

Element Clue Hunt

Use physical properties and modern uses to sort periodic-table elements.

6.6.C "identify elements on the periodic table as metals, nonmetals, metalloids, and rare Earth elements based on their physical properties and importance to modern life;"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each physical-property clue. Circle every named element and write M, NM, ML, or RE beside it to show metal, nonmetal, metalloid, or rare Earth element.

Clues in the Elements

- ① The periodic table organizes elements by patterns in their properties. Most metals fill the left side and center. Metals are usually shiny, can be shaped without breaking, and conduct heat and electric current well. Copper wiring and aluminum cans use these traits. On the right side, nonmetals often have dull surfaces and do not conduct electricity well. Oxygen and carbon are nonmetals that are important in living things and useful materials people use each day at home.
- ② Metalloids sit near the zigzag staircase that separates metals from nonmetals. They have some traits of both groups. Silicon, for example, can carry electric current under certain conditions, so it is useful in computer chips and solar panels. Rare Earth elements are a special group of metals that includes the lanthanides. Many lanthanides appear in the separated rows at the bottom of many periodic tables. One rare Earth element, neodymium, helps make strong magnets for headphones and wind turbines.
- ③ Scientists use more than table position when identifying a group. A sample's luster, brittleness, ability to be bent, and electrical conductivity provide clues. A brittle solid that conducts electricity only in certain conditions may be a metalloid. A material chosen for phone speakers may contain a rare Earth element because its magnets can be very strong. Mining and recycling these elements matter because modern devices need them for daily communication and energy technology in many places.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 An unknown element is shiny, can be bent into a new shape, and conducts electric current well. Which group is it most likely in? Where is most of that group on the periodic table?

2 An element is on the right side of the periodic table and does not conduct electricity well. Which group does it most likely belong to?

3 A brittle solid carries electric current only under certain conditions and is used in an electronic sensor. Which group is the best match? Use one property clue to explain.

4 A company needs an element for strong magnets in an audio device. Which element group might provide it, and why is that group important to modern life?

3 YOUR TURN _____ Your own words

Complete the chart with one element from the passage for each category. In the evidence column, give a physical property or a modern-life use from the passage.

ELEMENT	CATEGORY	EVIDENCE FROM THE PASSAGE

PART 1 • READ AND MARK

Underline each physical-property clue. Circle every named element and write M, NM, ML, or RE beside it to show metal, nonmetal, metalloid, or rare Earth element. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	An unknown element is shiny, can be bent into a new shape, and conducts electric current well. Which group is it most likely in? Where is most of that group on the periodic table?	It is most likely a metal. Most metals are on the left side and center of the periodic table.
2	An element is on the right side of the periodic table and does not conduct electricity well. Which group does it most likely belong to?	It most likely belongs to the nonmetals.
3	A brittle solid carries electric current only under certain conditions and is used in an electronic sensor. Which group is the best match? Use one property clue to explain.	It is most likely a metalloid because metalloids can conduct electricity only under certain conditions.
4	A company needs an element for strong magnets in an audio device. Which element group might provide it, and why is that group important to modern life?	Rare Earth elements might provide it because they can make strong magnets used in modern technology such as headphones, wind turbines, and phone speakers.

PART 3 • YOUR TURN (SAMPLE ANSWER)

ELEMENT	CATEGORY	EVIDENCE FROM THE PASSAGE
Copper	Metal	Conducts electricity well and is used in wiring.
Oxygen	Nonmetal	Important in living things.
Silicon	Metalloid	Carries current under certain conditions and is used in computer chips.
Neodymium	Rare Earth element	Helps make strong magnets for headphones.

Accept equivalent category names and accurate evidence from the passage. For the chart, students may select copper or aluminum for metal, oxygen or carbon for nonmetal, silicon for metalloid, and neodymium for rare Earth element.