Assembled Den Meeting Plan – WEBELOS (4th Grade)

This ***Assembled* Den Meeting Plan** combines ideas from Webelos Adventures Den Meeting Resources found at Scouting.Org (or from the requirements), into the parts of a quality Den Meeting, which are **Preparation** (plan + collect materials needed), **Gathering** (something for early arrivals to do), **Opening** (a ceremony to start), then **Activities** (an Activities Intro chat, followed by a series of activities, ideally alternating quiet and energetic fun), **Closing + Recognition** (ceremony), and **After the Meeting** (follow up) …

Webelos – 4th Grade

Earth Rocks

A "Science" Adventure

ELECTIVE (2 "electives" are needed to earn Webelos Rank)

Snapshot of Adventure. Rocks and minerals are more than just things that lie in the ground. Yes, they help form our planet, but people also use them to create things that make our lives easier. In this Adventure, dig into the world of rocks and minerals and discover some surprises about the science of geology — like how the ground beneath you is constantly on the move.

The QR Code above takes you to scouting.org/cub-scout-adventures/earth-rocks/

This Den Meeting Plan adapts Activity content from that Scouting link with other fun, simple, easy ideas. For more, see the Adventure Resources at the end of this Plan for a list of the suggested Activities at that link.

Requirements from the Webelos Handbook

1. **Examine the three types of rocks, sedimentary, igneous, and metamorphic.**
2. **Find a rock, safely break it apart and examine it.**
3. **Make a mineral test kit and test minerals according to the Mohs scale of mineral hardness. Using the rock cycle chart or one like it, discuss how hardness determines which materials can be used in homes, in landscapes, or for recreation.**
4. **Grow a crystal.**

Meeting Plan

Does this take one Meeting to complete – or more? It's up to the Parents / Leaders! As written, you can do this in a single session, but you might do more, like a museum visit and one or more rockhound hunts.

PREPARATION (and materials needed): Read the Earth Rocks Adventure in the Webelos Handbook.

- Decide whether you like any of the "Activity Card" options or the suggested activities below or some other way to deliver this Adventure. When you decide, check the materials and supplies you need.
- This is an Adventure where getting expert help can make your session special. You may have a science teacher who would help if asked. The internet is your friend ... search *geology clubs near me* .
  - Other resources include natural history museums and rock + mineral shows.
  - Wherever you do this, be sure to inform Scouts and families when and where to meet.
- Equipment you'll want access to includes magnifying glasses, small hammers and chisels, old socks or rags (to cover rocks while breaking them), safety glasses, and Mohs scale materials (see Activity 3).
  - Also, samples of igneous, sedimentary, and metamorphic if your rock hunting location is missing them.

GATHERING: A "gathering" activity is to keep Scouts occupied as the rest of the den arrives. *What you do will depend on your location and leadership resources*.

- Use gathering time to connect with adults and "share the leader load": everyone can help with something! A good approach is for different parents (or teams) to share the "lead" of parts of the Adventure below.

OPENING: (Parent leader: _____) An Opening ceremony says, "we've begun" and helps set the tone.

- Maybe: a simple ceremony you like that includes the Pledge of Allegiance and the Scout Oath and/or Law.

ACTIVITIES (See also other Activities linked at Adventure Resources – use those if you like them):

◆**Activity Intro:** (Parent leader: _____) As you move into Activities, have some "talk time" where you (1) discuss today's Adventure activities (what you'll do, how you'll do it – share in a way to get the Scouts excited) and (2) let each of the Scouts share "what's new" with them and get to know each other better.

◆**Activity 1: Three Types of Rocks (Requirement 1: *"Examine the three types of rocks, sedimentary, igneous, and metamorphic."*)** (Parent leader: _____)

The plan below adapts the substance of Rock Hunt from the Adventure Resources.

- You can do this rock hunt anywhere – your back yard, a park, the side of the road, a creek bed, an excavation, the sides of a riverbank, a beach, a highway cut, a landscaping business that sells rock – but be sure you have permission and follow all rules of the owner. Common rules are:
  - Many parks don't allow you to take rocks to collect – but you can collect pictures.
  - Many locations won't want you to dig for rocks – get permission if you can and put the site back together like you found it when you're done.
- Ideally, find a location with each of igneous, sedimentary, and metamorphic, but if the location is missing any, bring examples of the type you're missing.
  - **Igneous Rock** is any rock made by cooling magma (hot, molten material that flows under the Earth's surface) or lava (molten rock that comes out of a volcano). Examples of igneous rock include:



  - **Sedimentary Rock** is made from sediment: gravel, sand, clay, or soil that settles and hardens out of water in riverbeds, ponds, lakes, and oceans. Sediment may contain shells and skeletons. Sedimentary rock is formed in layers, like a giant cake, after sediment has been under great pressure for millions of years. If the sediment was originally sand, it becomes sandstone. Clay turns into shale. Shells and skeletons make limestone. Small pebbles and sand form conglomerate.



  - **Metamorphic Rock** has been through a process much like baking or pressure. (Meta means changed, and morphic means form.) The change is caused by intense heat and great pressure deep in the earth. Under these conditions, sedimentary limestone becomes marble. Sedimentary sandstone turns into quartzite. Igneous granite changes into gneiss (pronounced "nice").



- On your rock hunt hikes, have Scouts look for different kinds of rocks and identify what types they find.
  - They might try to identify based on the information in the *Webelos Handbook*, which shows the three main rock groups and provides an explanation of minerals.
  - If you have a guide showing local types of rocks and minerals, that will be most excellent.
  - In any event, have your Scouts describe what they see and feel on the rock.

◆Activity 2: Breaking Rocks (Requirement 2: *"Find a rock, safely break it apart and examine it."*) (Parent leader: _____)

The plan below adapts the substance of Let's Go Rock Hunting from the Adventure Resources.



- While on a rock hunt, geologists look closer to examine and identify rocks and minerals.
- One way to look closer is to look inside the rock – break it open. But do it safely:
  - Have Scouts wear safety glasses and wrap their rocks in a cloth before breaking apart the rocks with a hammer and chisel.
- If you have one, use a magnifying glass to help in your observation.
- If you don't have one, see if you can borrow one from a friend or school – or take a few rocks to where you can use a magnifying glass (hint: at a store that sells magnifying glasses).



- Geologists use different tests to identify minerals.
  - Color test: Scratch the specimen on a plate of unglazed porcelain or the back of a piece of tile. The color that appears helps to identify it.
  - Luster test: How does the specimen look when light is from it? Is it shiny, dull, or greasy?
  - Cleavage test: How does it split or break up? Does it turn into powder or split in layers? If it breaks into crystals, how many sides does a crystal have?
  - Chemical test: Does it contain limestone? If a drop of vinegar bubbles on it, the answer is yes.
  - Hardness test: How hard is it? See the hardness scale in Activity/Requirement 3 below.

◆Activity 3: Mohs Mineral Testing (Requirement 3: *"Make a mineral test kit and test minerals according to the Mohs scale of mineral hardness. Using the rock cycle chart or one like it, discuss how hardness determines which materials can be used in homes, in landscapes, or for recreation."*) (Parent leader: _____)

The Adventure Resources offer an Activity Card of Mineral Lab. Use that if you like – or something else. The plan below adapts the substance of the Requirement.

- *Mohs Scale?*
- What is Mohs?
- Friedrich Mohs was a geologist who figured out that you can test the hardness of rocks and minerals by seeing whether:
  - The rock or mineral can scratch other materials,

    or
  - Whether other materials can scratch the rock or mineral.
- ***This is Mohs scale of mineral hardness.***
  - A scale that gives different rocks and minerals hardness values from 1 to 10.
  - Talc is soft. Diamonds are hard!
- You won't have all of these elements, but you can make a mineral test kit that will work for most of what you come across.

Mohs Hardness Scale

Scale No.	Mineral Example	Scratch Test
1	Talc	Scratches easily with fingernail
2	Gypsum	Barely scratches with fingernail
3	Calcite	Barely scratches with copper penny
4	Fluorite	Scratches easily with file or knife blade
5	Apatite	Barely scratches with file or knife blade
6	Feldspar	Doesn't scratch with file or knife blade; scratches easily with glass
7	Quartz	Easily marks steel and hard glass
8	Topaz	Is harder than common minerals
9	Corundum	Scratches topaz
10	Diamond	Scratches corundum; hardest mineral

Materials Needed for a Mineral Test Kit:

- Penny
- Small piece of glass
- Piece of unglazed tile
- File or pocketknife
- Eyedropper
- Small bottle of vinegar
- Selection of Rocks and Minerals



See below on how to do streak, scratch, and fizz (acid) tests on the minerals

- Tell Scouts that they will be testing for minerals.
  - The Earth contains many useful minerals.
  - Some, like silica (sand), are easy to see and collect.
  - Others, like iron and zinc, are found in rocks.
  - There are three categories of useful minerals: metals, nonmetallic minerals, and fuels.
- Ask them to open their Webelos handbook to page 217. They will be using the Mohs Hardness Scale to examine the minerals.
- Demonstrate how to test for a mineral:
  - Scratch the tile with your mineral to determine the "streak" of the mineral.
    - The streak is the color of the resulting powder.
    - It's usually a more consistent color than the apparent color of the mineral.
    - You can refer to a mineral identification chart to find out what minerals have this streak.
  - Use the eyedropper to put a drop of vinegar on the mineral.
    - If the vinegar fizzes, that means the mineral contains calcium carbonate.
  - Test the hardness of the mineral by trying to scratch it, in order, with your fingernail, the penny, and the file or knife.
    - Then, try to scratch the file or knife and the glass with the mineral.

- Refer to the chart to determine the mineral's hardness.
- For example, if you can scratch the mineral with your fingernail, it measures 1 or 2 on the scale.
- If the mineral can scratch the file, it measures at least 7 on the scale.



◆Activity 4: Geology is Crystalizing (Requirement 4: "*Grow a crystal.*") (Parent leader: _____)

This plan adapts the substance of Sweet Crystal from the Adventure Resources.

- Before the meeting, practice growing a crystal using the directions below.
  - This will allow you to share the finished crystal.
- Supply List:
  - 2 cups of water
  - 6 cups of granulated sugar
  - Medium size pan and a place to heat water.
  - Paper towels, enough to share, and a table covering.
  - Optional: 2 or 3 drops of food coloring, and ½ to a teaspoon of flavoring extract
  - For each Scout: Wooden skewer or string, clean glass jars, clothes pins
- Preparation: Clean the glass jars thoroughly with hot water, and prepare sugar water mixture:
  - Place the 2 cups of water in a medium-sized pan and bring it to a boil.
    - Begin adding the sugar, 1 cup at a time, stirring after each addition.
    - You'll notice that it takes longer for the sugar to dissolve after each cup you add.
    - Continue to stir and boil the syrup until all the sugar has been added and it's completely dissolved.
    - Remove the pan from the heat.
  - If you're using colors or flavorings, add 2 to 3 drops of food coloring and stir it in to ensure an even, smooth color.
    - When using an extract, add 1 teaspoon of the extract; for flavoring oils, only add ½ 14 teaspoon.
    - Make sure you don't stand right in front of the pan because the scent can be very strong as it rises in the steam.
  - Allow the sugar syrup to cool for 20 to 30 minutes.
- Share with Scouts that they will be making a crystal that they can eat.
  - Show them the finished product and then lead them through the experiment.

- Wet each wooden skewer or string with water and roll it in granulated sugar.
  - This base layer gives the sugar crystals something to grab when they start forming.
  - Set these aside to dry while you prepare the sugar syrup.
- Pour the syrup into the clean, prepared jars.
- Lower one sugared skewer or string into each jar until it hangs about 1 inch from the bottom.
  - Carefully place your jar in a cool place, away from harsh lights, where it can sit undisturbed.
  - Cover the top loosely with plastic wrap or a paper towel.



- Let Scouts know that they should start to see sugar crystals forming within two to four hours.
  - If you see no change after 24 hours, try boiling the sugar syrup again and dissolve another cup of sugar into it.
  - Then pour it back into the jar and insert the skewer or string again. They may do this with adult supervision.
- Allow the rock candy to grow until it is the size you want.
  - Don't let it grow too large; otherwise, it might start growing onto the sides of your jar.
- Note that a top layer of crystal will form. This is OK.
  - Once the candy has reached the desired size, break that top layer of crystal up with a fork before removing the candy.
- Transfer the rock candy to an empty jar or glass (keep the clothespins to balance it) and allow it to dry for one to two hours.
- Enjoy your rock candy!



◆Activity 5: [*OPTION*: Fun Game We Like (Parent leader: _____):



If this meeting is too dry or the games in the Activity Cards in Adventure Resources don't resonate with you as something your Scouts will like, you can turn up the "Fun Meter" and play a game or some other Fun Activity you like. Some ideas here. NOTE: the fun game doesn't' need to be connected to today's Adventure topic – it can just be FUN!

CLOSING: A Closing ceremony ends the meeting and highlights the achievements. A Den leader can reflect on the meeting + praise Scouts for specific good actions today. Thank every Parent who helped.

- If you have them, award Pins to all who completed the requirements. Maybe end with a "Living Circle".

AFTER THE MEETING: Clean up as needed. Share refreshments if that's what you like.

Upon completion of this Adventure, your Webelos will have earned the Adventure Pin for it. Make sure they are recognized for their completion by presenting the Adventure Pins as soon as possible according to your pack's tradition. Text or email all Den parents to share these resources for future reference and so parents of Scouts who could not attend may complete this Adventure from home.

ADVENTURE RESOURCES: Den Meeting Resources and "Activity Card" options for this Adventure are found at https://www.scouting.org/cub-scout-adventures/earth-rocks/. Those resources include the Snapshot of Adventure (included above), a "Safety Moment" of tips and links about doing this safely, and, for each Requirement, one or more "Activity Cards" you can click on for an activity to complete the Requirement.

Those "Activity Card" pages are linked below – along with the "Key" scoring of (a) whether the Activity must be done Outdoors, may be done Indoors, or involves Travel; (b) how much Energy Scouts will generate; (c) How "Supply Intensive"; and (d) Prep Time – those last 3 categories are scored on a 1 to 5 scale, with 5 being "most". Note that while that website page says "Choose one of the following" before the "Activity Cards", what that means is "Choose one of the following – *or do some other activity that will meet the Requirement*", because the Requirements are required, not the Activity Cards. In the Assembled Den Meeting Plan above we have adapted some of what's below or other ways to complete the requirement in easier ways.

1. **Examine the three types of rocks, sedimentary, igneous, and metamorphic.**
   - Crayon Rock Formation (Indoor; **2** of 5 Energy; **4** of 5 Supplies; **2** of 5 Prep Time)
   - Rock Classification (Indoor; **2** of 5 Energy; **4** of 5 Supplies; **2** of 5 Prep Time)
   - Rock Expert (Indoor; **1** of 5 Energy; **1** of 5 Supplies; **5** of 5 Prep Time)
   - Rock Hunt (Travel; **4** of 5 Energy; **3** of 5 Supplies; **5** of 5 Prep Time)
2. **Find a rock, safely break it apart and examine it.**
   - Break a Geode (Outdoor; **3** of 5 Energy; **5** of 5 Supplies; **5** of 5 Prep Time)
   - Let's Go Rock Hunting (Travel; **5** of 5 Energy; **5** of 5 Supplies; **3** of 5 Prep Time)
3. **Make a mineral test kit and test minerals according to the Mohs scale of mineral hardness. Using the rock cycle chart or one like it, discuss how hardness determines which materials can be used in homes, in landscapes, or for recreation.**
   - Mineral Lab (Indoor; **3** of 5 Energy; **5** of 5 Supplies; **4** of 5 Prep Time)
4. **Grow a crystal.**
   - Crystal Shapes (Indoor; **3** of 5 Energy; **4** of 5 Supplies; **4** of 5 Prep Time)
   - Sweet Crystal (Indoor; **3** of 5 Energy; **4** of 5 Supplies; **4** of 5 Prep Time)