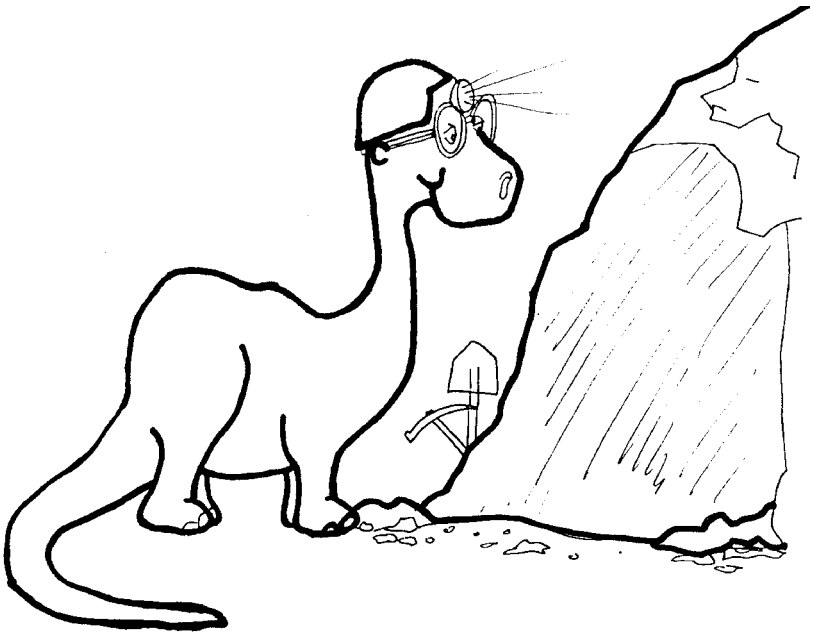
Rock Cycle

Understanding the Earth's Crust

THIRD GRADE

WORKBOOK



students _____

ROCK CYCLE - CHEMISTRY (3)

PROBLEM: Can you identify the elements that are in a mineral if you know the characteristics of the elements?
PREDICTION: _____
MATERIALS: periodic table, mineral specimens
PROCEDURE: Look on the periodic table and identify the names of the following elements:

ELEMENT SYMBOL:	NAME:	CHARACTERISTICS
Fe		heavy
S		yellow
Cu		copper, tarnishes to green-blue color
Si		clear
Ti		dark gray, silvery

Try to figure out what elements might be in the following specimens.

SPECIMEN	ELEMENTS AND REASONS
ROSE QUARTZ	
HEMATITE	
PYRITE	
SULFUR	
COPPER	
CHRYSOCOLLA	
BORNITE	

CONCLUSION: Which minerals show the elements that make them up?
_____

ROCK CYCLE - MINERALS (3A)
PRE LAB

Write the name of the shape and draw it.

2-dimensional	**3-dimensional**
Name _____	**Name** _____
Name _____	**Name** _____
Name _____	**Name** _____

ROCK CYCLE - MINERALS (3A) LAB

PROBLEM: How many shapes can minerals take?

PREDICTION:_____

MATERIALS: specimens of quartz, amethyst, pyrite, calcite, halite, fluorite, feldspar, galena, gypsum, and citrine

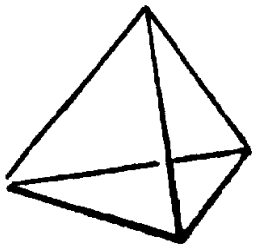
PROCEDURE: At each station, match the labeled minerals with the shapes below. Write the names of the minerals next to the correct shapes.

	SHAPE	**NAME OF MINERAL**
CUBIC		
DIPYRAMID (OCTAHEDRON)		
TABULAR		
RHOMBOHEDRON		
SIX SIDED PRISM		

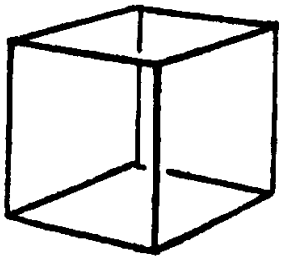
CONCLUSION: Are the shapes of minerals easy to describe? Explain your answer.

_____

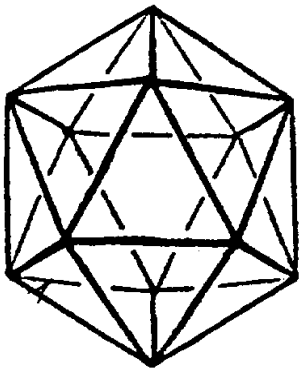
PLATONIC SOLIDS



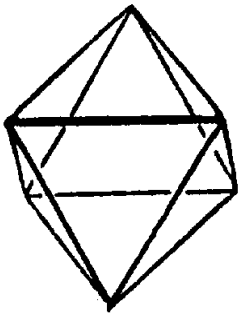
TETRAHEDRON
4 TRIANGLES



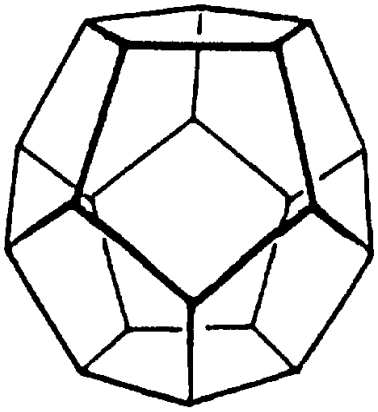
CUBE
6 SQUARE



ICOSAHEDRON
20 TRIANGLES

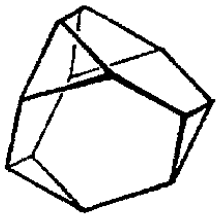


OCTAHEDRON
8 TRIANGLES



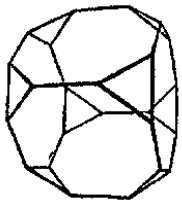
DODECAHEDRON
12 PENTAGONS

ARCHIMEDEAN SOLIDS



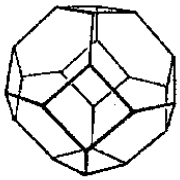
4 HEXAGONS
4 TRIANGLES

TRUNCATED TETRAHEDRON



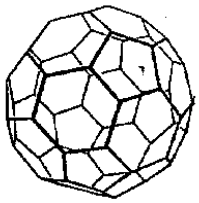
6 OCTAGONS
8 TRIANGLES

TRUNCATED CUBE



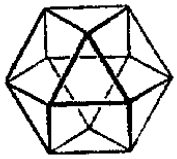
8 HEXAGONS
6 SQUARES

TRUNCATED OCTAHEDRON



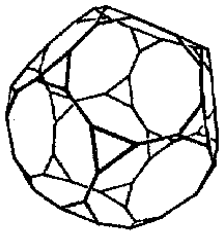
20 HEXAGONS
12 PENTAGONS

TRUNCATED ICOSAHEDRON



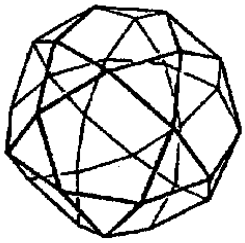
6 SQUARES
8 TRIANGLES

CUBOCTAHEDRON



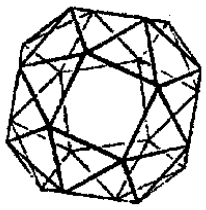
12 DECAGONS
20 TRIANGLES

TRUNCATED DODECAHEDRON



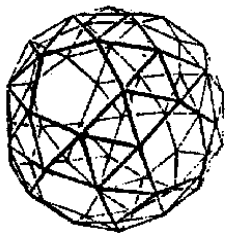
20 TRIANGLES
12 PENTAGONS

ICOSIDODECAHEDRON



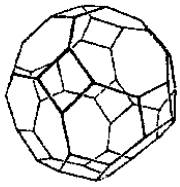
6 SQUARES
32 TRIANGLES

SNUB CUBOCTAHEDRON



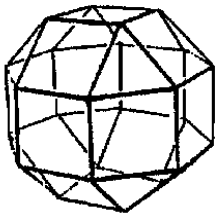
80 TRIANGLES
12 PENTAGONS

SNUB ICOSIDODECAHEDRON



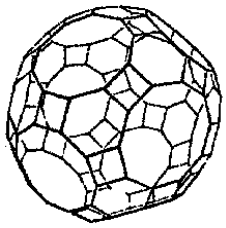
6 OCTAGONS
8 HEXAGONS
12 SQUARES

TRUNCATED CUBOCTAHEDRON



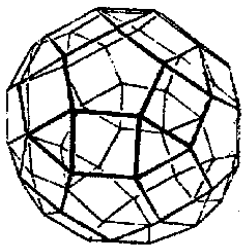
18 SQUARES
8 TRIANGLES

RHOMBICUBOCTAHEDRON



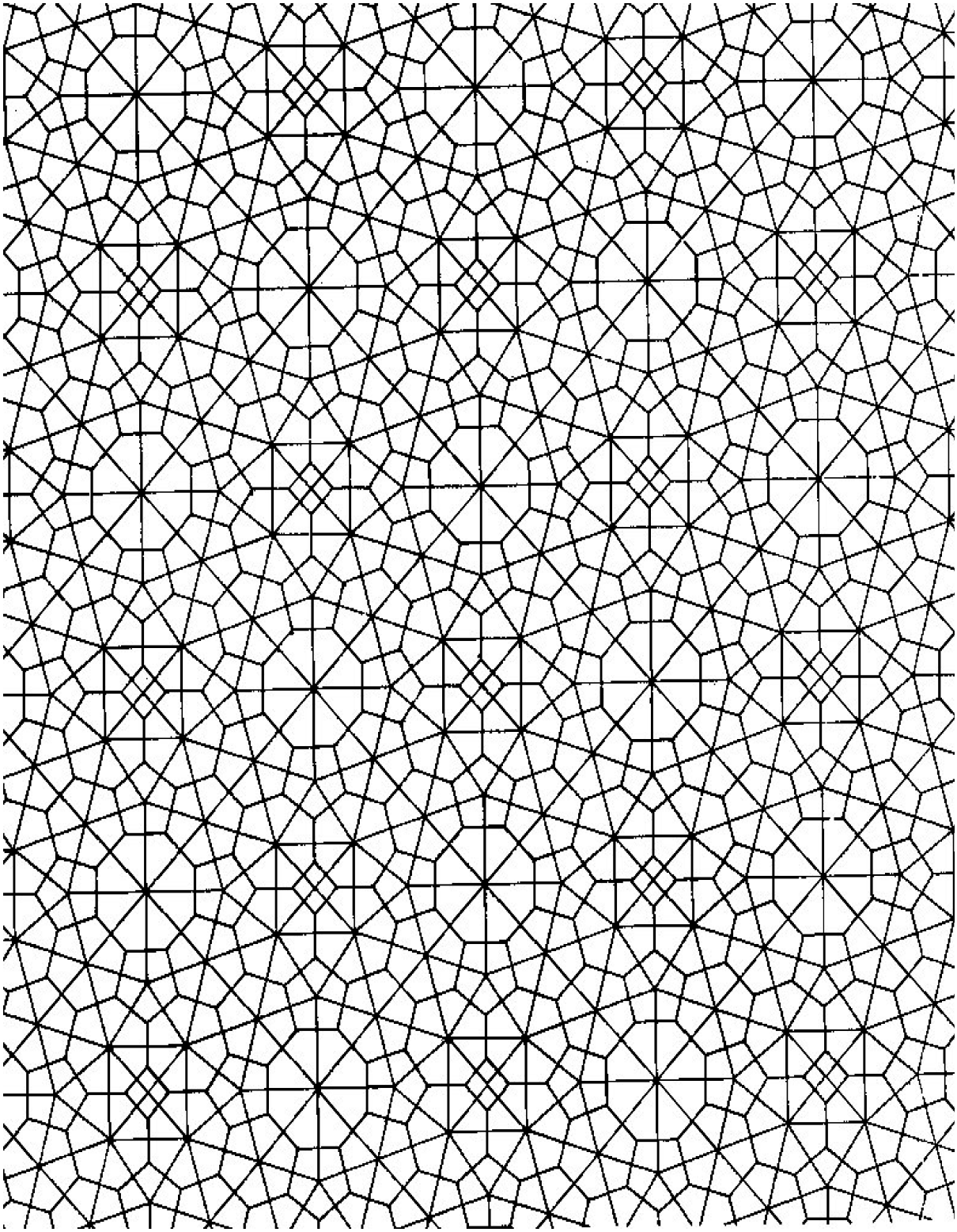
12 DECAGONS
20 HEXAGONS
30 SQUARES

TRUNCATED RHOMBICOSIDODECAHEDRON



20 TRIANGLES
12 PENTAGONS
30 SQUARES

ICOSIDODECAHEDRON



ROCK CYCLE - MINERALS (3B)
LAB

PROBLEM: Are all crystals minerals?

PREDICTION:_____
MATERIALS: salt, epsom salt, sugar; gypsum and quartz samples, microscope
PROCEDURE: Look at the following samples under a microscope.

EXERCISE I. Draw what you see

	DRAWING
EPSOM SALT	
TABLE SALT	
SUGAR	

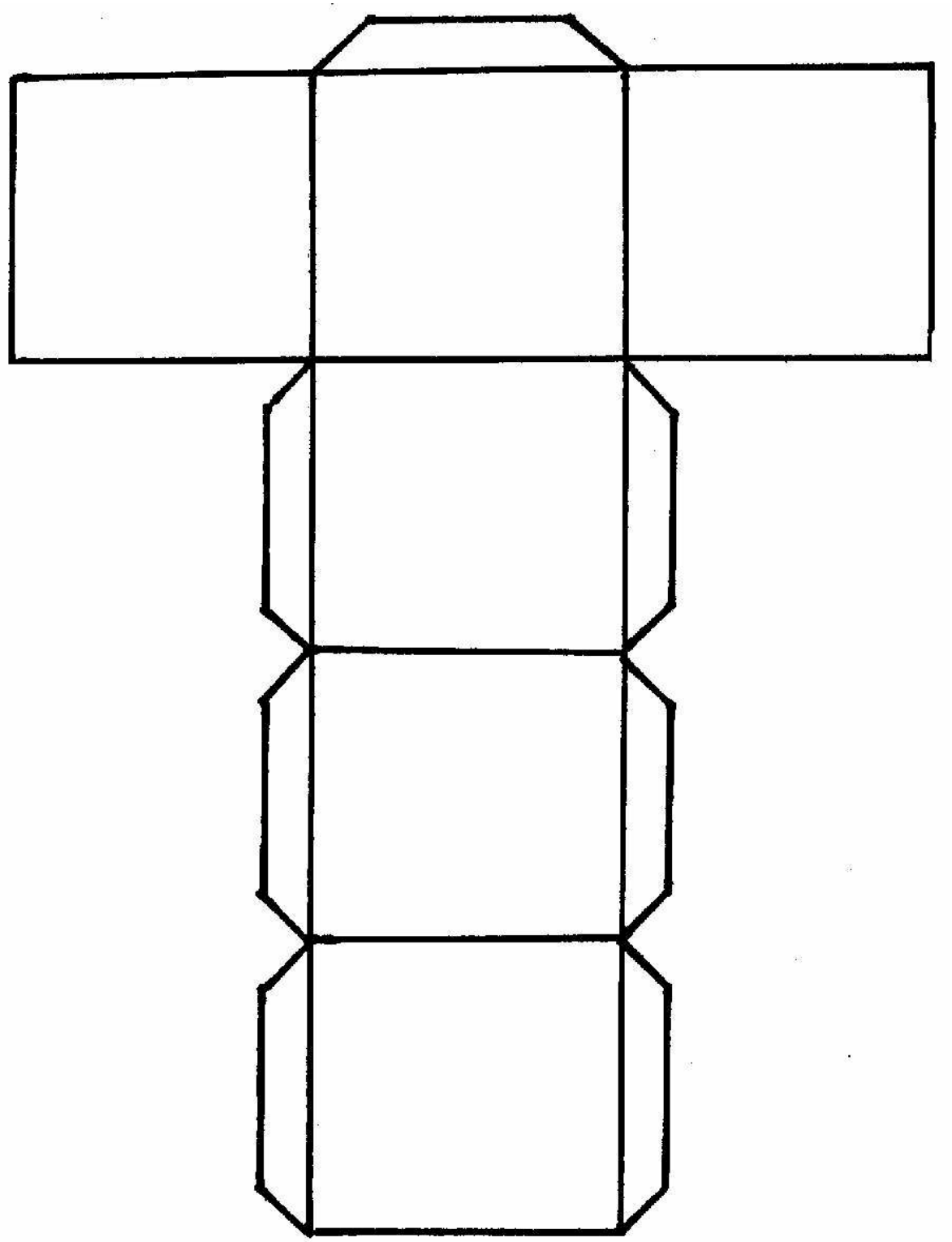
EXERCISE II. Draw and describe the two varieties of quartz and gypsum

QUARTZ	MASSIVE QUARTZ
GYPSUM	MASSIVE GYPSUM

CONCLUSION: What type of substances can be crystals?

_____

HALITE CRYSTAL



ROCK CYCLE - ROCKS (3A)
LAB

PROBLEM: How can you classify rocks?

PREDICTION:_____

PROCEDURE: Using the following clues to identify each rock sample. Place the rock on a piece of paper with the number of the rock that corresponds with the questions below, so your teacher can check your answer.

1. This sedimentary rock is called **sandstone**. It feels "gritty" and looks like sand cemented together. Describe the specimen you think is sandstone.

_____

2. This igneous rock, called **granite**, has white and black minerals. Describe your specimen.

_____

3. **Schist** is a metamorphic rock with sparkly, flat minerals. Describe your specimen.

_____

4. **Fossiliferous mudstone** looks like mud with a clam stuck in it. Describe your specimen.

_____

5. This dark, glassy igneous rock is called **obsidian**. Describe your specimen.

_____

6. **Shale** is a flattened rock. Describe your specimen.

_____

7. This igneous rock is red, with holes and is called **scoria**. Describe your specimen.

_____

8. **Marble** is a whitish, gray metamorphic rock. Describe your specimen.

_____

9. **Pumice** is a very light igneous rock with holes. Describe your specimen.

_____

10. **Serpentinite**, a metamorphic rock, is green with a smooth feel. Describe your specimen.

_____

CONCLUSION: How many different types of rocks have you looked at?

_____

Describe the rocks you have trouble identifying._____

_____

ROCK CYCLE - ROCKS (3A)
POST LAB

Write an essay using the picture and lead sentence.

Lead Sentence:
The prince picked up a rock and it
sparkled.

ROCK CYCLE - ROCKS (3B)
LAB

PROBLEM: Can sands from different areas be related?

PREDICTION:

_____

MATERIALS: Swift-GH Microscope, hand lens, sand samples

PROCEDURE: Sand reflects the type of rock that it came from. Let's look at 7 sand samples from California and try to figure out if they are related. Take out the sand only when your teacher tells you to. Use the following words to help describe the sand samples: shells, small grains, large grains, quartz or white to clear, grains of sand, chert or red to brown grains of sand, serpentinite or green grains of sand; gray or basalt grains of sand

SAND	DESCRIPTION
Rodeo Beach	
Half Moon Bay	
Cleone	
Bodega	
Montara	
Long Beach	
Monterey	

CONCLUSION: Which sands do you think are related? Why?

_____

_____

ROCK CYCLE - PAST LIFE (3)
LAB

PROBLEM: What information is available from fossil animals?
PREDICTION:_____
_____

EXERCISE 1. Look at the fossils. Try and figure out what type of animal it was (guess) and how it became a fossil. Your teacher will give you some hints.

Fossil	**Type of animal and fossilization**
trilobite	
ammonite	
shark teeth	
coral	
crinoid stem	
irregular echinoderm	
orthoceras	

EXERCISE 2. Look at the fossil that your teacher has on display. Draw them and try to guess how they became fossils.

	picture	how it became a fossil
coprolite		
fossil fish		

CONCLUSIONS: In how many ways can an organism become a fossil?
_____
_____