CLASSIFYING MINERALS

INTRODUCTION

Minerals are the components of rocks, and are used in making useful materials. Different minerals have different properties, and these properties are used to classify and identify the minerals.

PURPOSE

Students will observe and examine the physical properties of minerals and use those properties to create groups of minerals.

STANDARDS

See summary of National Science Education Standards.
Original: http://books.nap.edu/readingroom/books/nses/

Standard Concept	General Standard	Specific Standard	General Standard	Specific Standard	General Standard	Specific Standard
Grade level		K-4		5-8		9-12
Science as Inquiry (A)	Abilities to do science…	A.1.4.1		A.1.8.2		A.1.12.2
		A.1.4.2		A.1.8.3		A.1.12.6
		A.1.4.3		A.1.8.7		
		A.1.4.4				
		A.1.4.5				
	Understanding about inquiry	A.2.4.2	Understanding about inquiry	A.2.8.1	Understanding about inquiry	A.2.12.2
		A.2.4.3				
		A.2.4.5				
		A.2.4.6				
Physical Science (B)	Properties of materials …	B.1.4.1	Properties of … matter	B.1.8.1		
		B.1.4.2				

Earth and Space Science (D)	Properties of Earth Materials	D.1.4.1				
Science and Technology (E)	Abilities of Technological Design	E.1.4.1				
	Understanding about Science and Technology	E.2.4.1				
History and Nature of Science	Science as Human Endeavor	G.1.4.1	Science as Human Endeavor	G.1.8.1	Science as Human Endeavor	G.1.12.2
				G.1.8.2		

MATERIALS

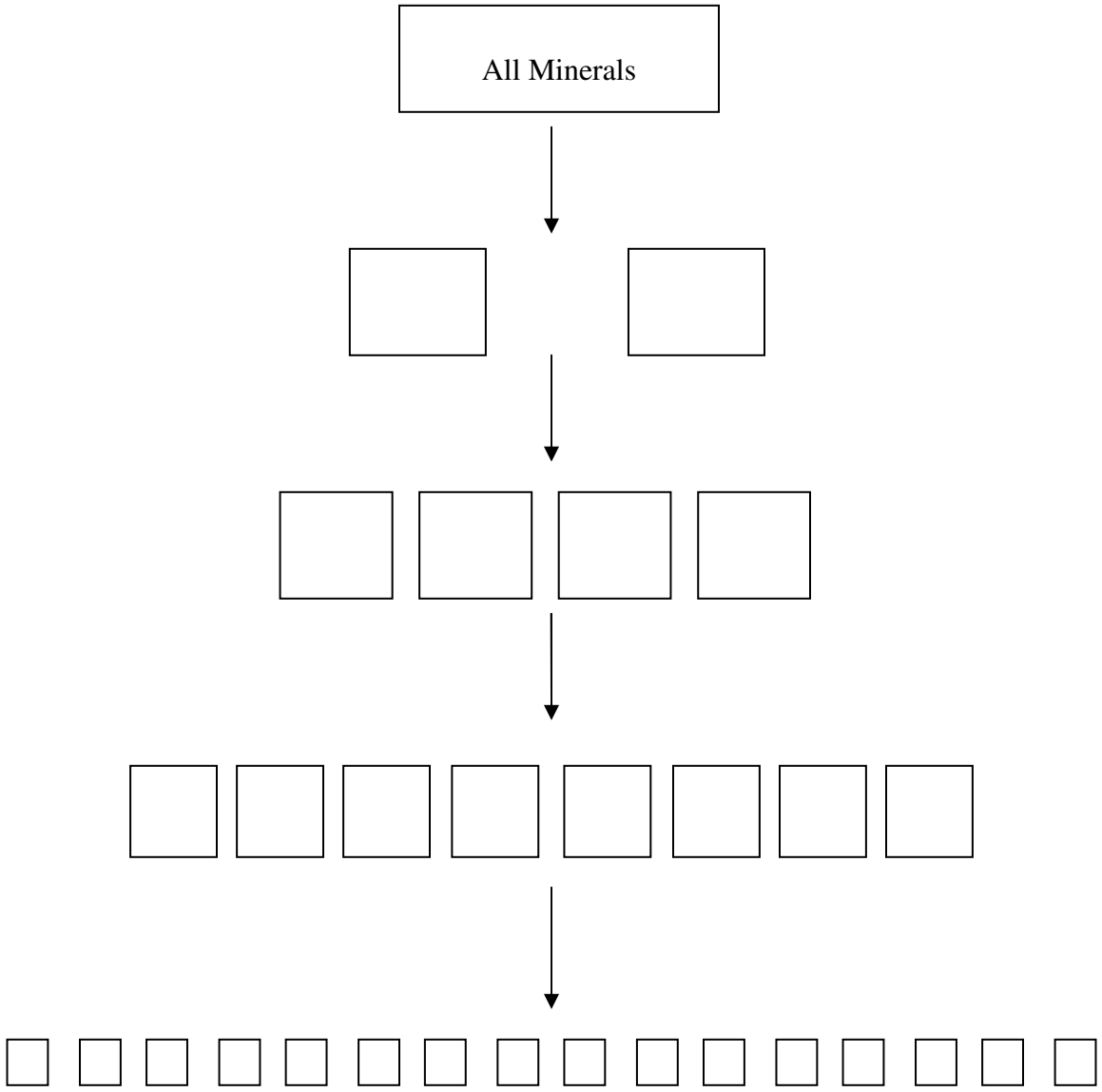
- One set of a minimum of 8 different minerals for each group (each group should have the same set of minerals).
  - The minerals should be numbered (with the same minerals having the same number).
- One piece of large paper (11x17)
- One piece of notebook paper

PROCEDURE Student instructions

1) Put all the minerals at one end of your large paper.
   a) Draw a circle around the minerals.
2) Decide on one property that divides your minerals more-or-less in half.
   a) You can use your own words to describe the properties for classifying.
3) Using the property you have decided upon, move half of the minerals that don't have that property out of the circle and slightly down the piece of paper.
   a) Move the other half of the minerals to a different spot, also down the large piece of paper.
   b) You will be making a sorting "tree."
4) Draw a circle around each new grouping of minerals. Draw lines from your new circles to your first circle.
   a) Label each line with the property you used to separate the minerals.
   b) Assign one person in each group to draw a map of your classification scheme on a piece of notebook paper.
5) Repeat the process above each time you make a new group.
   a) For each group of minerals decide on a new property to split the group in half.
      i) The properties you choose for each group do not have to be the same.
   b) Again move the new groups down the piece of paper, draw circles around each new group, and draw lines back to the old circles, labeling each line with the property you used to separate the minerals.
6) Continue with this process until each mineral is in its own circle.
7) Be sure to label the last circles with the number of the mineral that belongs in each circle on the map of your classification scheme (if you haven't assigned one of your group to draw one as your group progresses, draw a map now).
8) Trade maps with another group (not minerals).
   a) See if that group can sort their minerals into the same circles you used.

EVALUATION

1) Discuss the results.
   a) Which groups were able to follow another group's classification?
   b) Which ones had trouble?
      i) Why?
   c) Which properties of minerals were most useful for classification?
   d) Which were the least useful?



EXAMPLE CLASSIFICATION MAP