- http://kids.nceas.ucsb.edu/ecology/ecologyascareer.html
- https://studentscholarships.org/salary/679/engineers.php#sthash.rdFfqtBH.dpbs
- https://www.careerexplorer.com/careers/geologist/
- https://studentscholarships.org/salary/484/mathematicians.php#sthash.HMEQLAbN.dpbs
- https://www.ametsoc.org/ams/index.cfm/education-careers/career-guides-tools/all-about-careers-in-meteorology/
- https://www.yourfreecareertest.com/physicist/
- https://www.yourfreecareertest.com/artist/
- https://www.careerexplorer.com/careers/scientist/
- https://www.sciencebuddies.org/science-fair-projects/science-fair/steps-of-the-scientific-method
- https://www.environmentalscience.org/career/seismologist
- https://www.bls.gov/ooh/math/mathematicians-and-statisticians.htm#tab-2
- https://www.timeshighereducation.com/student/subjects/what-can-you-do-theology-degree#survey-answer
- https://study.com/articles/Become_a_Topographer_Step-by-Step_Career_Guide.html
- https://www.careermatch.com/job-prep/career-insights/profiles/volcanologist/
- https://www.truity.com/career-profile/zoologist-or-wildlife-biologist
- http://individual.utoronto.ca/boyd/anthro.htm
- http://crete.classics.ox.ac.uk/U1s1/U1S1L1.html
- https://en.wikibooks.org/wiki/Biology,_Answering_the_Big_Questions_of_Life/Introduction
- https://www.ccber.ucsb.edu/research/katherine-esau-digital-archive-esaus-career-plant-anatomist/career-botany
- https://blogs.scientificamerican.com/the-curious-wavefunction/five-questions-that-should-keep-chemists-awake-at-night/
- https://besjournals.onlinelibrary.wiley.com/doi/pdf/10.1111/1365-2745.12025
- https://www.economicshelp.org/blog/21651/economics/basic-questions-of-economics/
- https://www.wikihow.com/Think-Like-an-Engineer
- https://www.artiststrong.com/asking-artists-questions/
- https://www.livescience.com/4849-top-10-questions-earth.html
- https://www.insurancejournal.com/blogs/corelogic/2015/10/14/384464.htm
- https://www.wikihow.com/Think-Like-a-Scientist
- https://flowingdata.com/2010/03/04/think-like-a-statistician-without-the-math/
- https://blogs.scientificamerican.com/guest-blog/what-cartography-taught-me-about-science-writing/
- https://www.esri.com/esri-news/arcwatch/0216/its-a-wonderful-life-as-a-cartographer
- http://www.livebinders.com/play/play?id=1354748
- https://www.aboutbioscience.org/careers/zoologist/
- The People - Christy Joy Phillips