SCIENTIFIC METHOD

- For many years, people believed that atoms were the smallest unit of matter.
  - Today, science has proven the existence of protons, electrons, and neutrons.
- Modern physics has also shown that protons and neutrons are made of smaller particles called quarks joined together by other particles called gluons.

SCIENTIFIC METHOD

Science uses laws, theories and models to conduct investigations:

- **Laws** are not used to explain but are instead used to predict, describe and summarize.
- **Theories** are used to explain why something happens the way it does.
- **Scientific models** are used to represent or conceptualize a system of ideas, events or processes.

SCIENTIFIC METHOD

- The **scientific method** is a procedure consisting of:
  - Systematic observation
  - Measurement
  - Experiment
  - Formulating, testing, and modifying hypotheses
- Scientists use the scientific method to verify hypotheses through testing and experimentation.

SCIENTIFIC METHOD

Ask a question or make an observation

Create a hypothesis

Test hypothesis through experimentation

Draw conclusions

Hypothesis is true

Hypothesis is false or needs revision

Communicate results

SCIENTIFIC METHOD

- The scientific method ensures reliable and valid results.
- Reliability refers to how consistent the measure is.
    - Whether the results can be reproduced if the same conditions are met
- Validity refers to how accurate the results are.
    - Ensures the results represent what they are supposed to measure

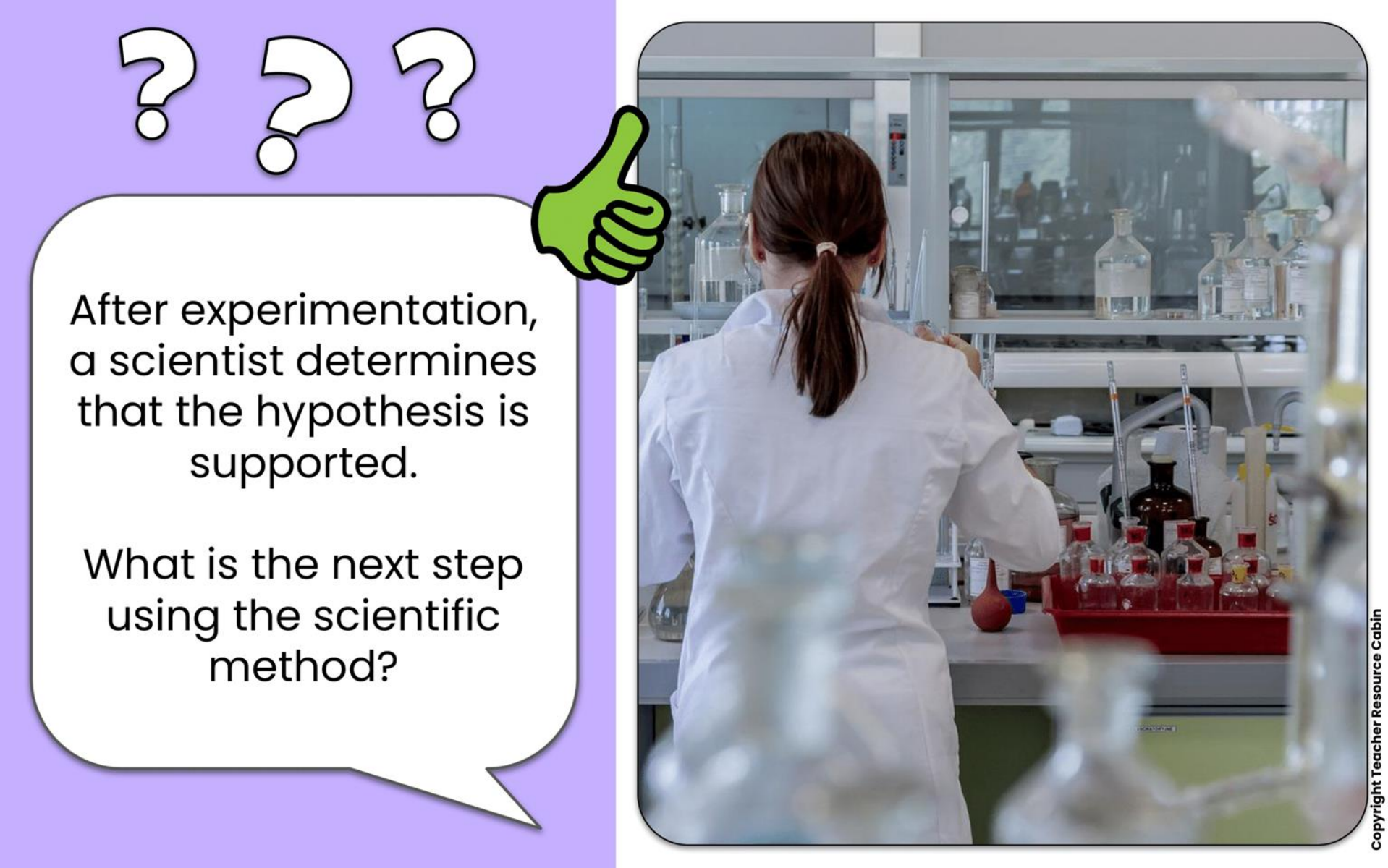
Think about it!

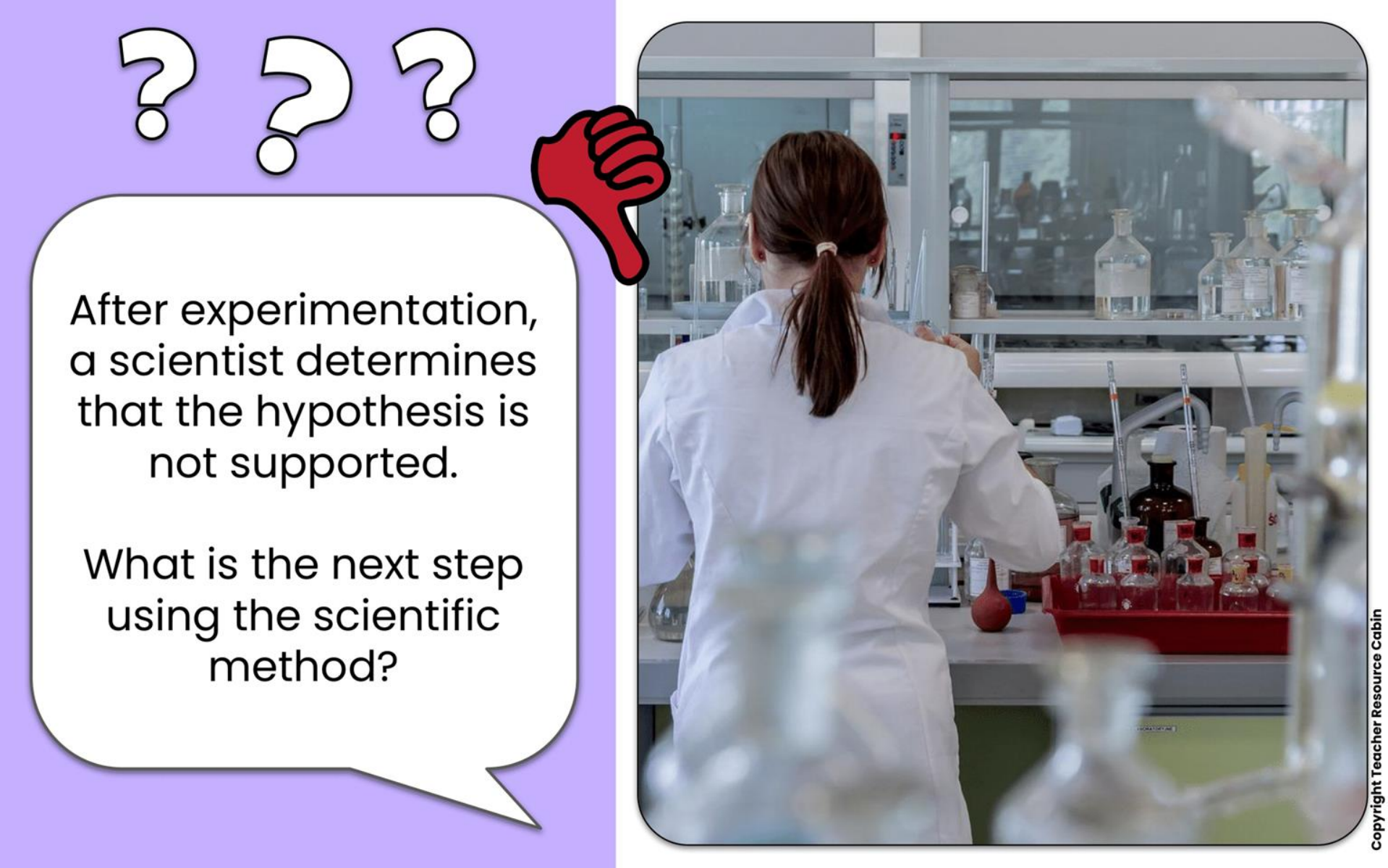
Write the definition for each word below.

Scientific Method

Reliability

Validity





SCIENTIFIC METHOD

Ask a question or make an observation

Create a hypothesis

Test hypothesis through experimentation

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Hypothesis is true

Hypothesis is false or needs revision

Communicate results

Think about it!

Create a flowchart for the scientific method by dragging and dropping the text.

- Hypothesis is true
- Ask a question or make an observation
- Communicate results
- Draw conclusions
- Hypothesis is false or needs revision
- Test hypothesis through experimentation
- Create a hypothesis