Tools and Safety Name:

Lesson 6, Article.

Inquiry. R: 5.7

In **laboratories** (lab-or-uh-tor-eez) and in the field, scientists need to select the right **tools** for **research**. Tools help find **solutions**, or answers, to their **investigation**. Tools may **compare** properties of objects to see how they are **similar** or **different**. Special tools are used to gather, **analyze**, and understand data.

Kinds of Tools

Scientists use tools to make **observations**, or do experiments. Some tools, like glass beakers and graduated cylinders, measure liquids. Thermometers measure temperature. Balances or spring scales measure mass and force. Standard and **metric** rulers identify length. A stopwatch measures time. Hand lenses help magnify materials. Compound microscopes allow scientists to view microscopic or cellular (sell-u-lar) structure. Calculators, sound recorders, cameras, and computers aid in storing collected information. Voltmeters measure electrical voltage. All these tools were invented to **identify**, **observe**, and **measure** the world around us.

These tools help us gather **data**, or collected information. It's important to use measuring units (grams, pounds, centimeters) when measuring, calculating, or sharing values for data. A **variable** is a single factor in an experiment, like sunlight or water. By focusing on one variable at a time, scientists learn the cause of the results they have observed. Repeated experiments help ensure that collected data and results are **reliable**, or trusted, as **evidence** (proof).

As scientists in the classroom, we should **conserve** and **reuse** our science resources.

Safety

Scientists must practice **safe** procedures, or steps, to complete their study in the classroom and in the laboratory. Students and scientists should wear protective gloves and safety **goggles** when using chemicals. A fire extinguisher should be handy. Water to wash off harmful chemicals is important. A first aid kit is important, too. By demonstrating good safety practices during field and laboratory investigations, injuries can be avoided.

Be wise! Reading non-fiction is a smart idea. Suggested readings: P. 75, P. 89.

Lesson 6

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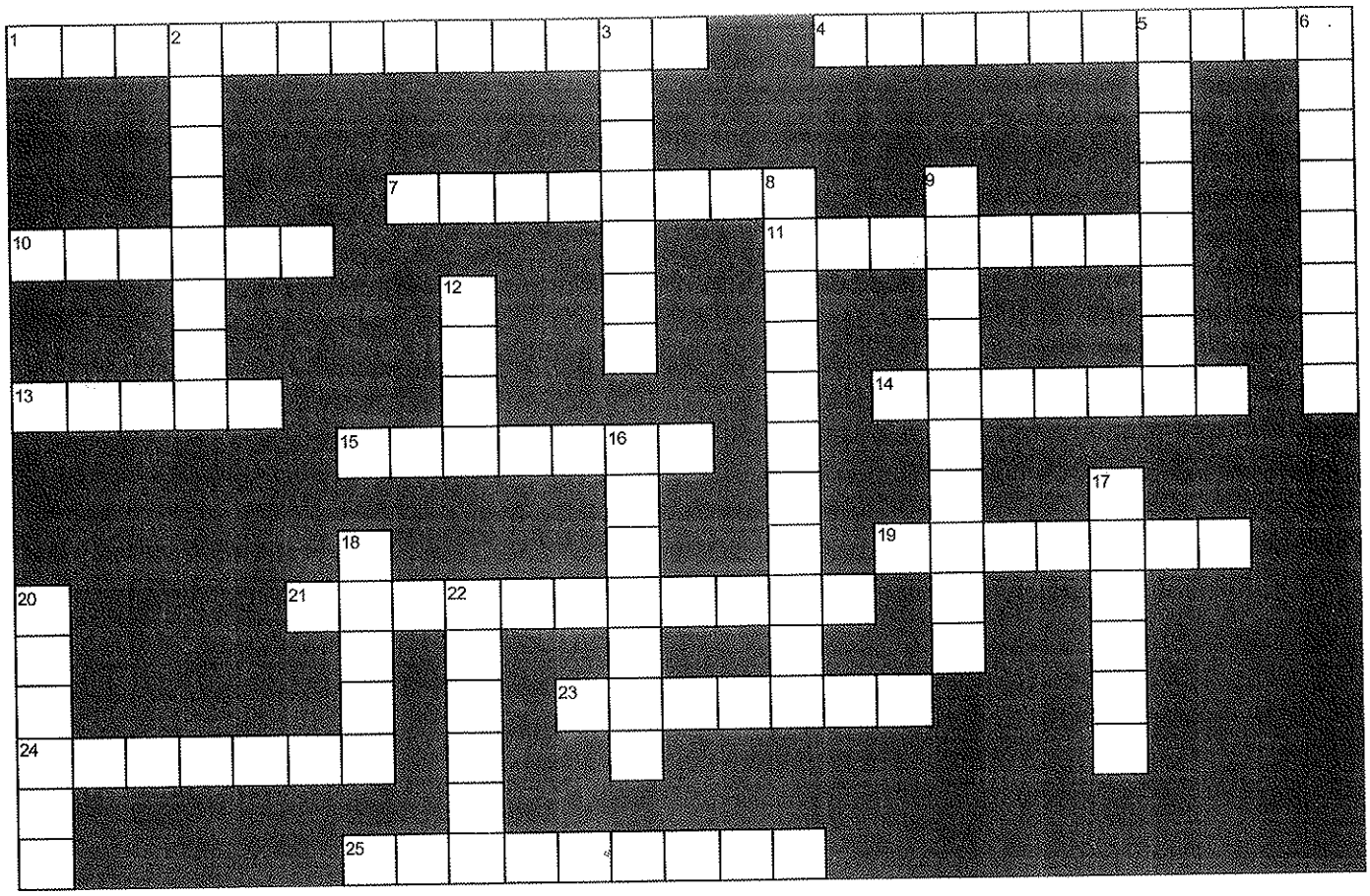

ACROSS

1 Water pulled from the atmosphere to Earth by gravity. P. 25.

4 A prediction made before doing an investigation.

7 As important for our bodies as good food. P. 74.

10 Important when doing experiments so no one gets hurt.

11 A single factor in an experiment.

13 A design to show how an idea would work. ★

14 A network of many food chains. (2 words.) P. 57.

15 The force that holds the planets in orbit around the sun. P. 96.

19 Looking at how objects are similar.

21 A helpful guide for a balanced diet. (2 words.) P. 74.

23 A measuring tool that compares weight.

24 A huge chunk of ice that can carve valleys. P. 54.

25 Land made from Earth's constructive and destructive forces. P. 54.

DOWN

2 When you use only what you need so you have more for later.

3 The result of an action or event. P. 110.

5 Scientific proof.

6 The answer to an investigation.

8 The process of liquid heating and changing into vapor. P. 25.

9 A tool to view objects too tiny to see with your eyes.

12 Collected information.

16 Heat energy is also known as ___ energy. P. 62.

17 A space with no matter. P. 62.

18 Our sun's system is called a ___ system. P. 96.

20 An important gas made by plants, needed for animal survival. P. 57.

22 Used to solve a problem. ★

Parent/Guardian Signature:

Date:

1. Which tool would you use to measure the mass of an object?
   - O A. Stop watch
   - O B. Microscope
   - O C. Balance scale

2. Why do scientists do multiple trials in an investigation?
   - O A. Scientists keep repeating an investigation until they get the results they want.
   - O B. Scientists keep repeating an investigation to see if the results are consistent.
   - O C. Scientists keep repeating an investigation so they can change more variables.

3. Explain why safety equipment in a lab is important.
   - Identify two pieces of safety equipment.
   - Explain how each piece of equipment protects scientists.

One piece of equipment:
Explain how this protects scientists:
Another piece of safety equipment:
Explain how this protects scientists: