

Science Skills -8

Identifying Errors

Read the following paragraph and then answer the questions.

Andrew arrived at school and went directly to his earth science class. He took off his cap and coat and sat down at his desk. His teacher gave him a large rock and asked him to find its density. Realizing that the rock was too large to work with, Andrew got a hammer from the supply cabinet and hit the rock several times until he broke off a chip small enough to work with. He partly filled a graduated cylinder with water and suspended the rock in the water. The water level rose 2 cm. Andrew committed this measurement to memory. He next weighed the rock on a balance. The rock weighed 4 oz. Andrew then calculated the density of the rock as follows: He divided 2 cm by 4 oz. He then reported to his teacher that the density of the rock was .5 cm/oz.

Questions

1. What safety rule(s) did Andrew break?
2. What mistake did Andrew make using measurement units?
3. What should Andrew have done with his data rather than commit them to memory?
4. What is wrong with the statement “He next weighed the rock on a balance”?
5. Why is “4 oz.” an inappropriate measurement in a science experiment?
6. What mistakes did Andrew make in calculating density?

PROCEED WITH CARE

Professor Moses is constantly reminding his students about proper lab procedures. He has asked some of them to make a poster about safe behaviors in the lab. This is the poster his students prepared. It has some flaws.

Circle the number of any rules that are correct. Fix the rules that are not correct by crossing out wrong information and writing it correctly.

LAB SAFETY RULES

1. Study your procedure ahead of time to be aware of possible hazards.
2. Use whatever equipment you can find, including kitchen utensils.
3. Wear goggles and an apron when heating, pouring, or using chemicals.
4. Always slant test tubes toward you when heating a substance, so you can watch the substance carefully.
5. Keep a fire alarm, fire blanket, fire extinguisher, and first aid kit nearby.
6. Wash the lab containers carefully before you eat out of them.
7. Only inhale chemicals that you are sure are safe.
8. Taste substances by putting just a tiny bit on your tongue.
9. Wash any spills off as soon as the lab is over.
10. Keep all excess materials away from flames.
11. Wear a baggy-sleeved shirt whenever you work in the lab.
12. Tie back loose hair when working in the lab.
13. If your clothes catch on fire, run from the lab immediately.
14. Return all chemicals and supplies to their proper containers.
15. Only report major injuries or accidents to the teacher.
16. Clean up by washing all the materials down the sink.

I guess I should have paid better attention.