

Mineral Decoder Game

PREVIEW

from Activities To Teach

Sampling of our 64 Mineral Decoder & Puzzle Card Game!

24 Mineral Identification Cards



4 How to Play Options

Mineral Decoder (with response sheet)

Working Pairs

- Each PAIR has a copy of Mineral Properties Guide.
- Each PAIR has a set of Mineral ID Cards (from 12 to 24 cards).
- Each PAIR has a set of 80 cards (from 12 to 24 cards).
- Each PAIR or student needs a response sheet.

Task at Hand:

- Working as a team, students use the Mineral Decoder and use the Mineral Properties Guide to identify the mineral.
- When the team has matched the Mineral Decoder cards with the Mineral ID Cards, they record their findings on the student response sheet.
- The Mineral Decoder card matches the NUMBER on the record sheet.

Mineral Decoder (with cards only)

Go Diggin' (similar to Go Fish)

Playing in groups of 4 students. Each student receives a copy of Mineral Properties Guide.

Each student receives 6 Decoder Cards to each of the 4 students playing in the group. Distribute 3 Mineral Identification Cards to each student playing. The cards should be stacked in the group.

Students have 10 to 15 minutes to play.

Three players take turns asking for the minerals they decoded.

- The player who's birthday is closest to today's date, asks for the mineral.
- If the player asked has the requested mineral, they request "Go Diggin'" from the draw pile the top card AND discarding an ID Card they have in their hand bottom of the deck without to what they are discarding.
- The "winner" is the student who has the most minerals from their play.

Mineral Decoder (with cards only)

Mineral Memory (similar to Concentration)

- Playing in groups of 3 to 4 students.
- Each student in the group receives equal amount of the Mineral Decoder Cards.
- The Mineral ID Cards are to be placed FACE DOWN in an organized fashion.
- Students have 10 to 15 minutes to "decode" their cards.
- When time is up, students take turns flipping 1 Mineral ID Card and seeing if they reveal one of the minerals they have decoded.
- If they reveal a mineral they decoded, they keep the card.
- If it is NOT one of their minerals, the card is flipped back over to the next player takes a turn.
- The student whose birthday is closest to the day of play, goes first.
- The "winner" is the student who decodes ALL their cards AND gets the correct mineral card from flipping their playmates first.

Mineral Puzzle (with response sheet)

Working Pairs

- Each PAIR has a copy of Mineral Properties Guide.
- Each PAIR has a set of Mineral Puzzle Cards (from 8 to 16 cards).
- Each PAIR or student needs a Student Response Sheet.

Task at Hand

- Working as a team, students solve the "puzzle" of what mineral the geologists have found.
- The student or pair record the determination on their response sheet.
- If the answer is YES, they move on to the next Puzzle card.
- If the answer is NO, then the team needs to record AND try to determine what the correct mineral actually is.
- The Mineral Puzzle card LETTER matches the LETTER spaces on the record sheet.



24 Mineral Decoder Card Deck

Mineral Decoder Game

PREVIEW

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Student Resource Guides

16 Card Puzzle Slueth Deck

Mineral Physical Properties Guide
Non-Metallic Luster Minerals

Mineral	Hardness	Color	Streak	Breakage	Crystals
BIKITE	1-3	WHITE, GRAY, RED, BROWNISH	GRAY	FRAGILE	TRICLINIC
CALCITE	3	WHITE, COLORLESS	WHITE	FRAGILE	RHOMBIC
CORUNDUM	9	BLUE, BROWN, COLORLESS	COLORLESS	FRAGILE	TRIGONAL
COLOMITE	3.5-4	WHITE, GRAY, PINK, GREEN, COLORLESS	WHITE	FRAGILE	TRICLINIC
FELDSPAR	6	WHITE, GRAY, GREEN	COLORLESS	FRAGILE	TRICLINIC
FLUORITE	4	WHITE, GRAY, COLORLESS, BLUE, GREEN, RED, PURPLE	COLORLESS	FRAGILE	CUBIC
GARNET	7.5	RED-YELLOW, GREEN, BLACK	COLORLESS	FRAGILE	TRICLINIC
GYPSUM	2	WHITE, GRAY, COLORLESS	WHITE	FRAGILE	TRICLINIC
HAUTE	2.5	WHITE, COLORLESS, BLUE, RED	COLORLESS	FRAGILE	TRICLINIC
HORNBLende	5-6	GREEN TO BLACK	GRAY TO WHITE	FRAGILE	TRICLINIC
MUSCOVITE	2.5	WHITE, GRAY, ROSE, YELLOW, GREEN	COLORLESS	FRAGILE	TRICLINIC
QUARTZ	7	COLORLESS, VARIOUS COLORS	COLORLESS	FRAGILE	TRIGONAL
SAPPHIRE	9	YELLOW	YELLOW TO WHITE	FRAGILE	TRIGONAL
TALC	1	WHITE, GREENISH	WHITE	FRAGILE	TRICLINIC
TANALASE	8	WHITE, COLORLESS, PINK, BLUE, YELLOW	COLORLESS	FRAGILE	TRICLINIC

Mineral Physical Properties Guide
Moh's Hardness Scale

Number	Characteristics	Examples	Number	Characteristics	Examples
1	Can be scratched by a fingernail	Talc, Gypsum	6	Can be scratched by a steel file	Magnetite, Pyrite
2	Can be scratched by a copper penny	Calcite, Fluorite	7	Scratches a steel file	Quartz
3	Can be scratched by a steel nail	Calcite, Fluorite	8	Scratches a steel file	Topaz
4	Can be scratched only by a harder mineral	Diamond, Sapphire	9	Scratches a steel file	Sapphire, Corundum
5	Can be scratched by a steel nail	Quartz, Fluorite	10	Scratches a steel file	Diamond

Minerals with a Metallic Luster

Mineral	Hardness	Color	Streak	Breakage	Crystals
COPPER	3	COPPER RED	COPPER RED	IRREGULAR	CUBIC
CHROMITE	5.5	BROWN OR BLACK	BROWN TO BLACK	IRREGULAR	CUBIC
GALENA	2.5	GRAY	GRAY TO BLACK	PERFECT CUBIC	CUBIC
GOUD	2.5-3	PALE GOLDEN YELLOW	YELLOW	IRREGULAR	CUBIC
GRAPHITE	1-2	GRAY TO BLACK	BLACK TO GRAY	SCALES	HEXAGONAL
MAGNETITE	6	BLACK	BLACK	CORONAL	CUBIC
PYRITE	6.5	LIGHT BRASSY YELLOW	GREENISH GRAY	UNEVEN	CUBIC
SILVER	2.5	SILVERY WHITE	LIGHT GRAY / SILVER	IRREGULAR	CUBIC

Mineral Puzzle Card J

Taylor got a shiny gray metallic mineral from Peyton. The crystals are cubic in shape and breaks hackly (uneven, rough, jagged). It is soft enough to be scratched by a fingernail. It leaves a light gray streak. Did Peyton give Taylor a piece of graphite?

Mineral Puzzle Card K

Peyton is holding a white stone with hexagonal crystals. It can be scratched by a knife but not by a fingernail. It leaves a white streak. Is Peyton holding dolomite?

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Sampling of our 64 Mineral Decoder & Puzzle Card Game!

Name _____ Class _____ Date _____

Mineral Puzzler Response Sheet

All throughout the earth's crust are loads of minerals, from common every day minerals to very rare and valuable minerals. Made up of specific combinations of elements, minerals are inorganic solids naturally found in the earth's crust that are comprised of crystalline structures. Whether worth cents on the dollar or thousands of dollars, minerals in the gem variety are useful and valuable. Identifiable by physical properties, minerals are often identified by their mass, form, hardness, luster, streak, cleavage, smell, taste, and texture. The scientific study of minerals is specialty field of called geology and the scientists that study minerals are called geologists.

Taylor, Jasper, and Peyton are university students studying geology. XXX

Directions: Using the mineral properties chart and hardness scale, your challenge is to decide if Taylor, Jasper, and Peyton has identified the correct mineral indicated on the Mineral Puzzle cards. On the lines below, write YES or NO for each of the Mineral Puzzle cards. If the answer is NO (meaning the girls have incorrectly identified the mineral), then you need to also correctly identify the mineral on the same line. The line numbers represent the Mineral Puzzle Card number located in the upper right hand corner of each card. If only given a limited selection of the 24 cards, fill in the corresponding cards to their numbered line.

E1	Yes	E2	No - Gold
A		I	
B		J	
C		K	
D		L	
E		M	
F		N	
G		O	
H		P	

ANSWER KEY
Mineral Puzzle Response Sheet

Directions: Using the mineral properties chart and hardness scale, your challenge is to decide if Taylor, Jasper, and Peyton have identified the correct mineral indicated on the Mineral Puzzle cards. On the lines below, write YES or NO for each of the Mineral Puzzle cards. If the answer is NO (meaning the girls have incorrectly identified the mineral), then you need to also correctly identify the mineral on the same line. The line numbers represent the Mineral Puzzle Card number located in the upper right hand corner of each card. If only given a limited selection of the 24 cards, fill in the corresponding cards to their numbered line.

A	Yes	I	No - Pyrite
B	Yes	J	No - Silver
C	No - Magnetite	K	Yes
D	Yes	L	Yes
E	Yes	M	Yes
F	Yes	N	Yes
G	Yes	O	Yes
H	No - Topaz	P	Yes
I	Yes	Q	No - Diamond

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Name _____ Class _____ Date _____

Mineral Decoder's Response Form

All throughout the earth's crust are loads of minerals, from common every day minerals to very rare and valuable minerals. Made up of specific combinations of elements, minerals are inorganic solids naturally found in the earth's crust that are comprised of crystalline structures. Whether worth cents on the dollar or thousands of dollars, minerals in the gem variety are useful and valuable. Identifiable by physical properties, minerals are often identified by their mass, form, hardness, luster, streak, cleavage, smell, taste, and texture. The scientific study of minerals is specialty field of called geology and the scientists that study minerals are called geologists.

Taylor, Jasper, and Peyton are university students studying geology. On the weekend these best friends like to go hiking and searching for gems. Over time they have collected a great number of gems. Their professor has invited them to visit the local middle school to share their treasures with future geologists. For each mineral Peyton created a Mineral Identification Card and Taylor made a Mineral Description Card. However, Jasper accidentally knocked over the box holding all the pinned up cards. They need some help getting back up the ID cards with the description cards. Working with the Gem Properties Identification Card help Taylor and Peyton match up with information.

Directions: Using the mineral properties chart and hardness scale, your challenge is to identify the minerals that Jasper, Taylor, and Peyton have collected. On the lines below, write the name of the mineral for each of the Mineral Identification Card number on each card. If only given a limited selection of the 24 cards, fill in the corresponding cards to the

1	13
2	14
3	15
4	16
5	17
6	18
7	19
8	20
9	21
10	22
11	23
12	24

ANSWER KEY
Mineral Decoder's Response Form

1	Graphite	13	Hornblende
2	Bauxite	14	Topaz - Gemstones
3	Feldspar	15	Garnet
4	Sulfur	16	Dolomite
5	Gypsum	17	Muscovite
6	Talc	18	Copper
7	Halite	19	Gold
8	Calcite	20	Silver
9	Quartz	21	Pyrite
10	Chromite	22	Galeana
11	Fluorite	23	Magnetite
12	Corundum	24	Diamond

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