

Family Unit Study: *Rocks & Gems*



SARAH NOFTLE & NICOLE WELDON

TEACHER AND READING SPECIALIST



Copyright © 2021 by Sarah Noftle

All rights reserved.

No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying or other electronic or mechanical methods, without the prior written permission from the author. For permission requests, write to the author at: sarah@howweelearn.com.

Design and Layout by Mallory Foster: www.malloryfoster.com

Visit the author's website at: www.HowWeeLearn.com



FAMILY UNIT STUDY: ROCKS AND GEMS

Table of Contents

INTRODUCTION

Welcome Home!.....	4
--------------------	---

TOPICS

What is a Rock?	6
The Rock Cycle	8
Igneous Rock.....	10
Sedimentary Rock.....	12
Metamorphic Rock.....	14
Rocks vs. Minerals.....	16
What is a Gem?.....	18
Discover More Gems.....	20
Birthstones.....	22
Using Rocks and Minerals.....	24

PRINTABLES

The Rock Cycle	26
Venn Diagram	27
My Birthstone.....	28
My Unit Study Notes on Rocks and Gems.....	29



FAMILY UNIT STUDIES

Welcome Home!

Thank you so much for choosing a How Wee Learn Family Unit Study. This unit study has been created with care by me, a homeschooling Mom and former teacher. These unit studies have worked so beautifully with my own family, I knew they must be shared. My time in the classroom, certification as a Reading Specialist, and 18 years as a mom has given me a unique perspective on what children truly 'need to know'.

What is a unit study?

A unit study focuses on critical thinking and problem solving, allowing children to dive deep into fascinating topics and engage in meaningful learning.

When a child is engaged in what he or she is learning, that learning sticks. And when a child is engaged *and fascinated* in what he or she is learning, learning is amazingly fun for the whole family! Say goodbye to those power struggles.

Each unit study is broken down into ten topics with manageable, bite-sized amounts of incredible information. Each of these ten topics includes a hands on activity, a math or literacy enrichment activity, a curated YouTube video, book suggestion, interesting fact and discussion question.

What are the components of a unit study?

HANDS ON ACTIVITY

Each of the ten topics includes a hands on activity that brings the information shared and discussed to life! This allows children to really engage in and solidify their learning. The hands on activities use items you likely have already. If you do not have an item, think creatively about what you do have and adapt. No buttons? I bet beads could work. No pipecleaners? Maybe you have some yarn!

MATH ENRICHMENT WORD PROBLEM

Each unit study includes five math word problems modified to three levels so they are fitting for the whole family. They cover five math strands: Number Sense, Geometry, Measurement, Patterning and Data Management/Probability. The word problem introduces your child to each of these areas with

the belief of quality over quantity. This is not a full math curriculum of course, but an enrichment opportunity and chance to be exposed to some real world math.

As you go through a question, consider how you might change it slightly to ask a follow up question. Perhaps you could ask, "What would happen if there were 6 birds instead of 5?" Or you might get out some manipulatives and help your child dive into deeper learning about the geometry topic introduced.

LITERACY ENRICHMENT ACTIVITY

When a child is learning about a fascinating topic, there are so many natural opportunities to tie in literacy development. Reading, researching, recording information, labeling, and note taking will all happen naturally.

On top of this, each unit study includes five literacy enrichment activities modified to three levels so they are fitting for the whole family. Creating poems, public speaking, practicing letter formation, and literacy scavenger hunts are all fun ways literacy learning is brought to life with these unit studies.

CURATED YOUTUBE VIDEO

Each of the ten topics includes a carefully curated YouTube video. Dive into some fun and easy learning with experts in the field, entertaining stories, and inspiring tales, all selected to highlight key learning concepts. Enjoy some time snuggled on the couch learning with popcorn and a movie!

BOOK SUGGESTION

The book suggestions for each topic are just that—suggestions. Any books at all on the unit study



theme are strongly encouraged. Immersing our children in a literacy-rich environment and offering plenty of time to dive into research, pictures, and stories is key for child-led learning.

INTERESTING FACT

Did you know that elephants suck their trunks much like babies suck their thumbs? Or that a human has the same number of neck bones as a giraffe? Interesting facts are a wonderful way to spark a child's interest and imagination, which is why every topic includes an interesting fact.

DISCUSSION QUESTION

Asking the right questions and having meaningful discussions is a wonderful way to meet your child at his or her current level of understanding and to help your child grow his or her learning and thinking about topics. So much can be learned through one meaningful discussion!

How do I use a unit study?

These unit studies are completely flexible and can be used however you wish. For those who would like a few suggestions, I will outline two possible ways you might choose to use these unit studies.

OPTION 1: FOCUSED UNIT STUDY

Your family might choose to focus on one unit study over a two day period.

Day 1	<ul style="list-style-type: none"> Introduce the topic with the curated YouTube video Have an amazing discussion using the discussion question as a prompt Research more about the topic with the suggested book or a book of your choice Read the interesting fact together
Day 2	<ul style="list-style-type: none"> Dive into the hands on activity for some deep learning Complete the math or literacy enrichment question
Day 3+	<ul style="list-style-type: none"> Core skill work in reading, writing and math at your child's individual level Family outings Extracurricular activities Start another topic!

OPTION 2: BLENDED UNIT STUDY

Alternatively, your family might choose to blend the unit study with your core skill learning over a three day period.

Day 1	<p>Morning:</p> <ul style="list-style-type: none"> Core skill work in reading, writing and math at your child's individual level <p>Afternoon:</p> <ul style="list-style-type: none"> Introduce the topic with the curated YouTube video Have an amazing discussion using the discussion question as a prompt
Day 2	<p>Morning:</p> <ul style="list-style-type: none"> Core skill work in reading, writing and math at your child's individual level <p>Afternoon:</p> <ul style="list-style-type: none"> Research more about the topic with the suggested book or a book of your choice Read the interesting fact together Complete the math or literacy enrichment question
Day 3	<p>Morning:</p> <ul style="list-style-type: none"> Core skill work in reading, writing and math at your child's individual level <p>Afternoon:</p> <ul style="list-style-type: none"> Dive into the hands on activity for some deep learning
Day 4+	<ul style="list-style-type: none"> Core skill work in reading, writing and math at your child's individual level Family outings Extracurricular activities Start another topic!

There is no right or wrong way to dive into this unit study. When learning is this exciting, you simply cannot go wrong!

I hope you and your family love this unit study! If you have any questions at all, wish to purchase more unit studies, or if I can be of assistance, please visit www.howweelearn.com/family-homeschooling-unit-studies or email me at sarah@howweelearn.com.

xo
Sarah



TOPIC 1

What is a Rock?

A rock is a collection of sand, pebbles, and gravel that have formed as one over time. Rocks are often grouped into three types: Igneous, Sedimentary, and Metamorphic. Let's explore...

Spark Curiosity



Did you know? Rocks are constantly forming and eroding all over (and inside!) the Earth.



I wonder if mountains and sand are really made from the same things? How could this be?

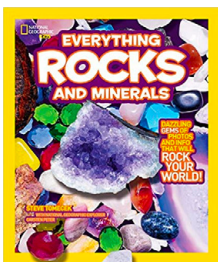
Resource Suggestions



Be a Rock Detective!

SciShow Kids

A first look at where rocks come from and how to observe their properties.



Everything Rocks and Minerals

by Steve Tomecek

Get started learning about the wide world of rocks and minerals.

HANDS ON ACTIVITY

- "Make a Rock!" on page 7

Math Enrichment Word Problem

Have blocks, stones, or other manipulatives available for these math problems. Be flexible and change up the numbers to make these problems the right challenge for your children. Extend on the problems and ask follow up questions if your child is enjoying these challenges!

- ★ Julius went for a walk and collected 10 rocks. 4 were grey, 2 were black, and the rest were white. How many were white?
- ★★ Julius went for a walk and collected 50 rocks. 20 were grey, 10 were black, and the rest were white. How many were white?
- ★★★ Julius went for a walk and collected 150 rocks. 25 were grey, 35 were black, and the rest were white. How many were white?



HANDS ON ACTIVITY

Make a Rock!

Types of Learning: Science, Sensory Learning, Following Instructions

WHAT'S HAPPENING?

All rocks are formed or created from a variety of minerals or substances. A rock can be made of various things, depending on the classification of rock. For the most part, rocks are classified into three types:



Igneous: Formed from magma.



Sedimentary: Formed from sediment compressed together over time.



Metamorphic: Formed under great heat and pressure.

In this activity, you're making a sedimentary rock because it involves combining many different materials together over time.

While we are learning and exploring about rocks this unit study, it may seem like creating a rock and the changes that rocks undergo happens quickly. In reality, rocks change over millions of years!

Adapted from Learner.org.

[Check it out here for more interesting facts about the types of rocks.](#)

Materials

- Disposable cup
- Sand
- Pebbles or gravel
- White glue
- Paper plate
- Scissors

Directions

1. Add a small layer of sand to the bottom of a clear, disposable cup.
2. Next, add a small layer of pebbles or gravel.
3. Now add a very thin layer of white glue over the top.
4. Repeat this layering for 3 or 4 layers.
5. Place your 'rock' in a sunny place to dry for about 5 days.
6. After your 'rock' has dried for 5 days, place it on a paper plate (or piece of paper) and cut off the cup. Allow your 'rock' to continue to dry on the paper for a few more days.





TOPIC 2

The Rock Cycle

Rocks progress through a rock cycle over millions of years! A volcano brings magma to the surface of Earth, which turns into igneous rock. Over millions of years it breaks down and turns into sedimentary rock, and finally into metamorphic rock. Let's explore...

Spark Curiosity



Did you know? The rock cycle is not circular. Any of the rock types can become any of the other rock types! Even metamorphic rock can become another kind of metamorphic rock, before going on to become igneous or sedimentary rock.



Rovers have found igneous and sedimentary rocks on Mars. I wonder what that means about Mars' history? I wonder if there is metamorphic rock there, too?

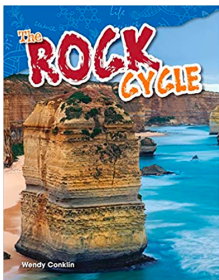
Resource Suggestions



The Rock Cycle | Sedimentary, Metamorphic, Igneous | Learning Made Fun

Mr. Bradley - Learning Made Fun

A deeper look at the types of rocks and how each type becomes the others in the rock cycle.



The Rock Cycle

by Wendy Conklin

Learn all about the rock cycle.

HANDS ON ACTIVITY

- "Label the Rock Cycle" on page 9

Literacy Enrichment Activity

- ☆ There are many different cycles that happen in our world – the plant life cycle, animal life cycles, and water cycles. Draw pictures of a cycle of one topic you know about. Perhaps you can draw the life cycle of a chicken?
- ☆☆ There are many different cycles that happen in our world – the plant life cycle, animal life cycles, and water cycles. Draw a picture of a cycle you are familiar with and add some words to label your work.
- ☆☆☆ There are many different cycles that happen in our world – the plant life cycle, animal life cycles, and water cycles. Draw and describe a cycle you are familiar with and add some pictures as well.



HANDS ON ACTIVITY

Label the Rock Cycle

Types of Learning: Literacy Development, Writing Skills, Research Skills, Fine Motor Development, Science

WHAT'S HAPPENING?

The rock cycle begins with magma, or melted rock, being sent to the Earth's surface by a volcano. As this magma cools, it forms **igneous rock**.

Next, events happen that will break this igneous rock into small pieces of sediment. This happens very, very slowly. Some of the events that cause rocks to break up include severe weather or a river repeatedly rubbing over the rock. Over many, many years, this sediment builds up and hardens together, forming a **sedimentary rock**.

Slowly, this sedimentary rock will get buried under with other rocks and will end up deep in Earth's crust. For a sedimentary rock to turn into a **metamorphic rock**, the heat and pressure must get very high. Once this happens, the cycle will begin all over again!

It is important to note that the rock cycle doesn't necessarily happen in this order. Rocks may change from one type to another and even back again!

Adapted from Ducksters.

[Check it out here for more interesting facts about rocks and the rock cycle.](#)

Materials

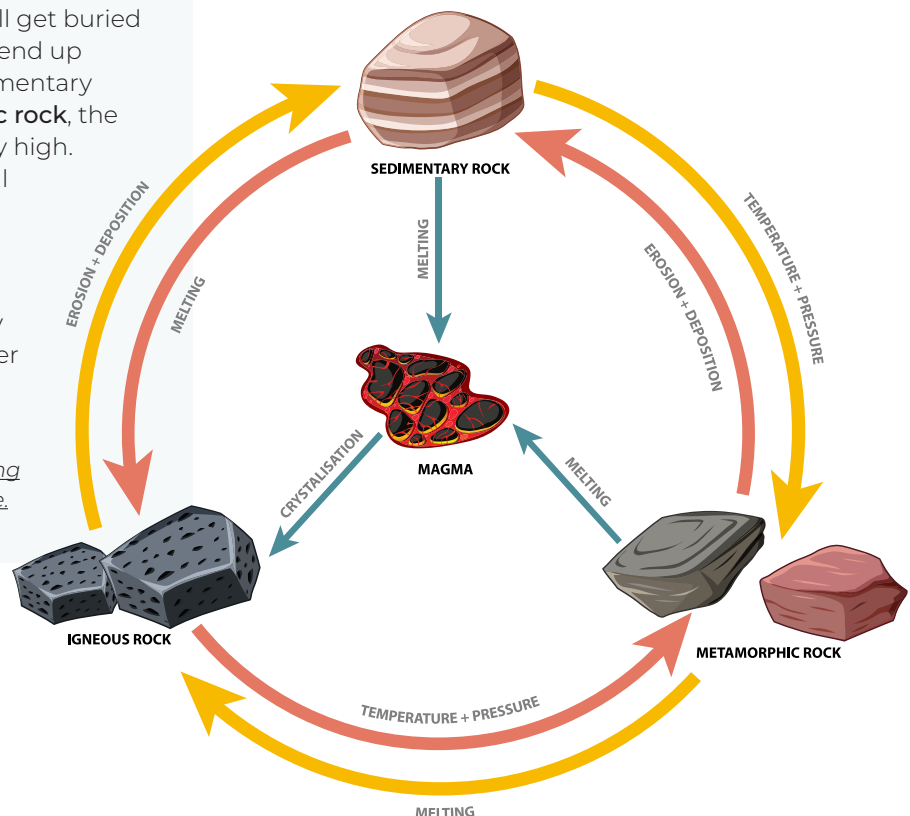
- Paper
- Pencil

Directions



"The Rock Cycle" on page 26

1. Label the stages on the The Rock Cycle printable with the words: Igneous Rock, Sedimentary Rock, and Metamorphic Rock.





TOPIC 3

Igneous Rock

Igneous rocks form from hardened lava, or magma, from a volcano. After the lava spills out of the volcano, it cools and hardens into igneous rock. Let's explore...

Spark Curiosity



Did you know? The word 'igneous' comes from the Latin word 'ignis,' meaning 'of fire.'



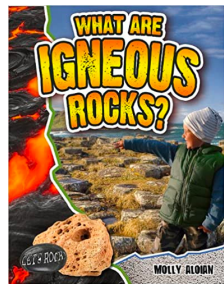
I wonder if different mineral content makes different igneous rocks, or is it all about cooling time? What other attributes could make a difference?

Resource Suggestions



Igneous Rocks Introduction
London Jenks

An advanced explanation of the types, formation, and properties of igneous rocks.



What are Igneous Rocks?
by Molly Aloian

Explore igneous rocks and how they are formed.

HANDS ON ACTIVITY

- "Make a Volcano" on page 11

Math Enrichment Word Problem

Have blocks, stones, or other manipulatives available for these math problems. Be flexible and change up the numbers to make these problems the right challenge for your children. Extend on the problems and ask follow up questions if your child is enjoying these challenges!

- ☆ A volcanologist wanted to measure the growth of a volcano over time. He measured a volcano and found it was 20 meters tall. The next time he measured, the volcano was 23 meters tall. How much had the volcano grown?
- ☆☆ A volcanologist wanted to measure the growth of a volcano over time. He measured a volcano and found it was 210 meters tall. The next time he measured, the volcano was 313 meters tall. How much had the volcano grown?
- ☆☆☆ A volcanologist wanted to measure the growth of a volcano over time. He measured a volcano and found it was 552 meters tall. The next time he measured, the volcano was 686 meters tall. How much had the volcano grown?



HANDS ON ACTIVITY

Make a Volcano

Types of Learning: Science Experiment, Crafting, Problem Solving, Critical Thinking, Art

WHAT'S HAPPENING?

A volcano is formed when very hot molten rocks and gas escape from a hole in the Earth's surface. As this molten rock cools down, it hardens, forming a cone shape we call a volcano around the hole in Earth's surface.

Every time a volcano erupts, it spills hot molten rock, ash, and gas up into the air and down the sides of the volcano.

Volcanoes can produce different types of lava. Some lava is very runny and quick to run down the slope of the volcano. This lava has a smooth, ropery texture and is called **Pahoehoe lava**. When a volcano is very explosive, it produces very hot gasses and thicker lava. This lava has a very rough texture and is sticky. It is called **Aa lava**.

Finally, did you know that volcanoes exist under water? When an underwater volcano erupts, it forms shapes that look like pillows, and this lava is called **pillow lava**!

Adapted from One Geology Kids.

[Check it out here for more interesting facts about volcanoes.](#)

Materials

- Plastic bottle
- Construction paper
- Paint (optional)
- Hot glue
- Optional: baking soda, red food colouring, and vinegar to make your volcano erupt!

Directions

Igneous rocks form from hardened magma from a volcano – so let's make a volcano!

1. Take a plastic bottle and wrap paper around the outside in a cone shape so it looks like a volcano. Paint this black or brown (or use brown construction paper).
2. Now make your lava. Take hot glue and run it from the mouth of the volcano down to the bottom. As this hot glue cools, it will harden, just as magma does, representing igneous rocks.
3. You can level up this activity by making your volcano actually erupt! Put a few tablespoons of baking soda into the plastic bottle and add a few drops of red food colouring. Now slowly pour vinegar into the bottle and watch the eruption take place!





TOPIC 4

Sedimentary Rock

Sedimentary rock is made up of sand, gravel and other sediments that have been compressed together over a long period of time. Let's explore...

Spark Curiosity

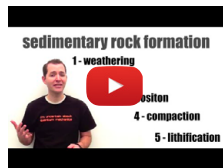


Did you know? Sedimentary rock is where almost all fossils are formed and preserved.



I wonder why sedimentary rock is the weakest?

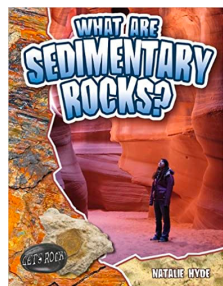
Resource Suggestions



Sedimentary Rocks Introduction

London Jenks

An advanced explanation of the types, formation, and properties of sedimentary rocks.



What are Sedimentary Rocks?

by Natalie Hyde

Explore sedimentary rocks and how they are formed.

HANDS ON ACTIVITY

- "Sedimentary Rice Krispies" on page 13

Literacy Enrichment Activity

Since sand is one of the sediments that makes up sedimentary rocks, it is a great opportunity to set up a sand writing tray! Place a piece of coloured construction paper on a cookie sheet and pour some sand (or salt) over top. Now you have a tray to practice printing letters and new vocabulary words.

- ☆ Young children can practice some form drawing, printing their names, or printing some letters of the alphabet
- ☆☆ Older children can write the word 'rock' and then write as many other words that rhyme with it as they can. Another word to try rhyming with is 'sand.'
- ☆☆☆ Oldest children can learn to spell the names of the three types of rocks—igneous, sedimentary, and metamorphic—by writing them in the sand tray.



HANDS ON ACTIVITY

Sedimentary Rice Krispies

Types of Learning: Cooking, Life Skills, Scientific Demonstration, Following Instructions

WHAT'S HAPPENING?

As you do this activity, pretend each ingredient is a different type of sediment. Sedimentary rocks are made up of a variety of sediments that accumulate in layers over a long period of time, hardening into rocks.

As you melt the marshmallows and butter, you can recall how low heat over a long period of time can cause sediments to adhere together. As you stir in the Rice Krispies, you can note how Rice Krispies are kind of like pebbles or gravel that might break off of igneous rock. As you sprinkle those sprinkles, you can note how sand and bits of shell also get layered into sedimentary rocks.

Sedimentary rocks tend to be fairly soft and crumbly. When examined closely, you can sometimes see the various sediments, such as sand, pebbles, and stones. This type of rock is typically the only one that contains fossils!

Adapted from [Learner.org](https://www.learner.org/).

[Check it out here for more interesting facts about types of rocks.](#)

Materials

- Mini marshmallows
- Butter
- Rice Krispies
- Sprinkles

Directions

1. Make a batch of Rice Krispies Squares by melting 4 cups of mini marshmallows with 3 tbsp of butter. Stir in 6 cups of Rice Krispies.
2. Place a thin layer of the Rice Krispies mixture in the bottom of a buttered 6x6 pan.
3. Next, top with some sprinkles to represent additional 'sediment'.
4. Add another thin layer of the Rice Krispies mixture, again, topping with sprinkles. Repeat until all of the Rice Krispies mixture has been used, then top with one more layer of sprinkles.
5. Gently press the layers together, cut, examine, and enjoy!





TOPIC 5

Metamorphic Rock

Metamorphic rocks are formed under great heat and pressure. They are found under the surface of Earth. Let's explore...

Spark Curiosity



Did you know? The Taj Mahal in India is covered in white marble, a type of metamorphic rock.



If metamorphic rock is formed deep in the Earth, I wonder how people have access to it?

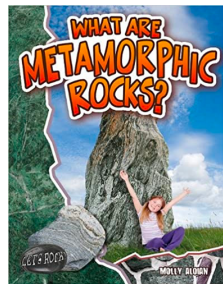
Resource Suggestions



Metamorphic Rocks Introduction

London Jenks

An advanced explanation of the types, formation, and properties of metamorphic rocks.



What are Metamorphic Rocks?

by Molly Aloian

Explore metamorphic rocks and how they are formed.

HANDS ON ACTIVITY

- "Metamorphic Pancakes" on page 15

Math Enrichment Word Problem

Have blocks, stones, or other manipulatives available for these math problems. Be flexible and change up the numbers to make these problems the right challenge for your children. Extend on the problems and ask follow up questions if your child is enjoying these challenges!

- ☆ You notice a pattern in the rocks you are exploring. The pattern goes: Sedimentary, Igneous, Metamorphic, Sedimentary, Igneous, Metamorphic. What would you expect to come next in the pattern?
- ☆☆ You notice a pattern in the rocks you are exploring. The pattern goes: Sedimentary, Igneous, Igneous, Metamorphic, Metamorphic, Sedimentary, Igneous, Igneous, Metamorphic... What would you expect to come next in the pattern?
- ☆☆☆ You notice a pattern in the rocks you are exploring. The pattern goes 1 Sedimentary, 1 Igneous, 8 Metamorphic, 1 Sedimentary, 1 Igneous, 7 Metamorphic, 1 Sedimentary, 1 Igneous, 6 Metamorphic. What would you expect the 26th rock to be?



HANDS ON ACTIVITY

Metamorphic Pancakes

Types of Learning: Cooking, Life Skills, Scientific Demonstration, Following Instructions

WHAT'S HAPPENING?

Metamorphic rocks begin as igneous or sedimentary rocks. Metamorphic rocks form when they are in an environment with very high heat and pressure. These conditions are found within the Earth, in Earth's crust.

Metamorphism, the process metamorphic rocks undergo, does not actually melt the rocks. Just as your pancake did not melt. Instead, it transforms these rocks into denser and more compact forms. Metamorphic rocks are often squished, folded, and smeared, but do not get hot enough to melt. When rocks are hot enough to melt, they become igneous rocks.

There are two classes of metamorphic rocks: **foliated** and **non-foliated**.

Foliated rocks form when pressure squeezes the rocks flat, making minerals align. These rocks look almost sheet-like and show the direction that pressure was applied.

Non-foliated rocks are not sheet-like. Some of these rocks are made of minerals that will not align, no matter how much pressure is added!

Adapted from USGS.

[Check it out here for more interesting facts about metamorphic rocks.](#)

Materials

- Pancake mix
- Chocolate Chips
- Mini marshmallows

Directions

How about pancakes for lunch?

1. Begin by whipping up a batch of pancakes. Pour the batter into a pan and top with some mini marshmallows and chocolate chips.
2. Now flip the pancake over. This will add heat and allow the pancake to go through a change.
3. Press down with the spatula, flattening the pancake and applying pressure. This will further the change.
4. Once cooked, lift the pancake to reveal how it looks now! It will look completely different than it did before it was flipped over on the hot pan.





TOPIC 6

Rocks vs. Minerals

Rocks and Minerals are similar and look the same, but they differ because a mineral is usually a solid compound, while a rock is a combination of minerals. Let's explore...

Spark Curiosity



Did you know? There are 16 minerals that the human body needs to be healthy! They can all be found in our food, when we eat a good variety of things.



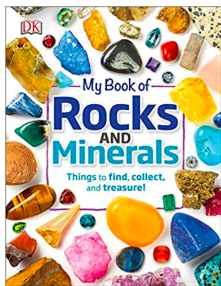
I wonder if minerals can ever be separated out again after combining into rocks? Could people separate them? Does nature ever separate them?

Resource Suggestions



Let's Learn About Rocks and Minerals | Caitie's Classroom | Science For Kids Super Simple Play

Watch an example of minerals becoming rocks and see some beautiful examples of both.



My Book of Rocks and Minerals

by Devin Dennie

Learn the difference between rocks and minerals and learn about many examples

HANDS ON ACTIVITY

- "Comparing Rocks and Minerals" on page 17

Literacy Enrichment Activity

Continue to build your comparative language and vocabulary by comparing two items that are very familiar to you. Perhaps you could compare cats and dogs? Think about what they sound like, what they look like, what they eat, and where they tend to live.

- ☆ Compare cats and dogs (or any two items) out loud. Grown ups: help your child to extend his or her vocabulary by offering new words, building on your child's observations.
- ☆☆ Compare your two items out loud. Afterwards, write one descriptive sentence about each of your items. Grown ups: help your child to extend his or her vocabulary by offering new words, building on your child's observations.
- ☆☆☆ Compare your two items out loud, then write a very descriptive sentence of both items. Use an online thesaurus to look up different words to make your sentences even more descriptive.



HANDS ON ACTIVITY

Comparing Rocks and Minerals

Types of Learning: Comparing and Contrasting, Writing Skills, Fine Motor Skills, Critical Thinking

WHAT'S HAPPENING?

Grown Ups: The information below might be too advanced for young children to understand. If you are doing this unit study with young children, have them head outside and grab two different rocks to compare and contrast in the Venn diagram.

While rocks and minerals look very similar to one another, there are some key differences between the two.

Rocks and minerals differ in their chemical makeup and in their colour. Minerals have a definite chemical composition, while rocks do not. This helps the colour of minerals to be the same throughout, while the colours of rocks vary.

Both minerals and rocks are helpful to people, though in different ways. Minerals help in bone and tooth formation and muscle contractions. Rocks help us build our structures and homes.

Minerals usually have a definitive shape while rocks do not.

Finally, minerals do not contain fossils, while some rocks can.

Adapted from Diffen.

[Check it out here for more interesting facts about the differences between rocks and minerals.](#)

Materials

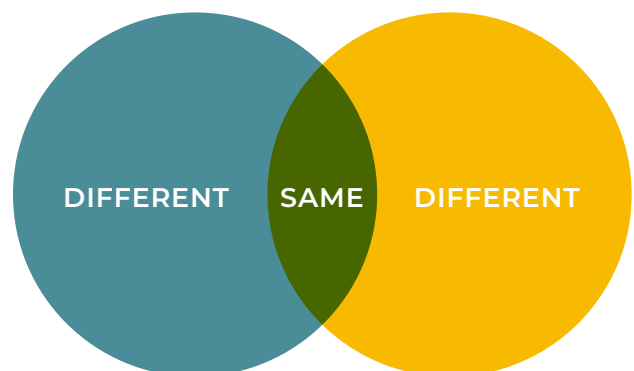
- Paper
- Pencil

Directions



"Venn Diagram" on page 27

1. Read the What's Happening section to the left to learn about the similarities and differences between rocks and minerals.
2. Label one circle on the Venn Diagram printable 'rocks,' the other circle 'minerals' and the middle where the two circles overlap 'both'.
3. Write what you have learned about rocks and minerals in the correct location on the Venn Diagram.
4. Young children can compare two rocks by looking at them closely. They might compare colour, size, and texture.





TOPIC 7

What is a Gem?

A gem, or gemstone, is a mineral that has been chosen for its beauty, durability, or rarity, and has been cut and polished. Gems are typically used in jewellery. Let's explore...

Spark Curiosity



Did you know? Geologists use the Mohs scale to describe the hardness of a rock. Diamonds are a 10 on the scale, the hardest material on Earth.



If gems are so hard and strong, I wonder what is used to cut and polish them?

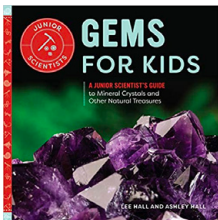
Resource Suggestions



Diamond, the Super Crystal!

SciShow Kids

Learn about diamonds, the strongest rock in the world.



Gems for Kids

by Lee Hall and Ashley Hall

Dig into 25 of the world's most rare and colourful gems.

HANDS ON ACTIVITY

- "Make a Rock Tumbler" on page 19

Literacy Enrichment Activity

- ☆ Have your child think of their favourite colour. Now try to brainstorm some things that rhyme with that colour and create a simple poem, such as: My favourite gem is red, I wear it on my head!
- ☆☆ Do the same activity as above, but also try to add in a shape or texture, such as: My favourite gem is rough which makes holding it tough!
- ☆☆☆ Do the same activity, but try to add in how wearing this gem makes you feel as well, such as: When I wear it, I'm not sad, in fact it makes me feel super rad!



HANDS ON ACTIVITY

Make a Rock Tumbler

Types of Learning: Hands On Exploration, Following Instructions, Sensory Learning, Science

WHAT'S HAPPENING?

A gem is a little bit tricky to define, because what qualifies as a gem is subjective! Over the years, humans have changed what they qualify as a gem, but it always comes down to beauty and rarity and what will look best as jewellery.

Gems tend to be very valuable, since they are made from rare minerals and rocks. Interestingly, the value of gems can change over time. A gem might be considered very rare and valuable, but if a large mine of that gem is found, its rarity decreases and so does its value!

This homemade rock tumbler turns everyday rocks into smooth and beautiful gems. This is how gems are created all over the world – though the machines used to tumble minerals and rocks into gems are far more advanced.

Our homemade rock tumbler works much the same way nature works over time to smooth rocks. Nature tumbles rocks through water that is mixed with sand and salt, rolling these rocks around and around. Over a long period of time, rocks become worn away and smooth.

Adapted from International Gem Society.

[Check it out here for more interesting facts about gems.](#)

Materials

- Rocks
- Plastic container with a lid
- Course sand
- Water
- Duct tape, optional

Directions

Gems are typically made from a mineral, but can be made from rocks as well! Today, you are going to make your own gems.

1. Head outside and find some rocks that match the definition of gems. Try to find ones that are beautiful, very strong, and rare.
2. Now bring those rocks inside and make your homemade rock tumbler. All you need is a plastic container (an empty peanut butter container works very well), some sand, and water.
3. Fill an empty plastic container with course sand.
4. Add water so the container is almost full, with about two inches remaining at the top.
5. Put the lid on and gently shake the water with the sand, making a slurry.
6. Add in your rocks, secure the lid very well (you might wish to add duct tape) and give it some shakes. You will want to shake it very often throughout the day over multiple days. Leave it in a place you frequent often and give it a shake every time you walk by.
7. After about one week, open the jar and have a look at the transformation taking place. You can then continue with your rock tumbling, or if you are happy with how your gems look, you can be done!



TOPIC 8

Discover More Gems

Gems are beautiful and are used to make jewellery. You can make some pretend gems and create your own jewellery – practicing the colour wheel and colour mixing as you do. Let's explore...

Spark Curiosity



Did you know? Some gems, like sapphire and fluorite, form in a whole rainbow of colours.



I wonder what makes some gems more valuable than others?

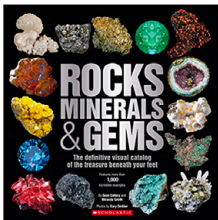
Resource Suggestions



What's Inside These Rocks?

SciShow Kids

Discover geodes: rocks with crystals inside.



Rocks, Minerals, and Gems

by Miranda Smith and Sean Callery

See over 1000 beautiful examples in this visual.

HANDS ON ACTIVITY

- "Paint a Gem" on page 21

Math Enrichment Word Problem

Have blocks, stones, or other manipulatives available for these math problems. Be flexible and change up the numbers to make these problems the right challenge for your children. Extend on the problems and ask follow up questions if your child is enjoying these challenges!

- ★ Jenna decided to buy a gem for her Mom. The gem cost \$2.00. She paid for the gem using only coins. How might she have paid for the gem?
- ★★ Jenna decided to buy a gem for her Mom. The gem cost \$6.00. She paid for the gem using a bill and some coins. How might she have paid for the gem?
- ★★★ Jenna decided to buy a gem for her Mom. The gem cost \$63.00. She paid for the gem using 2 bills and coins. How might she have paid for the gem?









HANDS ON ACTIVITY

Paint a Gem

Types of Learning: Research Skills, Art, Colour Mixing, Sensory, Fine Motor

WHAT'S HAPPENING?

There are gems in practically every colour of the rainbow! When painting your gem, try mixing your primary colours in these ratios to achieve a hue similar to the gem:

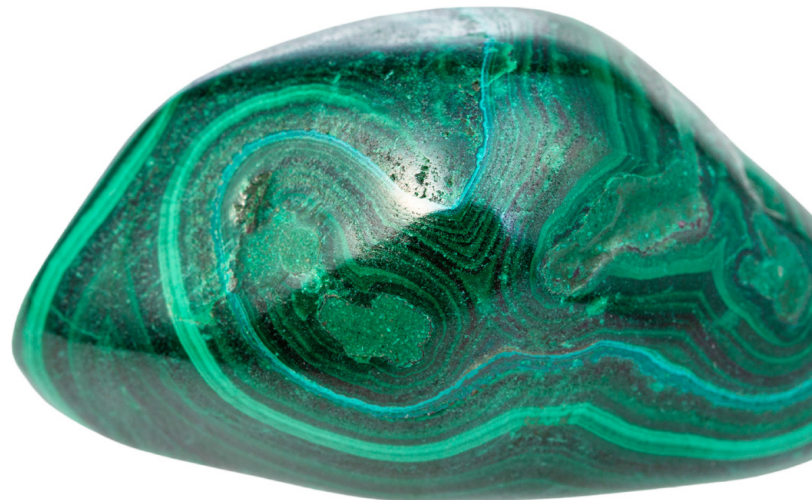
Gem Picture and Name	Try mixing:
 Ruby	3 parts red 1 part blue
 Citrine	1 part red 2 parts yellow
 Yellow Sapphire	1 part red 3 parts yellow
 Emerald	1 part blue 1 part yellow
 Tanzanite	4 parts blue 1 part red
 Amethyst	2 parts blue 1 part red

Materials

- Smooth rocks
- Red, blue and yellow paint
- Paintbrushes
- Ice cube tray
- Clear nail polish

Directions

1. Head outside and gather some smooth rocks that feel nice to the touch.
2. Now head inside to paint! Add some red, blue and yellow paint to three different sections of an ice cube tray. Mix a little bit of one primary colour with another in a different section of the ice cube tray, creating a rainbow of colours.
3. Read the What's Happening section to the left and choose a gem that you would like to recreate. Examine its colour and paint one of your stones to match, mixing colours as you go.
4. When you are done, add a clear coat of nail polish to your 'gem' to seal the paint and add some shine.





TOPIC 9

Birthstones

Experts believe that birthstones were chosen long, long, long ago and might have a religious origin. Astrologers long ago attributed supernatural powers to birthstones. Nowadays, the wearing of birthstones is often thought to bring good luck and good health. Let's explore...

Spark Curiosity

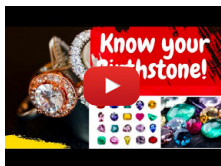


Did you know? While considered a precious gem because of their history, pearls are not actually mineral stones. They are organically formed, like coral or amber.



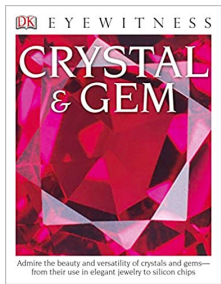
I wonder if there are other special things to mark a birth month, like flowers or animals?

Resource Suggestions



Birthstone by Month | Know your Birthstone | Birthstone Chart | Birthstone Meaning
FMGS Gemstone Mineral Treasures

Watch a little video clip of each birthstone.



Crystals and Gems
by R.F. Symes

Learn about a variety of gems and their uses.

HANDS ON ACTIVITY

- "Research Your Birthstone" on page 23

Literacy Enrichment Activity

Talking about birthstones might make you excited for your birthday! Let's take some time to plan out the most special birthday you can imagine.

- ★ Talk out loud about what the most special birthday you can imagine might include. Draw a picture of this magical day!
- ★★ Talk out loud about what the most special birthday you can imagine might include. Draw a picture of this magical day and write about it as well.
- ★★★ Describe a birthday that would be the most magical ever! Draw a picture and write about all the details.



HANDS ON ACTIVITY

Research Your Birthstone

Types of Learning: Research Skills, Fine Motor Skills, Literacy Development

WHAT'S HAPPENING?

Every month has a birthstone that is associated with it. Some even have multiple gems associated with them!

Birth Month	Associated Modern Gem	
January		Garnet
February		Amethyst
March		Aquamarine
April		Diamond
May		Emerald
June		Alexandrite
July		Ruby
August		Peridot
September		Sapphire
October		Pink Tourmaline
November		Citrine
December		Blue Zircon

Materials

- Research materials

Directions



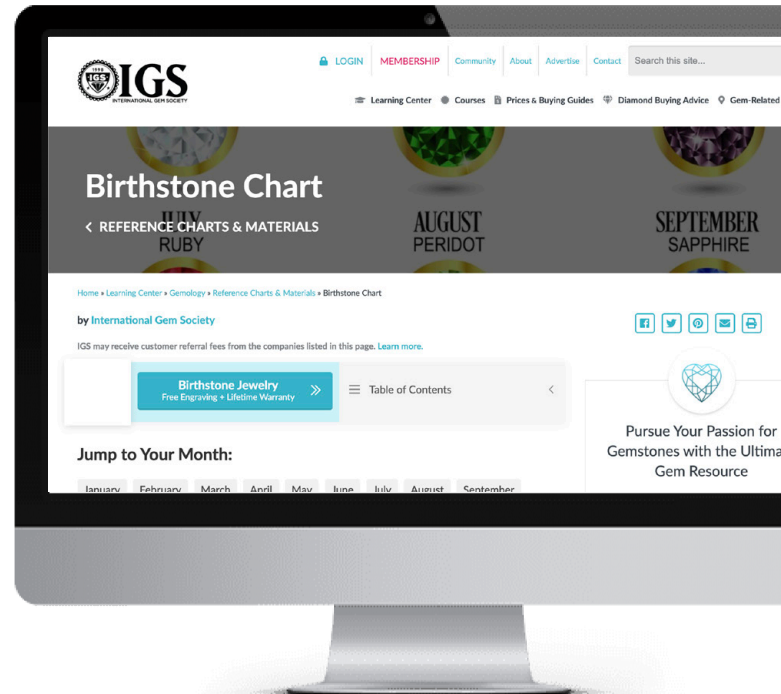
"My Birthstone" on page 28

- It is fun to research the birthstone associated with your birth month! Use the following website, or do your own research, to learn about your birth stone.

International Gem Society:

www.gemsociety.org/article/birthstone-chart

- Write your findings and draw a picture of your birthstone on the My Birthstone printable.





TOPIC 10

Using Rocks and Minerals

We use rocks and minerals everyday! From building our homes, to making roads and sidewalks, and even in cosmetics and beauty products! Let's explore...

Spark Curiosity

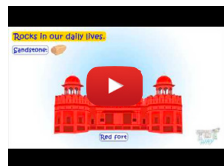


Did you know? Artists have used the beautiful colours of minerals in their paint for thousands of years, and have carved many masterpieces from marble and other strong stones.



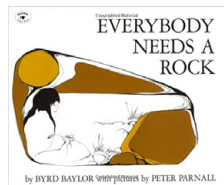
I wonder if we can think of a way each kind of rock is used in our home? How many rocks and minerals can we find inside?

Resource Suggestions



Uses and Importance of Rocks in our Daily Life | Science
TutWay

See a few examples of how rocks are used every day.



Everybody Needs a Rock
by Byrd Baylor

A poetic picture book about finding just the right rock for you.

HANDS ON ACTIVITY

- "Rock and Mineral Scavenger Hunt" on page 25

Math Enrichment Word Problem

Have blocks, stones, or other manipulatives available for these math problems. Be flexible and change up the numbers to make these problems the right challenge for your children. Extend on the problems and ask follow up questions if your child is enjoying these challenges!

- ★ Amelia has 5 clay pots and wants to put 2 plants in each pot. How many plants does she need?
- ★★ Alfred has 10 clay pots and wants to put 3 plants in each pot. How many plants does he need?
- ★★★ Angelo has 25 clay pots and wants to put 5 plants in each pot. How many plants does he need?



HANDS ON ACTIVITY

Rock and Mineral Scavenger Hunt

Types of Learning: Research Skills, Life Skills, Critical Thinking

WHAT'S HAPPENING?

We use things made from rocks and minerals every day!

Jewellery: Gems are used to create beautiful bracelets, watches, and necklaces.

Gypsum and Chalk: Drywall used in our houses is made up of the mineral gypsum, and chalk is a limestone.

Clay: Pots and dishes made from ceramics are often made from clay. Clay is a rock that is made from mud being compacted together.

Granite, Marble and Quartz: Many countertops are made from these stones. Granite is made from cooled magma, and marble is formed from limestone.

Salt: Salt is made of two minerals: sodium and chloride.

Glass: Glass is formed by melting quartz, the main mineral found in sand.

Copper, Zinc, Iron, and Aluminum: These are all used throughout our home in wires, pipes, and beams.

Adapted from Museum of Natural and Cultural History.

[Check it out here for more interesting facts about everyday uses of rocks and minerals.](#)

Materials

- Camera

Directions

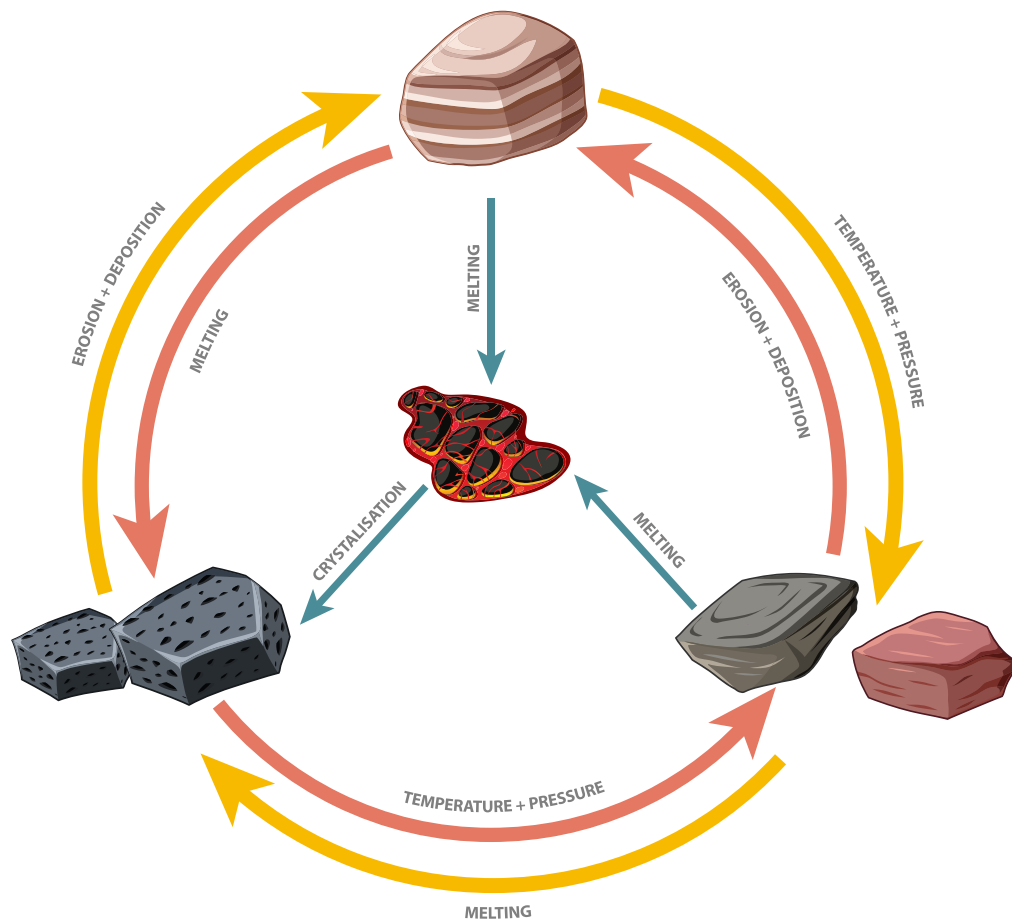
1. Read the What's Happening section to the left to learn about some of the ways we use rocks and minerals in our everyday lives.
2. Now walk around your house on a scavenger hunt! Take pictures using a phone or camera of all of the items you can find that are made from rocks or minerals.





TOPIC: THE ROCK CYCLE

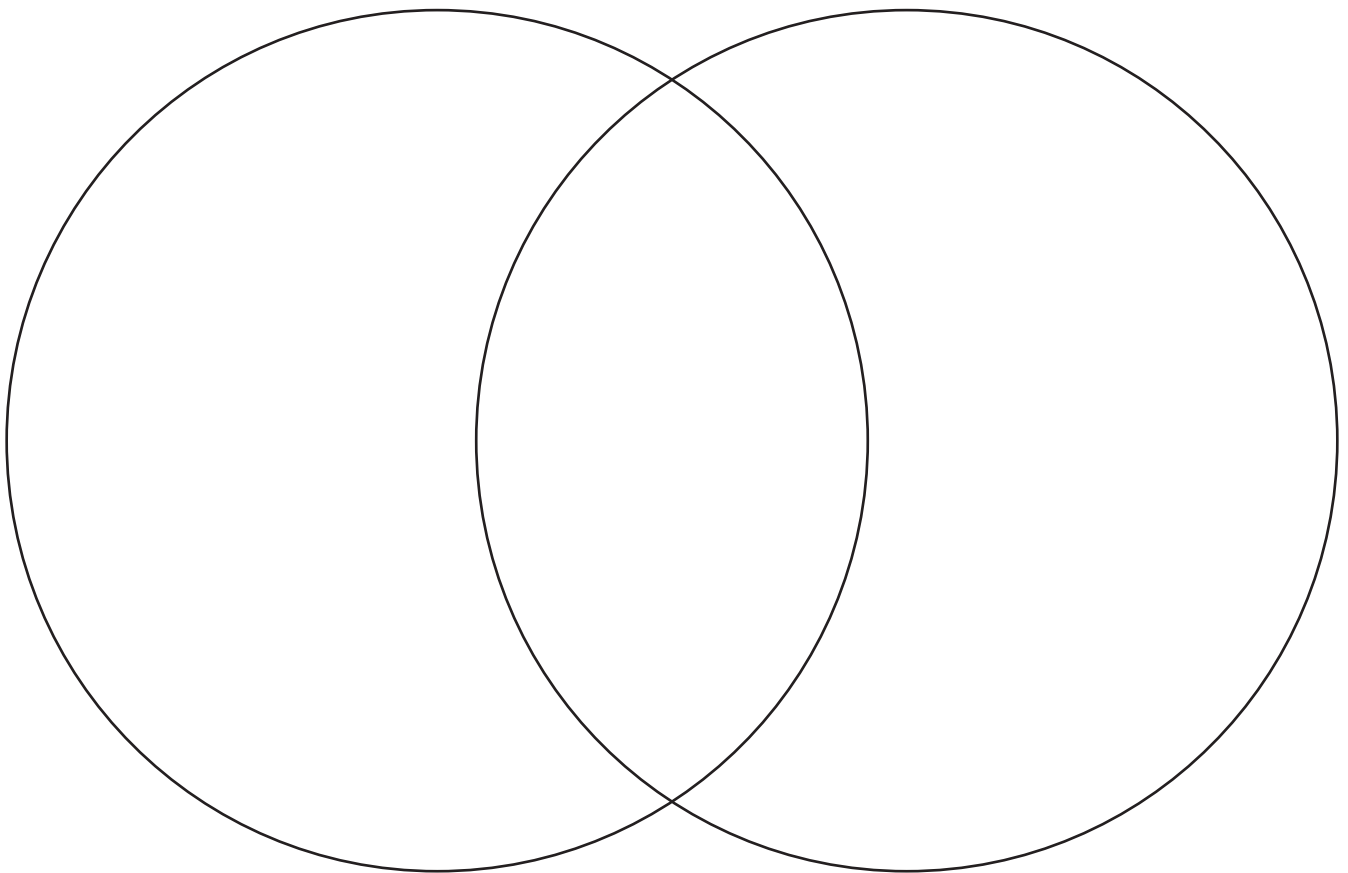
The Rock Cycle





TOPIC: ROCKS VS. MINERALS

Venn Diagram





TOPIC: BIRTHSTONES

My Birthstone

MY BIRTHDAY IS:

MY BIRTHSTONE IS:

INTERESTING FACTS ABOUT MY BIRTHSTONE:

Draw a picture of your birthstone.



My Unit Study Notes on Rocks and Gems

TOPIC 1: WHAT IS A ROCK?

A large, empty rectangular box with a thin black border, intended for handwritten notes related to the topic.Ten horizontal lines for handwritten notes, aligned to the right of the large rectangular box.

TOPIC 2: THE ROCK CYCLE

A large, empty rectangular box with a thin black border, intended for handwritten notes related to the topic.Ten horizontal lines for handwritten notes, aligned to the right of the large rectangular box.



My Unit Study Notes on Rocks and Gems

TOPIC 3: IGNEOUS ROCK

A large, empty rectangular box with a thin black border, intended for a drawing or detailed notes related to the topic of igneous rocks.

TOPIC 4: SEDIMENTARY ROCK

A large, empty rectangular box with a thin black border, intended for a drawing or detailed notes related to the topic of sedimentary rocks.



My Unit Study Notes on Rocks and Gems

TOPIC 5: METAMORPHIC ROCK

TOPIC 6: ROCKS VS. MINERALS



My Unit Study Notes on Rocks and Gems

TOPIC 7: WHAT IS A GEM?

A large, empty rectangular box with a thin black border, intended for a drawing or illustration related to the topic.Ten horizontal lines for writing notes, aligned to the right of the drawing box.

TOPIC 8: DISCOVER MORE GEMS

A large, empty rectangular box with a thin black border, intended for a drawing or illustration related to the topic.Ten horizontal lines for writing notes, aligned to the right of the drawing box.



My Unit Study Notes on Rocks and Gems

TOPIC 9: BIRTHSTONES

A large, empty rectangular box with a thin black border, intended for handwritten notes related to the topic of Birthstones.Ten horizontal lines for handwritten notes, aligned to the right of the large rectangular box.

TOPIC 10: USING ROCKS AND MINERALS

A large, empty rectangular box with a thin black border, intended for handwritten notes related to the topic of Using Rocks and Minerals.Ten horizontal lines for handwritten notes, aligned to the right of the large rectangular box.