Formulating a Research Question

*“Creativity is more important than intelligence.”*

# Discussion

1. Whose quote is this?
2. Explain what the author means.
3. Can science (chemistry, physics, biology, etc.) be creative?
4. What might be the advantage of being a creative scientist? A non-creative scientist?

# Developing a problem question

***A good problem question should be:***

1. Original—a new question that advances our understanding of the natural world
2. Easily formed into a testable hypothesis
3. Useful—have a practical application (or a possible application)

## Getting Ideas for Research

1. Read a lot
2. Consider topics that interest you
3. Ask a friend, teacher, acquaintance
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Brainstorming

Come up with some potential problem questions that are worthy of scientific research. List below some topic areas that you are interested in and questions that you could investigate.

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| Topic | Question(s) |
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Q: What if I don’t really know what “Life Science” or “Environmental Science” is?

A: Look it up.

Your Textbook Chapters are a good guide:

* The Dynamic Earth (land, sea and air)
* The Organization of Life (ecosystems, evolution and biodiversity)
* How Ecosystems Work (food chains, natural resource cycles)
* Biomes
* Aquatic Ecosystems (fresh and saltwater)
* Understanding Populations
* The Human Population
* Biodiversity
* Water
* Air
* Atmosphere and Climate Change
* Land
* Food and Agriculture
* Mining and Mineral Resources
* Nonrenewable Energy
* Renewable Energy
* Waste
* The Environment and Human Health
* Economics, Policy and the Future

A typical “Life Science” course will cover the following topics (and you will too in 9th grade)

* Ecology
* Cells – photosynthesis, cell respiration, cell growth and division
* Genetics – DNA, inheritance
* Evolution – history of life, classification
* Microorganisms and Fungi – bacteria and viruses, protists, fungi
* Plants – roots, stems, leaves, reproduction, seeds, adaptations
* Invertebrates – sponges, jellyfish, worms, mollusks, bugs
* Vertebrates – fish, amphibians, reptiles, birds, mammals
* The Human Body – nerves, bones, guts, growth, development, reproduction