Assembled Den Meeting Plan – BEAR (3rd Grade)

This ***Assembled* Den Meeting Plan** combines ideas from Bear Den Meeting Resources found at Scouting.Org or from the requirements themselves, 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) …

Bear – 3rd Grade

Super Science

A "Science" Adventure

ELECTIVE (2 "electives" are needed to earn the Rank of Bear)



Snapshot of Adventure. Have you ever wondered why the sky is blue or how gravity works or what makes a rainbow?

Scientists wonder about those things, too.

The QR Code above takes you to scouting.org/cub-scout-adventures/super-science/

This Den Meeting Plan adapts Activity ideas 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 Bear Handbook

1. **Conduct static electricity investigation.**
2. **Conduct the sink-or-float investigation.**
3. **Conduct the color-morphing investigation.**
4. **Conduct the color-layering investigation.**

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 if you're really organized, but that may be running too fast for your Scouts, especially if they get into the science mindset. Maybe better to split into another session, and add games or Bill Nye videos to enjoy.

PREPARATION (and materials needed): Read the Super Science adventure in the Bear Handbook.

- As always, decide whether you like any of the "Activity Card" options for the Requirements or the suggested activities below or some other way to deliver this Adventure.
  - When you decide, check the materials and supplies you need.

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: Static! (Requirement 1: "*Conduct static electricity investigation.*") (Parent leader: _____)

The Adventure Resources offer Activity Cards of Dancing Foil (Aluminum Foil Bits in a Plastic Bottle plus Balloon) and Race the Can (Soda Can and Balloon). Use what you like – both are great. Here's more ideas:

- **How Static Electricity Works.**
  - Everything is made of very small things called atoms.
  - And atoms are made up of even smaller things, including protons and electrons. Protons have a positive charge, and electrons have a negative charge.
  - Each atom usually has the same number of protons and electrons, but if two atoms bump into each other, electrons from one atom can get rubbed off onto the other atom.
  - If you walk across a carpeted floor (especially if you drag your feet), extra electrons build up on your body. If you do that (drag your feet across a carpet) and touch your dog or a metal doorknob, those electrons jump – causing a little spark of static electricity.
  - Static electricity also makes some things stick together, such as hiking socks and dryer sheets.
- **Materials Needed:** one or more balloons, polar fleece blanket or wool sweater, section of cloth, tissue paper, aluminum foil, two aluminum cans (one empty and one full), paper scraps, cardboard scraps, yarn or string, a coin.
- **Experiment:** Blow up a balloon and create static electricity by rubbing the balloon on the fleece blanket or wool sweater.
  - Ask your Scouts to predict which of these objects will stick to the "charged" balloon: human hair, tissue paper, aluminum foil, cardboard scrap, paper scrap, yarn/string, cloth, and a coin.
  - Some objects will be more affected by static electricity than others.
  - Have your Scouts discuss their findings with you.



- Here is another way we can prove that static electricity affects objects.
  - Charge the balloon again with static by rubbing it on the blanket or sweater.
  - Ask your Scouts to predict which of these objects will follow the balloon and which ones will move away from the balloon: full aluminum can, empty aluminum can, gentle stream of tap water.
  - Have your Scout discuss their findings with you.
- And another way:
  - Charge the balloon again and rub the balloon on someone's head with stringy hair.
  - Watch what happens to their hair as negative electrons build up on the balloon.
  - After doing this for a few seconds, place the balloon near a steady, gentle stream of tap water, about 1/8-inch thick.
  - Does the water move toward or away from the balloon?

◆Activity 2: Sink or Float? (Requirement 2: *"Conduct the sink-or-float investigation."*) (Parent leader: _____)

The Adventure Resources offer an Activity Card of Sink or Swim. A classic experiment, adapted below.

- Ask your Scouts: can you guess – or use your Super Science to "hypothesize" – whether an egg will sink or float in water that is salty?
  - What if the water is filled with sugar? And what if the water has nothing added?
  - Let's science this!
- **Materials Needed:** three eggs, three drinking glasses (same size), salt (2 tablespoons, more or less, depending on size of glasses), sugar (same), water, tablespoon.
- **Experiment:** Fill all three glasses with water.
  - Have your Scouts leave plain water in the first glass, stir salt into the second one, and stir the same amount of sugar into the third glass.
  - Can your Scouts predict what will happen when they add an egg to each glass?
  - Let them try it and see if the eggs sink or float.
- Then continue and explain:
  - In this adventure, we experimented with what scientists call "variables."
  - A variable is something that changes.
    - By changing just one variable at a time, you proved how sugar and salt affect how eggs float.
    - The plain water is called the control because it doesn't change.
    - Since the control is the same in each cup, we can use it to compare the results when the salt and the sugar are added.
- We left plain water in the first glass, but we stirred salt into the second glass and sugar into the third one.
  - Salt makes water denser so the egg floats at the top.
  - Using the same amount of sugar, the egg still floats, but not as well.
  - In plain water, the egg doesn't float at all.



- Did your findings support your hypothesis? Or should you have made a different prediction?

◆Activity 3: Color Morphing (Requirement 3: *"Conduct the color-morphing investigation."*) (Parent leader: _____)

The Adventure Resources offer an Activity Card of Oil and Water. Another classic, adapted below.

- Ask: Have you ever heard the saying "Oil and water don't mix"?
  - Let's use our Super Science to find out if that is true.
  - Then we'll experiment more by adding colors to the liquid.
  - What will happen if we add color to the oil, and then add the oil to the water?
  - What do you predict will happen?
- Materials Needed: One large jar or vase (must be clear), water, cooking oil, liquid food coloring (blue, red, and yellow), tablespoon, measuring cup.



- Experiment: Have your Scout fill the clear jar or vase halfway with water.
  - In the measuring cup, add 2 tablespoons of cooking oil.
  - Then add exactly 3 drops each of red, blue, and yellow food coloring to the oil (no more or it will turn black).
  - Stir the color and oil together – you will see it break up into little droplets.
  - Slowly pour the mix into the water and watch the show begin!



- Now ask: What is happening? Did you guess right?
  - Oil and water do not mix.
    - When stirred together in the same container, they will actually push away from each other once the motion stops.
  - When you added the food coloring to the oil, you stirred it, mixing the two together.
  - Once this is added to the water and allowed to be still, the water and oil start to separate.
  - Liquid food coloring is water-based.
  - This causes the colors to push away from the oil.
  - As the colors move through the water, it causes a beautiful color morphing effect.
- If you have more time for this activity, try it with different color combinations.

◆Activity 4: Color Layering (Requirement 4: *"Conduct the color-layering investigation."*) (Parent leader: _____)

The Adventure Resources offer an Activity Card of Create a Rainbow, adapted below.

Explanation: Explain to Scouts that they will be conducting an experiment on density.

- Density describes how much space an object or substance takes up (its volume) in relation to the amount of matter in that object or substance (its mass).
- Another way to put it is that density is the amount of mass per unit of volume.
- If an object is heavy and compact, it has a high density.

Materials Needed: Sugar (15 tablespoons), Water (15 tablespoons), Food coloring (blue, green, red, and yellow), Six clear plastic cups or glasses (same size), Tablespoon.

Introduction: Set out the materials for this investigation, and say:

- We found out how to create unique designs with colors in liquid.
- Now, can we put those colors together in layers to create a rainbow effect? Let's use Super Science to see.



Experiment: Place five of the clear cups or glasses in a row.

- Keeping the cups in order, add 1 tablespoon of sugar to the first cup, 2 tablespoons to the second, 3 tablespoons to the third, 4 tablespoons to the fourth, and 5 tablespoons to the fifth cup.
  - Keep the sixth cup empty.
- Pour 3 tablespoons of lukewarm water on top of the sugar in the first five cups. Stir until the mix dissolves.
- Now add a different food color to the first four cups and combine two of the colors in the fifth cup.

    - Stir the five cups again.
- Take the fifth cup (the one with the most sugar) and pour half of its contents into the sixth cup (the one that's empty), like this:
    - Hold the spoon, bowl side up, against the inside of the sixth cup.
    - Slowly and gently pour half the contents of the fifth cup into the sixth cup.
    - (Note: *Pouring onto the spoon keeps the two liquids from mixing in the cup* – in science talk, using a spoon diffuses the force of the liquid pouring into the cup. This will let the colors layer on top of one another instead of mixing in the cup.)
    - Be sure to pour gently, creating the first layer.
- Do the same thing with the third, second, and first cups.
    - Pour gently onto the spoon, creating the next three layers.
    - Enjoy the rainbow in your sixth cup!



Discuss:

- What is happening?
- What is causing the colored water to separate?

Explain:

- Adding sugar to the water causes it to become thicker as the sugar molecules take over the space.
- The more sugar you add, the denser the water becomes.
- This lets you stack the colored water if you pour it gently.

🔶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 Loops 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 Bears will have earned the Adventure Loop for it. Make sure they are recognized for their completion by presenting the Adventure Loops, to be worn on their belts, 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/super-science/. 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. **Conduct static electricity investigation.**
   - Dancing Foil (Indoor; **2** of 5 Energy; **2** of 5 Supplies; **1** of 5 Prep Time)
   - Race the Can (Indoor; **4** of 5 Energy; **2** of 5 Supplies; **2** of 5 Prep Time)
2. **Conduct the sink-or-float investigation.**
   - Sink or Swim (Indoor; **2** of 5 Energy; **2** of 5 Supplies; **2** of 5 Prep Time)
3. **Conduct the color-morphing investigation.**
   - Oil and Water (Indoor; **3** of 5 Energy; **3** of 5 Supplies; **2** of 5 Prep Time)
4. **Conduct the color-layering investigation.**
   - Create a Rainbow (Indoor; **3** of 5 Energy; **3** of 5 Supplies; **2** of 5 Prep Time)