



Junior Detective Badge Activity Plan 1

Badge Purpose: When girls have earned this badge, they'll know how to follow clues and discover facts like a real detective.

Planning Guides Link: STEM

Fun Patch Link: Super Sleuth

Lesson Plan Length: 1.5 hours

Involve Family and Friends: Participation from family and friends can enrich your troop's Girl Scout experience, both for the girls and for you. Use the suggestions below to make it easier for you to connect with additional support.

- Before the meeting:
 - Send a note to families to find those with interest in or expertise with the topic. Ask them to lead or support an activity or two, or even lead the whole meeting.
 - Offer this activity plan as a starting place and point out that they may choose alternative activities using the *Customize It!* section as a guide. For example: If an activity plan directs girls to sit outside and observe animal habitats, you may choose to go to the zoo and learn about animal habitats there instead.
- At home:
 - Encourage families to ask questions about their girls' badge activities. Some examples that work for any badge include: What did you learn? What surprised you? What does it make you think of trying next?
- Throughout the year:
 - Suggest to families ways that girls can share or display their Girl Scout accomplishments. Possibilities include a bulletin board, a scrapbook, a special memories box or family sharing time.

Girls Take the Lead: Include girl leadership through long-term planning, short-term meeting prep and specific activities at meetings.

- Long Term Planning
 - If you use "Plan Your Brownie Year", share this with the girls at the start of the year. Have them ask friends and family to help out with specific meetings or activities. Let the girls brainstorm ways to make the plans their own, such as thinking of related field trip activities. If a girl has experience with a field trip, ask her to be assistant tour guide.
 - If you are adapting the "Plan Your Brownie Year", get the girls' input on which badges to choose. Offer just a few choices in each category or timeframe to make decisions easier. Every girl should have at least one badge or journey she's excited about.
- Short Term Planning
 - Ask a family to help lead a badge. Make sure they have access to activity plans and any resources you might have. Keep additional requested materials to a minimum.
 - Choose two helpers to stay after a meeting for 15 minutes. Give them each an activity to introduce and either instruct or help guide at the next meeting.
 - Before a meeting, ask everyone to vote on some aspect of the activity: draw posters or perform skits, open with a song or game, etc.

- Use a rotating list of helper tasks, called a 'kaper chart', to share responsibilities. Examples include acting as emcee of the meeting, leading an opening game, bringing a snack next meeting or taking attendance.
- At the Meeting
 - During the opening, have 1-2 girls share their answers to a get-to-know-you question.
 - Have girls fulfill their kaper chart responsibilities.

Try to find something in each activity that you can let girls decide or manage.

Customize It: If your group wants to expand work on this badge or simply try different activities, go for it! There are many ways to earn this award, including completing the activities as listed in the *Junior Skill-Building Badge set for It's Your Planet—Love It!*, completing two of these activity plans, attending a council-sponsored event or customizing activities. Pick the one(s) that work best for your group. Girls will know they have earned the award if:

- They have explored multiple clues used for evidence
- They have practiced logical thinking and looked for patterns
- They have put their new skills into practice in solving a mystery

Tips and Tools

- Check out ways to stay safe using Safety-Wise at <http://gsrv.gs/safetywise>.
- Ensure that your activities are accessible to everyone. Ask in advance if any special accommodations need to be made. If you have questions regarding specific adaptations, please contact River Valleys at 800-845-0787.

Resources

- This activity plan has been adapted from the *Junior Skill-Building Badge set for It's Your Planet—Love It! Detective Badge*, which can be used for additional information and activities.

Getting Started

Time Allotment: 15 minutes

Materials Needed:

- Optional: Girl Scout Promise and Law printed out on poster board

Steps:

1. Welcome everyone to the meeting.
2. Recite the Girl Scout Promise and Law. Use repeat-after-me or say it as a group if girls know it by heart.

Girl Scout Promise	Girl Scout Law
<i>On my honor, I will try:</i> To serve God and my country, To help people at all times, And to live by the Girl Scout Law.	<i>I will do my best to be</i> honest and fair, friendly and helpful, considerate and caring, courageous and strong, and responsible for what I say and do, <i>and to</i> respect myself and others, respect authority, use resources wisely, make the world a better place, and be a sister to every Girl Scout.

3. Play a game so girls get to know each other better. Use the example below, if needed.
 - Pile Up: Girls sit on chairs in a circle. Choose a leader who will have a list of “yes” or “no” questions, such as “Do you have on brown shoes?”, “Are you wearing a ring?”, “Is your favorite color purple?” As the questions are asked, those that can answer “yes,” move one chair to the right. Those that answer “no,” don’t move. Girls will end up “piled-up” on chairs.

Activity #1: Five Changes

Badge Connection: Step 1—Practice the Power of Observation

Time Allotment: 10 minutes

Steps:

1. Use a suitable method to divide girls into pairs.
2. Have partners sit across from one another and talk about what they did today for one minute.
3. Stop the group and have partners turn and sit back to back, so that they cannot see one another.
4. Now they need to choose five things about their appearance to change. It has to be significant enough to be noticeable—setting your watch to the wrong time would be too small—and it can’t be related to how you are sitting or posed (hand on chin, right leg crossed over left) because those change even as you are sitting. Possible hints for those who are stuck: rolling or unrolling sleeves, collars, or socks; tying or untying shoelaces; or trading something with someone else.
5. When all are ready, partners turn around and try to guess each other’s changes.
6. If there’s time, challenge them to turn around again and pick three new things to change.
7. Discuss with girls how easy or difficult it was to notice changes—big or small—in their surroundings. What, if anything, helped/could help make their powers of observation stronger?

Activity #2: Make a Fingerprint ID Card

Badge Connection: Step 3—Fingerprint for fun

Time Allotment: 10 minutes

Prep Needed:

- Make copies of basic fingerprint patterns and, if desired, fingerprint record pages. You may also be able to get ID kits from your local police department.

Materials Needed:

- Pencils
- Index cards or scratch paper
- Clear tape, 3/4" or wider
- Optional: fingerprint record page printed on cardstock

Steps:

1. Give each girl a pencil and scratch paper to make a graphite "ink pad." Instead of ink, each will be using graphite dust to make a fingerprint record.
2. Direct girls to scribble with the pencil for a while, making a big, dark blob of silver gray dust.
3. Now it's time for girls to choose which hand to fingerprint. It's best to use the non-writing hand, so the one less used will be the one that's messy.
4. Start with the thumb. Rub the thumb in the dust until the entire finger pad, from tip to past the first joint crease, is covered in graphite. Notice that this is not like using ink or dye, where pushing the finger in or holding it down longer will soak up more color. It's more like rolling a donut in sugar.
5. Have girls help each other with this part: One person holds up her shiny gray thumb while the other pulls off a piece of clear tape about 1 1/2" long, holding at the edges to avoid adding other fingerprints. The tape helper places the tape so that the long direction runs up and down along her partner's finger— not wrapped around, like using an adhesive bandage.
6. The tape helper should smooth the tape down so it covers as much of the print as possible, without letting it wiggle. Then, from one edge, she can lift the tape up cleanly.
7. Direct girls to place the print in the box marked "thumb" on the record card. Or, if using index cards, place the tape print near one side and label the print with what finger and which hand it is from.
8. Complete the rest of the fingers on that hand.
9. NOTE: compared to using an ink pad, all of the prints taken this way are reversed. Instead of taking the image normally left on a surface, we put the print on a clear surface (the tape) and looked at it from the other side. This is what the finger actually looks like, rather than the mirror image that the finger normally leaves behind in an ink print.

Activity #3: Dust for Fingerprints

Badge Connection: Step 3—Fingerprint for fun, extension

Time Allotment: 15 minutes

Prep Needed:

- Practice dusting for prints once at home, or have your activity leader practice. You can expect a clear image only about one out of every third time, so girls should not be surprised if they have trouble reading the prints.
- Place a small piece of masking tape on the back of the mirror or tile where the girls can write their names.

Materials Needed:

- Cocoa powder
- Shallow bowls or deep paper plates
- Identical smooth surfaces—small mirrors used for craft projects, ceramic tiles, etc.
- Masking tape
- Writing utensils
- Paper towels, and a place to wash up
- ID cards made in activity #2

Steps:

1. Give each girl a mirror or tile, and a writing utensil to write her name or initials on the tape on the back.
2. Have girls wipe off the mirror with a cloth or towel until it is free from prints.
3. Each girl will choose one finger of the hand she made a record of in #2, or tell everyone in the group to use the same finger (for example, the index finger). Just make sure it is one of the fingers for which there is a record on the ID card.
4. Direct girls to rub the chosen finger on their face to pick up some additional oils.

5. Tell girls to hold the mirror or tile in the other hand (along the edge, without leaving additional prints) while pressing the chosen finger straight down onto the mirror. Roll the finger slightly from one side to the other but be very careful not to let the finger wiggle or smudge the print in any way.
6. Girls can now lift the finger straight up and make sure they can see a print. If not, they should wipe the mirror off and try again.
7. Divide girls into teams of three. For each team, set the three girls' ID cards out on the table and then the three girls' mirrors or tiles with prints. Have all three girls close their eyes while someone else mixes up the tiles. Each girl on the team will now pick one to dust.
8. To do so, have girls dip the makeup brush into the cocoa powder. Only the tips of the bristles need to be in the powder.
9. Girls should hold the mirror by the edges. Then, with the brush, try to leave powder behind without dragging any of the bristle through the print, which will only add more lines and smudge the print. Dab the cocoa gently onto the print, following the print ridges if they are visible.
10. Tell girls to face away from everyone else, and gently blow the extra cocoa powder off the print.
11. They can now compare this print to the ID cards (remember, they will be backwards.) Ask girls if they can tell whose print they have.

Activity #4: Dental Impressions

Badge Connection: Step 5—Types of evidence

Time Allotment: 15 minutes

Materials Needed:

- Styrofoam plates
- Scissors
- Ballpoint pens

Steps:

1. Each girl will need half a Styrofoam plate. Have each girl partner with a friend to cut one plate in two, and have each girl take half.
2. Girls should then cut the half plate in half again, so they each have two quarters.
3. Direct girls to label one along the edge with their name and "upper" and the other with their name and "lower."
4. Girls should now stack the two sections on top of each other so that the two curled edges, from the rim of the plate, curl away from each other rather than nesting together. That is, the surfaces that were the underside of the plate are touching, and the two interior or eating surfaces are now on the outside.
5. To make the completed impression, girls are going to put the points of the quarters (what used to be the center of the plate, away from the edges) in their mouths and bite down. If they think the point is going to get in the way and then they won't get many of their teeth on the plate, they can simply cut off a bit of the tip so they can fit more in their mouths.
6. Taking the impression doesn't take a lot of time. Each girl should put the plate quarters all the way in her mouth and bite down firmly, then let go. Now each girl has her basic dental record.
7. It's now time for the mystery. You can do this as one big group, or divide into smaller teams of about five–six to make it easier.
8. Cut one additional set of plate quarters and label them "mystery upper" and "mystery lower."
9. Direct everyone to sit or stand apart (so people can't get sound clues) with their eyes closed; tap one person on the shoulder to make the mystery dental record.
10. Call the group back together and set the mystery prints on the table, along with everyone's dental record prints. First, everyone gets to look at the impressions without picking any of them up. After about a minute, each person gets to pick up the mystery print in her hand, look at it carefully and pass it along to the next person (no one should give any opinions yet). Then, everyone who wants to do so gets a turn holding the print and holding it next to some of the dental record prints.
11. Count to three, and ask everyone to point to the record prints they think match the mystery prints. You may get all different answers, or there may be a majority (hopefully agreeing on the correct person!).
12. Discuss what things could make it hard to tell which print was which. Examples could be: prints looking very similar, not biting down hard enough or everyone using different amounts of pressure, using different amounts of pressure on the original and on the mystery print, inconsistencies in the Styrofoam, lighting or being able to see up close or using a magnifying lens, and others.

Activity #5: "Me" Latin

Badge Connection: Step 2—Communicate in code

Time Allotment: 10 minutes

Materials:

- Paper
- Pencils

Steps:

1. Ask if anyone has ever tried speaking or writing in "pig Latin." Explain that it is not a language at all, but a way of making your words hard to understand by anyone who doesn't know the trick. The trick itself, however, is short and easy to remember. Take the first letter, move it to the end, and add an "ay" sound. Vowels are hard to make work, so if it starts with a vowel you leave the word and just add "yay" to the end.
2. Have each girl write a short, simple sentence at the top of her paper.
3. Now ask each girl to come up with her own, easy to apply code. It should be easy to remember, and should have only one rule, unless you find some words or letters don't cooperate with the rule (like vowels in pig Latin) and you have to make an exception rule. It could be something that changes the starting letter in some way, or adds a syllable to every word, or changes the vowels, or just uses all the same words but the sentence is backwards.
4. Direct girls to use the paper to experiment with the test sentence.
5. When a girl is done, she will write her "Me Latin" code sentence on a new piece of paper. She can then trade with someone else who is finished to try to figure out each other's code.

Wrapping Up

Time Allotment: 15 minutes

Materials Needed:

- Optional: Make New Friends printed on poster board

Steps:

1. Instruct girls to get into a Friendship Circle. Have girls stand in a circle and cross their right arms over their left, holding hands with the person on each side of them.
2. Sing "Make New Friends."

Make New Friends		
Verse One	Verse Two	Verse Three
Make new friends, but keep the old. One is silver, the other is gold.	A circle is round, it has no end. That's how long, I will be your friend.	You have one hand, I have the other. Put them together, We have each other.

- After the song, ask everyone to be quiet.
- Assign one girl to start the friendship squeeze by gently squeezing her neighbor's hand with her right hand. Then, that girl squeezes with her right hand. One by one, each girl passes the squeeze until it travels around the circle. When the squeeze returns to the girl who started, she says "Goodbye Sister Girl Scouts" and the girls unwrap and face outward instead of inward.
- Optional: Have each girl make a wish after her hand has been squeezed and before passing the squeeze along. If she also puts her right foot out into the circle after receiving the friendship squeeze, everyone can see it travel along the circle.

More to Explore

- Field Trip Ideas:
 - Visit a local police station.

- Try looking for a letterbox. Go to www.letterboxing.org to find a box hidden near you and figure out the clues to find the box.
- Participate in a local or seasonal treasure hunt, such as the St. Paul Winter Carnival Medallion Hunt.
- Visit a nature center and learn about animal tracks and signs.
- Speaker Ideas:
 - Invite someone who coaches or plays softball or baseball to demonstrate sending signals (what pitch to use, when to run, whether to bunt or swing away, etc.).

Suggestions

Do you have any suggestions to improve this activity plan? Do you have ideas for other possible badge-earning activities? Please email troopsupport@girlscoutsv.org.

Family Follow-Up Email

Use the email below as a template to let families know what girls did at the meeting today. Feel free to add additional information, including:

- When and where you will be meeting next
- What activities you will do at the next meeting
- Family help or assistance that is needed
- Supplies or materials that girls will need to bring to the next meeting
- Reminders about important dates and upcoming activities

Hello Girl Scout Families:

We had a wonderful time today learning about forensic science and are on our way to earning the Detective Badge.

We had fun:

- Practicing our powers of observation
- Examining fingerprints and learning what goes into identifying a fingerprint clue
- Developing a fun way to share a message

Continue the fun at home:

- Look for places where a simplified "code" can give information to people in the know. For example, libraries use the Library of Congress system (or sometimes the Dewey Decimal system) to sort books into categories. Products with bar codes have both the lines that a scanner can read and numbers that are easier for people to read. Can you figure out how they are related? What activities do you enjoy that have jargon that makes sense only to other insiders—signals from a referee or umpire, or symbols on a trail map, for example?
- Puzzle out an answer with "20 Questions" or another logic game.
- Look through the *Girl's Guide to Girl Scouting* with your Junior to find other activities you could try at home.

Thank you for bringing your Junior to Girl Scouts!

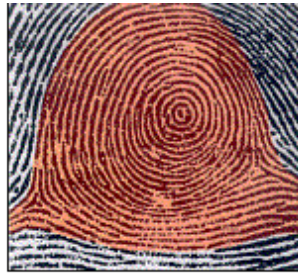
Three primary finger print patterns:



LOOP

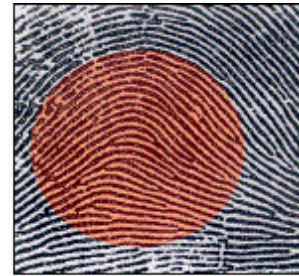
In a loop pattern, the ridges enter from either side, re-curve and pass out or tend to pass out the same side they entered.

and four additional variants



WHORL

In a whorl pattern, the ridges are usually circular.



ARCH

In an arch pattern the ridges enter from one side, make a rise in the center and exit generally on the opposite side.

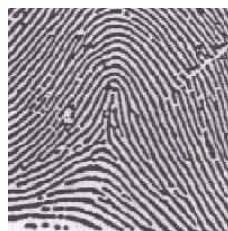
central pocket loop



double loop



tented arch



and accidental,
which is anything that doesn't fit neatly into the others.

