

# Empirical Evidence: A Definition - Worksheet - KEY



Read the article and then answer the questions.

1. Empirical evidence is information acquired by observation or experimentation. (3 pts)
2. How do scientists use empirical evidence? (3 pts) **Data is recorded and analyzed**
3. Why do scientists use empirical evidence? (3 pts) **It is a process that is part of the scientific method**
4. How do scientists start the scientific method? (3 pts) **forming questions, or hypotheses, and then acquiring the knowledge to either support or disprove a specific theory.**
5. What is empirical research? (3 pts) **The process of finding empirical evidence**
6. What is empirical data? (3 pts) **The information that comes from the research**
7. With the data/knowledge that scientists have collected they carefully design their research methods. (3 pts)
8. Before any pieces of empirical data are collected, scientists carefully design their research methods to ensure the accuracy, quality and integrity of the data. (3 pts)
9. What are the two research methods used to gather empirical measurements and data? qualitative and quantitative. (2 pts)
10. **Qualitative** research examines the reasons behind human behavior. It involves data that can be found using the human senses. It is often done in the beginning of an experiment. (1 pt)

11. **Quantitative** research involves methods that are used to collect numerical data and analyze it using statistical methods. This data is more exact in its measurements, including mass, size or volume. It is often used at the end of an experiment to refine and test the previous research. (1 pt)

12. What are some things one can look for when determining if evidence is empirical:

- Can the experiment be **recreated** and **tested**? (2 pts)
- Does the experiment have a **statement** about the **methodology**, **tools** and **controls** used? (4 pts)
- Is there a **definition** of the group or **phenomena** being studied? (2 pts)

13. The strength of any scientific research depends on the ability to gather and analyze empirical data in the most **unbiased** and **controlled** fashion possible. (2 pts)

14. Is a scientific laws the same thing as empirical laws? Why or why not?

**Yes** or No (circle one) (1 pt)

Why? **If a scientific law can be tested using experiments or observations, it is considered an empirical law.** (3 pts)