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| <b>NAME:</b><br>_____          | <b>GRADE:</b> _____               | <b>SCHOOL:</b><br>_____       |
| <b>Badge Start Date:</b> _____ | <b>Projected Finish:</b><br>_____ | <b>Teacher Initial:</b> _____ |

SCIENCE • BADGE 35

# CITIZEN SCIENTIST

Help a real research project by observing carefully, classifying consistently, and reporting uncertainty honestly.

**YOUR GRADE PATH** Grade 3: 5 classifications with an adult/teacher. Grade 4: 8. Grade 5: 10 + pattern count. Grade 6: 12 + uncertainty analysis. Teacher selects an age-appropriate project.

## Launch resource



**Zooniverse projects**

<https://www.zooniverse.org/projects>

## Mission tasks

- 1. Understand the mission** — Read the project description. Identify the research question, what volunteers examine, and how classifications help scientists.
- 2. Train your eyes** — Complete the tutorial. Make a mini field guide with at least four features that help you classify an image, sound, or record.
- 3. Contribute** — Complete the grade-required number of classifications. Do not enter private information or create an account unless your teacher approves.
- 4. Keep a tally** — Record what you classified and one observation for each session. Mark “uncertain” whenever the evidence is not clear.
- 5. Look for a pattern** — Summarize the most common category or feature. Grades 5–6 include counts or percentages; Grade 6 compares confidence levels.
- 6. Think like a scientist** — Explain why many volunteers can help—and how disagreement, bias, or unclear images can affect the data.

# Citizen Scientist • EVIDENCE & COMPLETION

## Final product

Create a Citizen Science Field Report with the project question, field guide, tally, pattern, uncertainty note, and one recommendation for future volunteers.

## Quality check

- ☐ I followed the project tutorial.
- ☐ My classifications were careful and honest.
- ☐ I recorded counts without sharing private data.
- ☐ I explained uncertainty or possible bias.

## Evidence notes

The research team is trying to learn...

---

A feature that helped me classify was...

---

My tally suggests...

---

I was least certain when...

---

---

## Reflect

The skill I improved most was...

---

One decision or revision I can defend with evidence is...

---

If I continued this badge, my next step would be...

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## Teacher verification

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|-----------------------------|-------------------------------------------------------------------|
| Student evidence conference | <input type="checkbox"/> Complete <input type="checkbox"/> Revise |
| Teacher initials / date     | <hr/>                                                             |
| Badge awarded               | <input type="checkbox"/> Yes <input type="checkbox"/> Not yet     |

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| <b>NAME:</b><br>_____          | <b>GRADE:</b> _____               | <b>SCHOOL:</b><br>_____       |
| <b>Badge Start Date:</b> _____ | <b>Projected Finish:</b><br>_____ | <b>Teacher Initial:</b> _____ |

SCIENCE • BADGE 36

# EXTREME WEATHER INVESTIGATOR

Explain one severe-weather hazard and turn science into a clear, locally useful safety message.

**YOUR GRADE PATH** Grade 3: hazard model + 3 safety actions. Grade 4: watch/warning comparison. Grade 5: local risk evidence + forecast script. Grade 6: evaluate a claim and explain uncertainty.

## Launch resource

|                                                                                     |                                                                                                                                                           |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <b>NOAA SciJinks</b><br><a href="https://www.nesdis.noaa.gov/about/k-12-education/scijinks">https://www.nesdis.noaa.gov/about/k-12-education/scijinks</a> |
|  | <b>National Weather Service education</b><br><a href="https://www.weather.gov/education/">https://www.weather.gov/education/</a>                          |

## Mission tasks

- 1. Choose a hazard** — Select tornado, flood, blizzard, extreme heat, severe thunderstorm, or another teacher-approved event.
- 2. Model how it works** — Draw and label the conditions that form or strengthen the event. Use arrows to show energy, water, air, or movement.
- 3. Decode alerts** — Explain the difference between a watch and a warning for the hazard. Identify the official source your household should use.
- 4. Connect to place** — Explain why the hazard can affect Nebraska or your region. Grades 5–6 use a map, climate fact, or historical example from a reliable source.
- 5. Build a safety plan** — List what to do before, during, and after. Include people, pets, supplies, communication, and the safest location.
- 6. Check the claim** — Grades 5–6: evaluate one weather claim or social-media statement. Grade 6 explains what is known, uncertain, and potentially misleading.

# Extreme Weather Investigator • EVIDENCE & COMPLETION

## Final product

Produce a one-page family safety guide plus a 60–90 second forecast briefing that explains the science, alert language, and actions.

## Quality check

- ☐ My science model is labeled.
- ☐ My alert explanation is accurate.
- ☐ My safety actions come from an official source.
- ☐ My message is calm, specific, and accessible.

## Evidence notes

**This hazard develops when...**

---

**A watch means... while a warning means...**

---

**The safest action is... because...**

---

**One claim I checked was...**

---

---

## Reflect

**The skill I improved most was...**

---

**One decision or revision I can defend with evidence is...**

---

**If I continued this badge, my next step would be...**

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---

## Teacher verification

|                             |                                                                   |
|-----------------------------|-------------------------------------------------------------------|
| Student evidence conference | <input type="checkbox"/> Complete <input type="checkbox"/> Revise |
| Teacher initials / date     | <hr/>                                                             |
| Badge awarded               | <input type="checkbox"/> Yes <input type="checkbox"/> Not yet     |

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| <b>NAME:</b><br>_____          | <b>GRADE:</b> _____               | <b>SCHOOL:</b><br>_____       |
| <b>Badge Start Date:</b> _____ | <b>Projected Finish:</b><br>_____ | <b>Teacher Initial:</b> _____ |

SCIENCE • BADGE 37

# POLLINATOR OBSERVER

Take on a focused challenge to observe pollinator behavior and explain plant–animal relationships.

**YOUR GRADE PATH** Grade 3: observe, model, and explain a pattern. Grade 4: run a fair comparison. Grade 5: collect repeated measurements and graph results. Grade 6: analyze variables, uncertainty, and limitations.

## Launch resource



**Launch resource**

<https://www.fs.usda.gov/managing-land/wildflowers/pollinators>

## Mission tasks

- 1. Frame the challenge** — Explain what it means to observe pollinator behavior and explain plant–animal relationships. Record what you already know, the intended audience or user, and two questions.
- 2. Study strong examples** — Use the launch resource and one teacher-approved example. Record three useful features, ideas, facts, or techniques and credit the source.
- 3. Plan with criteria** — List what success should look like for your grade. Make a labeled plan, sketch, outline, model, or prediction before starting the final work.
- 4. Create or investigate** — Complete the central work. Keep process evidence such as notes, drafts, measurements, trials, screenshots, or rehearsal marks.
- 5. Test the result** — Use evidence, peer feedback, a rubric, or a fair test to identify one strength and one problem. Grades 5–6 compare results or viewpoints.
- 6. Revise and explain** — Make at least two purposeful improvements. Explain how the final version addresses the challenge and what the evidence still cannot show.

# Pollinator Observer • EVIDENCE & COMPLETION

## Final product

Create a pollinator field study with tally, graph, and habitat recommendation. Include a title, clear evidence, at least two documented revisions, and credits for every outside source or media item.

## Quality check

- ☐ I met the requirement for my grade.
- ☐ My process evidence shows planning, testing, and revision.
- ☐ My final product is accurate, clear, and original.
- ☐ I credited sources and protected private information.

## Evidence notes

**My challenge and audience are...**

---

**The strongest evidence or example I found is...**

---

**Testing or feedback showed...**

---

**I improved the final product by...**

---

---

## Reflect

**The skill I improved most was...**

---

**One decision or revision I can defend with evidence is...**

---

**If I continued this badge, my next step would be...**

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## Teacher verification

|                                    |                                                                   |
|------------------------------------|-------------------------------------------------------------------|
| <b>Student evidence conference</b> | <input type="checkbox"/> Complete <input type="checkbox"/> Revise |
| <b>Teacher initials / date</b>     | <hr/>                                                             |
| <b>Badge awarded</b>               | <input type="checkbox"/> Yes <input type="checkbox"/> Not yet     |

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| <b>NAME:</b><br>_____          | <b>GRADE:</b> _____               | <b>SCHOOL:</b><br>_____       |
| <b>Badge Start Date:</b> _____ | <b>Projected Finish:</b><br>_____ | <b>Teacher Initial:</b> _____ |

SCIENCE • BADGE 38

# WATER QUALITY DETECTIVE

Take on a focused challenge to investigate indicators of water health and sources of change.

**YOUR GRADE PATH** Grade 3: observe, model, and explain a pattern. Grade 4: run a fair comparison. Grade 5: collect repeated measurements and graph results. Grade 6: analyze variables, uncertainty, and limitations.

## Launch resource



**Launch resource**

<https://www.epa.gov/water-research>

## Mission tasks

- 1. Frame the challenge** — Explain what it means to investigate indicators of water health and sources of change. Record what you already know, the intended audience or user, and two questions.
- 2. Study strong examples** — Use the launch resource and one teacher-approved example. Record three useful features, ideas, facts, or techniques and credit the source.
- 3. Plan with criteria** — List what success should look like for your grade. Make a labeled plan, sketch, outline, model, or prediction before starting the final work.
- 4. Create or investigate** — Complete the central work. Keep process evidence such as notes, drafts, measurements, trials, screenshots, or rehearsal marks.
- 5. Test the result** — Use evidence, peer feedback, a rubric, or a fair test to identify one strength and one problem. Grades 5–6 compare results or viewpoints.
- 6. Revise and explain** — Make at least two purposeful improvements. Explain how the final version addresses the challenge and what the evidence still cannot show.

# Water Quality Detective • EVIDENCE & COMPLETION

## Final product

Create a water-system report using safe observations or provided data. Include a title, clear evidence, at least two documented revisions, and credits for every outside source or media item.

## Quality check

- ☐ I met the requirement for my grade.
- ☐ My process evidence shows planning, testing, and revision.
- ☐ My final product is accurate, clear, and original.
- ☐ I credited sources and protected private information.

## Evidence notes

**My challenge and audience are...**

---

**The strongest evidence or example I found is...**

---

**Testing or feedback showed...**

---

**I improved the final product by...**

---

---

## Reflect

**The skill I improved most was...**

---

**One decision or revision I can defend with evidence is...**

---

**If I continued this badge, my next step would be...**

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## Teacher verification

|                             |                                                                   |
|-----------------------------|-------------------------------------------------------------------|
| Student evidence conference | <input type="checkbox"/> Complete <input type="checkbox"/> Revise |
| Teacher initials / date     | <hr/>                                                             |
| Badge awarded               | <input type="checkbox"/> Yes <input type="checkbox"/> Not yet     |

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| <b>NAME:</b><br>_____          | <b>GRADE:</b> _____               | <b>SCHOOL:</b><br>_____       |
| <b>Badge Start Date:</b> _____ | <b>Projected Finish:</b><br>_____ | <b>Teacher Initial:</b> _____ |

SCIENCE • BADGE 39

# MOON JOURNAL

Take on a focused challenge to record lunar observations and model repeating Sun–Earth–Moon patterns.

**YOUR GRADE PATH** Grade 3: observe, model, and explain a pattern. Grade 4: run a fair comparison. Grade 5: collect repeated measurements and graph results. Grade 6: analyze variables, uncertainty, and limitations.

## Launch resource



**Launch resource**

<https://moon.nasa.gov/moon-observation/daily-moon-guide/>

## Mission tasks

- 1. Frame the challenge** — Explain what it means to record lunar observations and model repeating Sun–Earth–Moon patterns. Record what you already know, the intended audience or user, and two questions.
- 2. Study strong examples** — Use the launch resource and one teacher-approved example. Record three useful features, ideas, facts, or techniques and credit the source.
- 3. Plan with criteria** — List what success should look like for your grade. Make a labeled plan, sketch, outline, model, or prediction before starting the final work.
- 4. Create or investigate** — Complete the central work. Keep process evidence such as notes, drafts, measurements, trials, screenshots, or rehearsal marks.
- 5. Test the result** — Use evidence, peer feedback, a rubric, or a fair test to identify one strength and one problem. Grades 5–6 compare results or viewpoints.
- 6. Revise and explain** — Make at least two purposeful improvements. Explain how the final version addresses the challenge and what the evidence still cannot show.

# Moon Journal • EVIDENCE & COMPLETION

## Final product

Create a dated moon journal with phase model and evidence-based explanation. Include a title, clear evidence, at least two documented revisions, and credits for every outside source or media item.

## Quality check

- ☐ I met the requirement for my grade.
- ☐ My process evidence shows planning, testing, and revision.
- ☐ My final product is accurate, clear, and original.
- ☐ I credited sources and protected private information.

## Evidence notes

**My challenge and audience are...**

---

**The strongest evidence or example I found is...**

---

**Testing or feedback showed...**

---

**I improved the final product by...**

---

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## Reflect

**The skill I improved most was...**

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**One decision or revision I can defend with evidence is...**

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**If I continued this badge, my next step would be...**

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## Teacher verification

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| <b>Student evidence conference</b> | <input type="checkbox"/> Complete <input type="checkbox"/> Revise |
| <b>Teacher initials / date</b>     | <hr/>                                                             |
| <b>Badge awarded</b>               | <input type="checkbox"/> Yes <input type="checkbox"/> Not yet     |

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| <b>NAME:</b><br>_____          | <b>GRADE:</b> _____               | <b>SCHOOL:</b><br>_____       |
| <b>Badge Start Date:</b> _____ | <b>Projected Finish:</b><br>_____ | <b>Teacher Initial:</b> _____ |

SCIENCE • BADGE 40

# FORCES IN MOTION LAB

Take on a focused challenge to test how force, mass, friction, and surface affect motion.

**YOUR GRADE PATH** Grade 3: observe, model, and explain a pattern. Grade 4: run a fair comparison. Grade 5: collect repeated measurements and graph results. Grade 6: analyze variables, uncertainty, and limitations.

## Launch resource



**Launch resource**

<https://phet.colorado.edu/en/simulations/forces-and-motion-basics>

## Mission tasks

- 1. Frame the challenge** — Explain what it means to test how force, mass, friction, and surface affect motion. Record what you already know, the intended audience or user, and two questions.
- 2. Study strong examples** — Use the launch resource and one teacher-approved example. Record three useful features, ideas, facts, or techniques and credit the source.
- 3. Plan with criteria** — List what success should look like for your grade. Make a labeled plan, sketch, outline, model, or prediction before starting the final work.
- 4. Create or investigate** — Complete the central work. Keep process evidence such as notes, drafts, measurements, trials, screenshots, or rehearsal marks.
- 5. Test the result** — Use evidence, peer feedback, a rubric, or a fair test to identify one strength and one problem. Grades 5–6 compare results or viewpoints.
- 6. Revise and explain** — Make at least two purposeful improvements. Explain how the final version addresses the challenge and what the evidence still cannot show.

# Forces in Motion Lab • EVIDENCE & COMPLETION

## Final product

Create a controlled investigation with data display and model revision. Include a title, clear evidence, at least two documented revisions, and credits for every outside source or media item.

## Quality check

- ☐ I met the requirement for my grade.
- ☐ My process evidence shows planning, testing, and revision.
- ☐ My final product is accurate, clear, and original.
- ☐ I credited sources and protected private information.

## Evidence notes

**My challenge and audience are...**

---

**The strongest evidence or example I found is...**

---

**Testing or feedback showed...**

---

**I improved the final product by...**

---

---

## Reflect

**The skill I improved most was...**

---

**One decision or revision I can defend with evidence is...**

---

**If I continued this badge, my next step would be...**

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## Teacher verification

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|------------------------------------|-------------------------------------------------------------------|
| <b>Student evidence conference</b> | <input type="checkbox"/> Complete <input type="checkbox"/> Revise |
| <b>Teacher initials / date</b>     | <hr/>                                                             |
| <b>Badge awarded</b>               | <input type="checkbox"/> Yes <input type="checkbox"/> Not yet     |

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| <b>NAME:</b><br>_____          | <b>GRADE:</b> _____               | <b>SCHOOL:</b><br>_____       |
| <b>Badge Start Date:</b> _____ | <b>Projected Finish:</b><br>_____ | <b>Teacher Initial:</b> _____ |

SCIENCE • BADGE 41

# ECOSYSTEM WEB BUILDER

Take on a focused challenge to model energy flow, interdependence, and effects of ecosystem change.

**YOUR GRADE PATH** Grade 3: observe, model, and explain a pattern. Grade 4: run a fair comparison. Grade 5: collect repeated measurements and graph results. Grade 6: analyze variables, uncertainty, and limitations.

## Launch resource



**Launch resource**

<https://education.nationalgeographic.org/resource/food-web/>

## Mission tasks

- 1. Frame the challenge** — Explain what it means to model energy flow, interdependence, and effects of ecosystem change. Record what you already know, the intended audience or user, and two questions.
- 2. Study strong examples** — Use the launch resource and one teacher-approved example. Record three useful features, ideas, facts, or techniques and credit the source.
- 3. Plan with criteria** — List what success should look like for your grade. Make a labeled plan, sketch, outline, model, or prediction before starting the final work.
- 4. Create or investigate** — Complete the central work. Keep process evidence such as notes, drafts, measurements, trials, screenshots, or rehearsal marks.
- 5. Test the result** — Use evidence, peer feedback, a rubric, or a fair test to identify one strength and one problem. Grades 5–6 compare results or viewpoints.
- 6. Revise and explain** — Make at least two purposeful improvements. Explain how the final version addresses the challenge and what the evidence still cannot show.

# Ecosystem Web Builder • EVIDENCE & COMPLETION

## Final product

Create a food-web model with disturbance scenario and prediction. Include a title, clear evidence, at least two documented revisions, and credits for every outside source or media item.

## Quality check

- ☐ I met the requirement for my grade.
- ☐ My process evidence shows planning, testing, and revision.
- ☐ My final product is accurate, clear, and original.
- ☐ I credited sources and protected private information.

## Evidence notes

**My challenge and audience are...**

---

**The strongest evidence or example I found is...**

---

**Testing or feedback showed...**

---

**I improved the final product by...**

---

---

## Reflect

**The skill I improved most was...**

---

**One decision or revision I can defend with evidence is...**

---

**If I continued this badge, my next step would be...**

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## Teacher verification

|                                    |                                                                   |
|------------------------------------|-------------------------------------------------------------------|
| <b>Student evidence conference</b> | <input type="checkbox"/> Complete <input type="checkbox"/> Revise |
| <b>Teacher initials / date</b>     | <hr/>                                                             |
| <b>Badge awarded</b>               | <input type="checkbox"/> Yes <input type="checkbox"/> Not yet     |

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|--------------------------------|-----------------------------------|-------------------------------|
| <b>NAME:</b><br>_____          | <b>GRADE:</b> _____               | <b>SCHOOL:</b><br>_____       |
| <b>Badge Start Date:</b> _____ | <b>Projected Finish:</b><br>_____ | <b>Teacher Initial:</b> _____ |

SCIENCE • BADGE 42

# MICROBE MODELER

Take on a focused challenge to compare helpful and harmful roles of microscopic organisms.

**YOUR GRADE PATH** Grade 3: observe, model, and explain a pattern. Grade 4: run a fair comparison. Grade 5: collect repeated measurements and graph results. Grade 6: analyze variables, uncertainty, and limitations.

## Launch resource



**Launch resource**

<https://www.niaid.nih.gov/research/microbes>

## Mission tasks

- 1. Frame the challenge** — Explain what it means to compare helpful and harmful roles of microscopic organisms. Record what you already know, the intended audience or user, and two questions.
- 2. Study strong examples** — Use the launch resource and one teacher-approved example. Record three useful features, ideas, facts, or techniques and credit the source.
- 3. Plan with criteria** — List what success should look like for your grade. Make a labeled plan, sketch, outline, model, or prediction before starting the final work.
- 4. Create or investigate** — Complete the central work. Keep process evidence such as notes, drafts, measurements, trials, screenshots, or rehearsal marks.
- 5. Test the result** — Use evidence, peer feedback, a rubric, or a fair test to identify one strength and one problem. Grades 5–6 compare results or viewpoints.
- 6. Revise and explain** — Make at least two purposeful improvements. Explain how the final version addresses the challenge and what the evidence still cannot show.

# Microbe Modeler • EVIDENCE & COMPLETION

## Final product

Create a scale-aware microbe model and myth-versus-evidence explainer. Include a title, clear evidence, at least two documented revisions, and credits for every outside source or media item.

## Quality check

- ☐ I met the requirement for my grade.
- ☐ My process evidence shows planning, testing, and revision.
- ☐ My final product is accurate, clear, and original.
- ☐ I credited sources and protected private information.

## Evidence notes

**My challenge and audience are...**

---

**The strongest evidence or example I found is...**

---

**Testing or feedback showed...**

---

**I improved the final product by...**

---

---

## Reflect

**The skill I improved most was...**

---

**One decision or revision I can defend with evidence is...**

---

**If I continued this badge, my next step would be...**

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---

## Teacher verification

|                                    |                                                                   |
|------------------------------------|-------------------------------------------------------------------|
| <b>Student evidence conference</b> | <input type="checkbox"/> Complete <input type="checkbox"/> Revise |
| <b>Teacher initials / date</b>     | <hr/>                                                             |
| <b>Badge awarded</b>               | <input type="checkbox"/> Yes <input type="checkbox"/> Not yet     |

|                                |                                   |                               |
|--------------------------------|-----------------------------------|-------------------------------|
| <b>NAME:</b><br>_____          | <b>GRADE:</b> _____               | <b>SCHOOL:</b><br>_____       |
| <b>Badge Start Date:</b> _____ | <b>Projected Finish:</b><br>_____ | <b>Teacher Initial:</b> _____ |

SCIENCE • BADGE 43

# RENEWABLE ENERGY ANALYST

Take on a focused challenge to compare energy sources using evidence, constraints, and impacts.

**YOUR GRADE PATH** Grade 3: observe, model, and explain a pattern. Grade 4: run a fair comparison. Grade 5: collect repeated measurements and graph results. Grade 6: analyze variables, uncertainty, and limitations.

## Launch resource



**Launch resource**

<https://www.energy.gov/eere/education>

## Mission tasks

- 1. Frame the challenge** — Explain what it means to compare energy sources using evidence, constraints, and impacts. Record what you already know, the intended audience or user, and two questions.
- 2. Study strong examples** — Use the launch resource and one teacher-approved example. Record three useful features, ideas, facts, or techniques and credit the source.
- 3. Plan with criteria** — List what success should look like for your grade. Make a labeled plan, sketch, outline, model, or prediction before starting the final work.
- 4. Create or investigate** — Complete the central work. Keep process evidence such as notes, drafts, measurements, trials, screenshots, or rehearsal marks.
- 5. Test the result** — Use evidence, peer feedback, a rubric, or a fair test to identify one strength and one problem. Grades 5–6 compare results or viewpoints.
- 6. Revise and explain** — Make at least two purposeful improvements. Explain how the final version addresses the challenge and what the evidence still cannot show.

# Renewable Energy Analyst • EVIDENCE & COMPLETION

## Final product

Create an energy recommendation matrix and community briefing. Include a title, clear evidence, at least two documented revisions, and credits for every outside source or media item.

## Quality check

- ☐ I met the requirement for my grade.
- ☐ My process evidence shows planning, testing, and revision.
- ☐ My final product is accurate, clear, and original.
- ☐ I credited sources and protected private information.

## Evidence notes

My challenge and audience are...

---

The strongest evidence or example I found is...

---

Testing or feedback showed...

---

I improved the final product by...

---

---

## Reflect

The skill I improved most was...

---

One decision or revision I can defend with evidence is...

---

If I continued this badge, my next step would be...

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## Teacher verification

|                             |                                                                   |
|-----------------------------|-------------------------------------------------------------------|
| Student evidence conference | <input type="checkbox"/> Complete <input type="checkbox"/> Revise |
| Teacher initials / date     | <hr/>                                                             |
| Badge awarded               | <input type="checkbox"/> Yes <input type="checkbox"/> Not yet     |

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|--------------------------------|-----------------------------------|-------------------------------|
| <b>NAME:</b><br>_____          | <b>GRADE:</b> _____               | <b>SCHOOL:</b><br>_____       |
| <b>Badge Start Date:</b> _____ | <b>Projected Finish:</b><br>_____ | <b>Teacher Initial:</b> _____ |

SCIENCE • BADGE 44

# TRAIT TRACKER

Take on a focused challenge to use observable variation to model inheritance and environment.

**YOUR GRADE PATH** Grade 3: observe, model, and explain a pattern. Grade 4: run a fair comparison. Grade 5: collect repeated measurements and graph results. Grade 6: analyze variables, uncertainty, and limitations.

## Launch resource



**Launch resource**

<https://learn.genetics.utah.edu/>

## Mission tasks

- 1. Frame the challenge** — Explain what it means to use observable variation to model inheritance and environment. Record what you already know, the intended audience or user, and two questions.
- 2. Study strong examples** — Use the launch resource and one teacher-approved example. Record three useful features, ideas, facts, or techniques and credit the source.
- 3. Plan with criteria** — List what success should look like for your grade. Make a labeled plan, sketch, outline, model, or prediction before starting the final work.
- 4. Create or investigate** — Complete the central work. Keep process evidence such as notes, drafts, measurements, trials, screenshots, or rehearsal marks.
- 5. Test the result** — Use evidence, peer feedback, a rubric, or a fair test to identify one strength and one problem. Grades 5–6 compare results or viewpoints.
- 6. Revise and explain** — Make at least two purposeful improvements. Explain how the final version addresses the challenge and what the evidence still cannot show.

# Trait Tracker • EVIDENCE & COMPLETION

## Final product

Create a trait-data investigation that avoids private or diagnostic claims. Include a title, clear evidence, at least two documented revisions, and credits for every outside source or media item.

## Quality check

- ☐ I met the requirement for my grade.
- ☐ My process evidence shows planning, testing, and revision.
- ☐ My final product is accurate, clear, and original.
- ☐ I credited sources and protected private information.

## Evidence notes

My challenge and audience are...

---

The strongest evidence or example I found is...

---

Testing or feedback showed...

---

I improved the final product by...

---

---

## Reflect

The skill I improved most was...

---

One decision or revision I can defend with evidence is...

---

If I continued this badge, my next step would be...

---

---

## Teacher verification

|                             |                                                                   |
|-----------------------------|-------------------------------------------------------------------|
| Student evidence conference | <input type="checkbox"/> Complete <input type="checkbox"/> Revise |
| Teacher initials / date     | <hr/>                                                             |
| Badge awarded               | <input type="checkbox"/> Yes <input type="checkbox"/> Not yet     |

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|--------------------------------|-----------------------------------|-------------------------------|
| <b>NAME:</b><br>_____          | <b>GRADE:</b> _____               | <b>SCHOOL:</b><br>_____       |
| <b>Badge Start Date:</b> _____ | <b>Projected Finish:</b><br>_____ | <b>Teacher Initial:</b> _____ |

SCIENCE • BADGE 45

# SOIL HEALTH INVESTIGATOR

Take on a focused challenge to compare soil texture, water movement, organisms, and plant support.

**YOUR GRADE PATH** Grade 3: observe, model, and explain a pattern. Grade 4: run a fair comparison. Grade 5: collect repeated measurements and graph results. Grade 6: analyze variables, uncertainty, and limitations.

## Launch resource



**Launch resource**

<https://www.nrcs.usda.gov/resources/education-and-teaching-materials>

## Mission tasks

- 1. Frame the challenge** — Explain what it means to compare soil texture, water movement, organisms, and plant support. Record what you already know, the intended audience or user, and two questions.
- 2. Study strong examples** — Use the launch resource and one teacher-approved example. Record three useful features, ideas, facts, or techniques and credit the source.
- 3. Plan with criteria** — List what success should look like for your grade. Make a labeled plan, sketch, outline, model, or prediction before starting the final work.
- 4. Create or investigate** — Complete the central work. Keep process evidence such as notes, drafts, measurements, trials, screenshots, or rehearsal marks.
- 5. Test the result** — Use evidence, peer feedback, a rubric, or a fair test to identify one strength and one problem. Grades 5–6 compare results or viewpoints.
- 6. Revise and explain** — Make at least two purposeful improvements. Explain how the final version addresses the challenge and what the evidence still cannot show.

# Soil Health Investigator • EVIDENCE & COMPLETION

## Final product

Create a soil profile and safe test report with improvement recommendation. Include a title, clear evidence, at least two documented revisions, and credits for every outside source or media item.

## Quality check

- ☐ I met the requirement for my grade.
- ☐ My process evidence shows planning, testing, and revision.
- ☐ My final product is accurate, clear, and original.
- ☐ I credited sources and protected private information.

## Evidence notes

**My challenge and audience are...**

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**The strongest evidence or example I found is...**

---

**Testing or feedback showed...**

---

**I improved the final product by...**

---

---

## Reflect

**The skill I improved most was...**

---

**One decision or revision I can defend with evidence is...**

---

**If I continued this badge, my next step would be...**

---

---

## Teacher verification

|                                    |                                                                   |
|------------------------------------|-------------------------------------------------------------------|
| <b>Student evidence conference</b> | <input type="checkbox"/> Complete <input type="checkbox"/> Revise |
| <b>Teacher initials / date</b>     | <hr/>                                                             |
| <b>Badge awarded</b>               | <input type="checkbox"/> Yes <input type="checkbox"/> Not yet     |

|                                |                                   |                               |
|--------------------------------|-----------------------------------|-------------------------------|
| <b>NAME:</b><br>_____          | <b>GRADE:</b> _____               | <b>SCHOOL:</b><br>_____       |
| <b>Badge Start Date:</b> _____ | <b>Projected Finish:</b><br>_____ | <b>Teacher Initial:</b> _____ |

SCIENCE • BADGE 46

# LIGHT AND SOUND LAB

Take on a focused challenge to investigate waves through reflection, vibration, pitch, and volume.

**YOUR GRADE PATH** Grade 3: observe, model, and explain a pattern. Grade 4: run a fair comparison. Grade 5: collect repeated measurements and graph results. Grade 6: analyze variables, uncertainty, and limitations.

## Launch resource



**Launch resource**

<https://phet.colorado.edu/en/simulations/filter?subjects=physics&type=html>

## Mission tasks

- 1. Frame the challenge** — Explain what it means to investigate waves through reflection, vibration, pitch, and volume. Record what you already know, the intended audience or user, and two questions.
- 2. Study strong examples** — Use the launch resource and one teacher-approved example. Record three useful features, ideas, facts, or techniques and credit the source.
- 3. Plan with criteria** — List what success should look like for your grade. Make a labeled plan, sketch, outline, model, or prediction before starting the final work.
- 4. Create or investigate** — Complete the central work. Keep process evidence such as notes, drafts, measurements, trials, screenshots, or rehearsal marks.
- 5. Test the result** — Use evidence, peer feedback, a rubric, or a fair test to identify one strength and one problem. Grades 5–6 compare results or viewpoints.
- 6. Revise and explain** — Make at least two purposeful improvements. Explain how the final version addresses the challenge and what the evidence still cannot show.

# Light and Sound Lab • EVIDENCE & COMPLETION

## Final product

Create a hands-on wave investigation with model, data, and application. Include a title, clear evidence, at least two documented revisions, and credits for every outside source or media item.

## Quality check

- ☐ I met the requirement for my grade.
- ☐ My process evidence shows planning, testing, and revision.
- ☐ My final product is accurate, clear, and original.
- ☐ I credited sources and protected private information.

## Evidence notes

**My challenge and audience are...**

---

**The strongest evidence or example I found is...**

---

**Testing or feedback showed...**

---

**I improved the final product by...**

---

---

## Reflect

**The skill I improved most was...**

---

**One decision or revision I can defend with evidence is...**

---

**If I continued this badge, my next step would be...**

---

---

## Teacher verification

|                                    |                                                                   |
|------------------------------------|-------------------------------------------------------------------|
| <b>Student evidence conference</b> | <input type="checkbox"/> Complete <input type="checkbox"/> Revise |
| <b>Teacher initials / date</b>     | <hr/>                                                             |
| <b>Badge awarded</b>               | <input type="checkbox"/> Yes <input type="checkbox"/> Not yet     |