THE RIGHT STUFF

The familiar objects around us are made from a variety of materials. How do we recognize them? Are they hard, soft, flexible, rigid, brown or silver? In this activity, you will classify different types of wood, modified woods and metals by observing the characteristics and mechanical properties of samples.

IDENTIFYING THE OBSERVATION CRITERIA

Read pp. 369–380 in your student book for help in answering the following questions.

1. What are the two main categories of wood?

_____

2. Complete the following table by writing in:

   a) the tree species you could use to make the wooden objects listed in the left-hand column.

   b) the type of wood to which each of the tree species belongs.

Object	Tree species	Type of wood
Toy (rocking horse)		
Musical instrument (violin)		
Kitchen cabinet		
Flooring		

3. Do the following statements describe oak or spruce?

  a) the hardest wood _____

  b) the wood that is almost white _____

4. How could you test the hardness of a wood?

_____

_____

_____

_____

_____

5. What are modified woods made of?

_____

_____

_____

_____

_____

6. What type of modified wood would you choose to make the objects listed in the following table?

Modified-wood objects

Object	Type of modified wood
Terrace or balcony	_____
Worktables	_____
Snowshoes	_____
Floating floor	_____
Cabana walls	

7. Do the following statements describe treated wood, plywood, fibreboard or particleboard?

a) material made by bonding large quantities of wood chips _____

b) material made by gluing several sheets of wood together _____

c) material made of wood that is greenish because of the treatment process _____

d) material made of wood fibres distinguished by the large amounts of specks in the wood sample _____

8. What is the definition of a metal?

_____

_____

_____

_____

9. What type of metal is used to make the following objects?

Metal objects

Object	Type of metal
Penny	
Soft-drink can	
Automobile	
Electrical wire	
Utensil	
Five-cent coin	
Bengal flare	
Solder	

10. Do the following statements describe iron, aluminum, zinc or copper?

a) lightest in weight of the four metals mentioned

_____

b) brownish metal

_____

c) slightly bluish metal

_____

d) silvery metal, but may turn black because it
easily rusts if exposed to oxygen

_____

ESTABLISHING AN OBSERVATION PROTOCOL

Materials

- 10 numbered samples of material
- hard pencil

Observation protocol

Record your observations in the charts on the next page.

1. First separate the metals from the non-metal materials.

2. Record the colour of each metal in the metal chart.

3. Determine the lightness (weight) of each metal and record your observations in the chart, ++++ being the lightest metal.

4. Separate the woods from the modified woods.

5. Record the colour of each wood in the wood chart.

6. Determine the hardness of each wood and record your observations in the chart, +++ being the hardest wood.

7. Record the colour of each sample of modified wood in the modified wood chart.

8. Describe the appearance of each sample of modified wood.

APPLYING THE OBSERVATION PROTOCOL

11. Complete the following observation charts.

Metal observation chart

Sample No.	Colour	Lightness

Wood observation chart

Sample No.	Colour	Hardness

Modified wood observation chart

Sample No.	Colour	Appearance

REFLECTING ON YOUR APPROACH

12. Complete the following table based on your recorded observations.

a) First indicate the type of material for each sample. Choose from among the following materials:

aluminum • treated wood • oak • plywood • copper • spruce

iron • particleboard • fibreboard • zinc

b) Then check the column that indicates the class of material of the sample.

Nature of material samples

Sample No.	Type of material	Class of material			
		Wood		Modified wood	Metal
		Hardwood	Softwood		
1	_____				
2	_____				
3	_____				
4	_____				
5	_____				
6	_____				
7	_____				
8	_____				
9	_____				
10	_____				

13. How do your observations make classifying the materials easier?

_____

_____

_____

_____

14. What material was the easiest to identify? Why?

_____

_____

_____

_____

_____

15. Which material was the hardest to identify? Why?

_____

_____

_____

_____

_____

16. In comparing your observations with those of your classmates, did you obtain the same classification for the various materials?

_____

_____

_____

_____

_____

17. How could you improve the observation protocol for classifying materials?

_____

_____

_____

_____

_____