

Matter Detectives

Use observations to classify everyday matter.

4.6.A "classify and describe matter using observable physical properties, including temperature, mass, magnetism, relative density (the ability to sink or float in water), and physical state (solid, liquid, gas);"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each phrase that tells an observable physical property. Write T for temperature, M for mass, MG for magnetism, D for relative density, or S for physical state beside each underlined phrase.

Garden Barrel Investigation

- ① During a cleanup at the school garden, Maya sorted objects found near a rain barrel. She used observations instead of guessing what the objects were made of. A thermometer showed that a metal spoon was 18 degrees Celsius. A balance showed that the spoon had more mass than a dry leaf. Both were solids because they kept their own shape.
- ② Maya placed each object gently in a tub of water. The dry leaf floated, while a smooth pebble sank to the bottom. Floating means an object is less dense than water. Sinking means an object is more dense than water. This water test describes relative density, not simply mass. A large object can float, and a small object can sink.
- ③ A magnet picked up a steel paper clip, but it did not pick up an aluminum can tab or a wooden stick. A material that a magnet pulls is magnetic. The rain barrel held liquid water, which flowed to fit its container. Air in an empty jar was a gas. It spread out to fill the jar.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What was the spoon's temperature? Which tool showed that the spoon had more mass than the leaf?

2 Classify the water and the air by physical state. Give one observation from the passage for each.

3 Which object was less dense than water? What observation supports your answer?

4 Which two objects did the magnet not pick up? Based on the test, what property did they not show?

3 YOUR TURN _____ Your own words

Choose three safe classroom objects. Test and record each object's physical properties, using a penny as the mass comparison and a tub of water for the float or sink test.

OBJECT	STATE AND TEMPERATURE	MASS COMPARED WITH A PENNY	MAGNET RESULT	WATER RESULT

PART 1 • READ AND MARK

Underline each phrase that tells an observable physical property. Write T for temperature, M for mass, MG for magnetism, D for relative density, or S for physical state beside each underlined phrase. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What was the spoon's temperature? Which tool showed that the spoon had more mass than the leaf?	The spoon was 18 degrees Celsius. A balance showed that it had more mass than the leaf.
2	Classify the water and the air by physical state. Give one observation from the passage for each.	Water was a liquid because it flowed to fit its container. Air was a gas because it spread out to fill the jar.
3	Which object was less dense than water? What observation supports your answer?	The dry leaf was less dense than water because it floated.
4	Which two objects did the magnet not pick up? Based on the test, what property did they not show?	The aluminum can tab and wooden stick were not picked up. They did not show magnetism in the test.

PART 3 • YOUR TURN (SAMPLE ANSWER)

OBJECT	STATE AND TEMPERATURE	MASS COMPARED WITH A PENNY	MAGNET RESULT	WATER RESULT
Steel paper clip	Solid, 22 degrees Celsius	Less than a penny	Picked up	Sank
Cork	Solid, 22 degrees Celsius	Less than a penny	Not picked up	Floated
Large glass marble	Solid, 22 degrees Celsius	More than a penny	Not picked up	Sank

Accept equivalent descriptions of the physical properties when they match the passage. For the open table, accept accurate observations from the student's tested objects, including a clear mass comparison, magnet result, and water result.