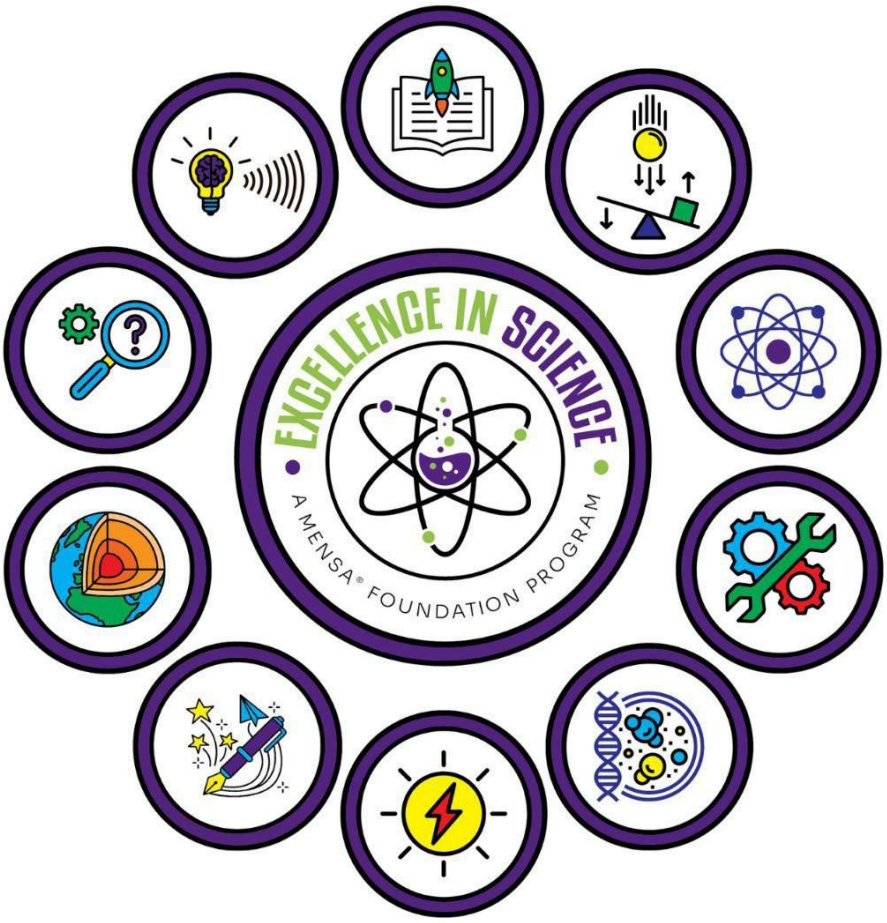
EXCELLENCE IN SCIENCE AWARD PROGRAM



GRADES K-2 BADGE WORKBOOK

NAME: _____

MENSA FOUNDATION

MENSA FOUNDATION EXCELLENCE IN SCIENCE AWARD

To encourage curiosity and exploration in STEM-related fields, the Mensa Foundation has developed the **Excellence in Science Award Program** - complete science activities, earn a commemorative certificate in recognition of your outstanding achievement and get an Excellence in Science T-shirt, too!

The Mensa Foundation recognizes and encourages education, gifted youth, and lifelong learning through resources like the Mensa for Kids website and other programs for youth and those who support them.

While these activities were written or selected for children in grades K-12, this program is open to all (including parents and teachers!) – the only requirement is an interest in science.

Inspired by the principles of the Next Generation Science Standards (NGSS), the *Excellence in Science* program invites learners to complete hands-on, research-based, creative, and real-world activities across a variety of science topics. The Mensa Foundation aims to help every participant build a lasting passion for science, one badge at a time.

To participate in the Mensa Foundation Excellence in Science Program, follow these steps:

1. Select a workbook from the grade level bands available. Participants can choose any workbook that best fits their skills and interests.

2. Print the appropriate workbook and track each activity you complete by checking it off as you go. When you finish all the activities for a given badge, record the completion date on your badge sheet. Please complete the form by hand. We operate on the honor system, and we encourage honesty in this way.

3. Once you've completed an entire workbook by finishing every badge, both the participant and an adult will need to sign the badge sheet as verification and return it and the order form to the Mensa Foundation at the address provided. Once we've received your signed badge sheet and verified it, we'll send you a recognition certificate and T-shirt. Please allow 6 weeks for delivery.

MENSA FOUNDATION

MENSA FOUNDATION EXCELLENCE IN SCIENCE AWARD

Important Questions Answered

Is Mensa membership required?
No, the program is open to anyone, regardless of Mensa affiliation or membership.

Do I have to use the workbook for my grade level?
No, participants can pick the workbook that's best for them.

Do I have to complete the activities exactly as written?
No, feel free to make adjustments to any activity as needed. This program is meant to be flexible and inclusive – if you can adapt the activity while keeping the scientific concepts intact, go for it!

Do I need to complete the activities in order?
No, activities can be completed in any order. Just make sure all badge requirements on the list are checked off before submitting your form.

Do I have to submit my completed projects?
No, all you need to submit is your signed badge sheet. We operate on the honor system, and we trust parents/teachers to verify that each badge was completed in its entirety.

Can the same activity be used satisfy multiple badge requirements?
Yes, we recommend reading the workbook in its entirety before you begin so you can make note of any activities that can be combined or modified to use across two or more badges.

Can I redo the program if I already completed it at a younger grade level?
Yes! We encourage participants to continue exploring science at any age or level, and we're happy to issue additional awards for each new badge workbook completed.

Can school projects or classroom assignments count toward badge activities?
Yes, if a school project or classroom activity aligns with one of the badge requirements, it absolutely counts.

I'm a teacher – can I swap some of these for similar activities that are already part of my school curriculum?
Please do! We trust teachers to make the right decisions for their students' educational needs while maintaining the integrity of the Excellence in Science Award Program.

If a teacher does an activity with the whole class, does every student in the class get credit for completing the activity?
Yes, as long as the student is present for the activity. Students who are absent must complete the activity another time before checking it off their workbook.

Can a teacher/parent submit a form and be recognized as well?
Of course!

Will you send my students' awards to our school?
Yes, just include your school's name, address, and who to attention it to.

Do you ship awards internationally?
Yes! We're happy to send certificates and T-shirts to participants outside the U.S. Please note that international delivery may take longer than the standard 6-week timeline.

The pages that follow contain the activities for each Excellence in Science badge. These activities are designed to help you explore science through hands-on experiments, creative projects, and real-world investigations.

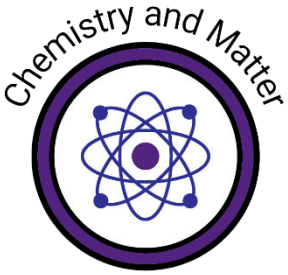
There are **10 badges** needed to complete the Excellence in Science Award Program:

- Chemistry and Matter
- Earth and Space Science
- Energy
- Engineering
- Forces and Motion
- Life Sciences
- Sound, Light, and Waves
- Science Literacy
- Science Exploration
- Arts and Science

Complete each activity to the best of your ability. You don't need to be perfect; the most important thing is to have fun, stay curious, and try something new. Some activities include suggested links to websites with examples, videos, or how-to instructions.

If you're viewing this workbook on a screen, you can click those links directly.
If you're using a printed workbook, **scan the QR code below** to visit a webpage with all the activity links in one place. If you experience any issues with the QR code or links provided, please let us know by emailing giftedyouth@mensafoundation.org.

Look for the □ symbol next to activities that have a suggested online resource.



CHEMISTRY AND MATTER

Use these activities to reinforce learning concepts related to matter. Learn about how to describe materials by their properties (like color, texture, and hardness), how matter can change (like melting, mixing, or dissolving), and how matter can exist in different states. Check off each activity as you go, and when you've completed them all, record the date on your badge sheet.

- ☐ Gather household objects and sort them by color, shape, or size.
- ☐ Gather items made from a variety of materials and test each item to determine if it's hard or soft. Repeat to determine which materials are flexible or rigid.
- ☐ Gather household objects and make predictions about whether they will sink or float in water. Then test your predictions by placing them in water.
- ☐ Use a doll house, spray bottle, and various materials (paper, plastic wrap, aluminum foil, fabric, etc.) to test which material would make the best waterproof cover for the roof.
- ☐ Use different types of materials to make at least 3 bridges. See which bridge can hold the most weight.
- ☐ Build a structure with blocks, then take it apart and build something new using the same blocks.
- ☐ Explore the states of matter by completing one of the following:
  - Melt ice in a pan and bring it to a boil to observe how it changes from a solid to a liquid to a gas
  - See how balloons behave differently when filled with air, water, and ice.
  - Make root beer floats and discuss how the ice cream reacts to the root beer to create carbon dioxide. ☐
- ☐ Explore the physical and chemical properties of various substances by completing one of the following:
  - Stir different ingredients in water and observe what happens.
  - Make a chemical reaction with milk, food coloring, and dish soap. ☐
  - Make your own volcano using a lemon, baking soda, and food coloring. ☐
  - Build an at-home mystery scent lab or mystery bag touch lab. ☐

DATE COMPLETED: _____

EARTH AND SPACE SCIENCE

Use these activities to reinforce learning concepts related to our planet, its place in the solar system, and its relationship with the moon and the sun. Learn about patterns in nature (like how the sun moves across the sky, how weather changes, and how seasons follow a cycle), explore the earth's landforms and systems, and identify key features of our solar system. Check off each activity as you go, and when you've completed them all, record the date on your badge sheet.

- ☐ Keep a weather log and record entries across at least two seasons. Include information about temperature, precipitation, and cloud cover.
- ☐ Track the sun's path in the sky throughout the day and illustrate how it changes from morning to night.
- ☐ Make a moon phases journal. Observe the moon each night, draw what you see, and use a moon phases chart to label each entry. Be sure to include the date and time of your observation.
- ☐ Build a replica of a constellation using marshmallows and toothpicks.
- ☐ Make a field guide to the solar system with illustrations and key facts about the sun, planets, and other celestial objects.
- ☐ Learn about the water cycle by doing one of the following
  - Make a model of the water cycle using a plastic bag or bottle
  - Make a rain cloud in a jar
- ☐ Research a city, state, or country (or use your own!) and create a map that includes major landforms and bodies of water found in the area.

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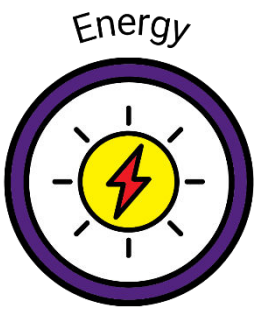

ENERGY

Use these activities to reinforce learning concepts related to energy. Learn about the fundamental properties of energy (like how it cannot be created or destroyed and how it changes form), the different types of energy (like heat energy, chemical energy, and electrical energy), and how we use energy in our everyday lives. Check off each activity as you go, and when you've completed them all, record the date on your badge sheet.

- ☐ Grow a plant from a seed. Make a diagram explaining how it uses energy from the sun to grow.
- ☐ Help cook or prepare a snack and identify the types of energy used and the transfer of energy involved.
- ☐ Touch different surfaces inside and outside and identify which ones feel warm and which ones feel cool. Use what you observe to discuss how the transfer of energy can produce heat.
- ☐ Use two or more thermometers to observe and compare temperature differences between shaded areas and areas in direct sunlight.
- ☐ Take two dishes of ice outside. Put one in direct sunlight and the other in a shaded area and record how long it takes for each dish to melt.
- ☐ Put various small items in a muffin tray and place it outside in the sun on a warm day. Hypothesize about what you think will happen to each item. After several hours, check your tray and observe what happened to each item. How did it match your hypothesis? Examples of items to use in this experiment may include:
    - Food items (cheese cubes, chocolate, deli meat, crackers)
    - Rocks, marbles, wooden blocks
    - Crayons
    - Small candle or tea light
    - Small plastic toys

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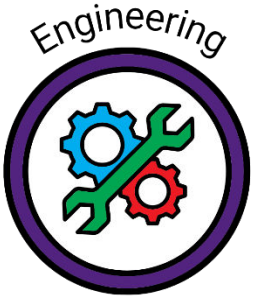

ENGINEERING

Use these activities to reinforce learning concepts related to engineering. Learn about how engineering involves using science to solve problems and about the basics of the design process (like asking questions, brainstorming solutions, building models, and testing ideas). Check off each activity as you go, and when you've completed them all, record the date on your badge sheet.

- ☐ Compare the strengths and weaknesses of two objects designed to solve the same problem by doing one of the following:
  - Use two different brands of paper towels to test which one can absorb the most liquid.
  - Use two different brands of glue to see which one creates a stronger bond when gluing two pieces of paper together.

- ☐ Think about a problem that could be solved by creating a new object or tool, then create a prototype of your new object. Be sure to sketch it, write a description of it, build a model of it, and name it.

- ☐ Use paper, aluminum foil, or other household materials to build a boat that can float on water. Add coins, marbles, or other small toys to see how much weight your boat can hold without sinking. Experiment with different shapes and design features.

- ☐ Build a variety of paper airplanes using different types of paper, different paper airplane designs, and different features. Record the distance each plane flies and how long it stayed in the air.

- ☐ Use craft supplies to make a homemade kite.

- ☐ Make columns out of paper in different shapes (square, circle, and triangle) and see which shape can hold the most weight by stacking books on top.

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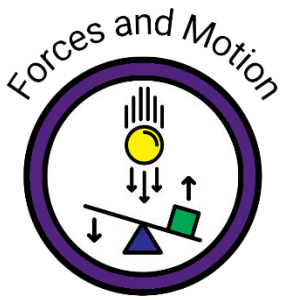

FORCES AND MOTION

Use these activities to reinforce learning concepts related to forces and motion. Learn about what forces act on objects to make things move, how forces can be used to change an object's speed and direction, and how motion works in the world around us. Check off each activity as you go, and when you've completed them all, record the date on your badge sheet.

- ☐ Push a toy car and measure the distance it travels. Repeat using more or less force and different surfaces and record your observations.
- ☐ Use string to pull a box, then add other items to the box to increase its weight. Explain how the force you need to apply to pull the box changes when the weight is increased.
- ☐ Use various objects to design a maze for a ball and analyze how effective your design changes your ball's direction to navigate through the maze.
- ☐ Make a ramp out of cardboard, wood, or other objects and record how long it takes a toy car to travel down the ramp. Then, using blocks or books, adjust the angle and height of the ramp and record how the car's speed changes.
- ☐ Gather a variety of lightweight objects and use a fan to move them around. Adjust the fan's distance and angle from the objects and observe how it affects their movement.
- ☐ Make a catapult out of craft sticks, rubber bands, a plastic spoon, and objects for launching. Test how different pull strengths affect how far an object travels.

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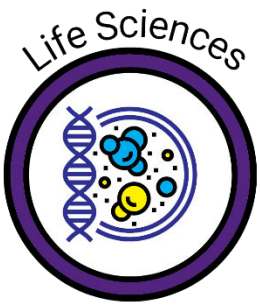

LIFE SCIENCES

Use these activities to reinforce learning concepts related to life sciences. Learn about the needs and behaviors of living things (like humans, animals, and plants), life cycles and how things grow and survive, and how organisms have features that help them live in their environments. Check off each activity as you go, and when you've completed them all, record the date on your badge sheet.

- ☐ Discuss how an animal's physical characteristics are used for protection from heat and cold, then design a piece of clothing inspired by animal fur, feathers, or scales.
- ☐ Plant bean seeds in three or more cups and care for them over the course of a few weeks. Give them different amounts of sunlight and water and observe their growth.
- ☐ Go to a park or nature center and do a Living Things vs. Non-Living Things scavenger hunt.
- ☐ Research how different animals care for their babies. Then compare and contrast them from each other and look for patterns in how parents help their young survive.
- ☐ Learn about how an animal's physical characteristics help it adapt to live in its environment, then pick an environment and design your own animal that could survive there.
- ☐ Pick two different locations (like your backyard and a local park) and record the living things you see in each location.
- ☐ Make a poster or diorama of an animal and its habitat.
- ☐ Make a list of traits and characteristics about yourself. Include both physical characteristics and personality traits. Then survey your family members and see which things you have in common and which things are different. Use the information you gather to hypothesize about inherited traits, acquired traits, and learned behaviors.

DATE COMPLETED: _____

SOUND, LIGHT, AND WAVES

Use these activities to reinforce learning concepts related to sound, light, and waves. Learn about how vibrations make sound, how light travels, and how we use waves to see, hear, and communicate. Check off each activity as you go, and when you've completed them all, record the date on your badge sheet.

- ☐ Learn about sound waves by doing one of the following:
  - Stretch a rubber band over a pencil or similar object and pluck it to make sound. Experiment with different sized rubber bands.
  - Tap a drum or a container with a lid and observe the sound. Sprinkle rice, salt, or sugar on top and observe how the rice moves from the vibrations of each tap.
  - Tap a glass with a spoon, then fill it with water and tap it again. Compare the difference between the two sounds.

- ☐ Explore how light behaves when it hits different objects by making a light box.

- ☐ Explore how light helps us see objects in the dark by making a pinhole light box.

- ☐ Gather different materials like clear plastic, frosted glass, cardboard, tissue paper, fabric, etc. and shine a flashlight through each one. Observe how much light passes through and determine whether the materials are transparent, translucent, or opaque.

- ☐ Explore how light refracts by using a small mirror to change the direction that a beam of light from a flashlight is traveling.

- ☐ Make a telephone using tin cans and string and discuss how sound travels to communicate over distances.

- ☐ Read about how people can communicate without using words, then create your own communication system and use it to send a message. Examples of communication systems might include:
  - Morse code
  - Signal lamps
  - Drum communications
  - Semaphore

DATE COMPLETED: _____

SCIENCE LITERACY

Use the following activities to think and talk about science like a real scientist. You'll build skills like asking questions, analyzing what you see and read, and talking with others about scientific concepts. Check off each activity as you go, and when you've completed them all, record the date on your badge sheet.

Complete at least 3 of the following:

- ☐ Keep a science journal while working on your badges to record your observations.
- ☐ Read at least 10 science-related books. Write or record a video review of at least two books.
- ☐ Make a list of at least 10 vocabulary words you learned while working on your badges.
- ☐ Watch a science documentary or video and write or draw about something you learned.
- ☐ Select a topic you learned about and design a poster or infographic about it.
- ☐ Interview a scientist (or watch one in a video) and explain why their job is important.
- ☐ Teach a science concept to someone else or make a short video of yourself explaining a science concept.
- ☐ Read and summarize a science article from a reputable source (e.g., National Geographic for Kids).
- ☐ Select a scientist and write a journal entry from their perspective.
- ☐ Write an article or blog post about how science has impacted you, your family, or your community.
- ☐ Select and research a popular science-related myth or misconception. Present your findings in a paper, blog post, presentation, infographic, or video.

DATE COMPLETED: _____

SCIENCE EXPLORATION

Use the following activities to connect science to the real world and see how science is used in everyday life. Check off each activity as you go, and when you've completed them all, record the date on your badge sheet.

Complete at least 3 of the following:

- ☐ Visit a science museum or natural history museum. Write or draw your favorite exhibit and explain what you learned.
- ☐ Visit a zoo, aquarium, or botanical garden. Observe an animal or plant and record 3 facts about it in your science journal.
- ☐ Visit a planetarium or stargazing event. Write or draw about something you learned.
- ☐ Attend or participate in a science fair. Take notes on 3 interesting projects or present your own project.
- ☐ Take a nature walk or go on a hike. Collect data or take pictures of rocks, insects, plants, or animals and describe them.
- ☐ Do a virtual field trip to a science lab, museum, or NASA site. Reflect on something new you discovered.
- ☐ Interview a scientist, zookeeper, astronomer, or science educator about their work and share what you learned.
- ☐ Visit a farm or environmental center. Learn about ecosystems, food production, or conservation and write about it.
- ☐ Volunteer at or attend a science outreach event (e.g., STEM night, Earth Day festival, robotics competition).
- ☐ Design your own science field trip—research and visit a local place of scientific interest and explain why it's important.

DATE COMPLETED: _____

ARTS AND SCIENCE

Use the following activities to blend scientific thinking with creativity and explore the beauty of science through artwork. Check off each activity as you go, and when you've completed them all, record the date on your badge sheet.

Complete at least 3 of the following:

- ☐ Make a nature journal with sketches and notes.
- ☐ Make an art piece out of recycled materials.
- ☐ Research a scientist and create a piece of art inspired by their work.
- ☐ Create a collage, photo album, or photo essay using pictures related to one of the scientific concepts you've learned.
- ☐ Create a calligram related to a science topic.
- ☐ Make a piece of digital data art using data collected from one of your experiments/projects.
- ☐ Create a wearable science project, such as a piece of jewelry or clothing, inspired by one of the scientific concept's you've learned.
- ☐ Write a poem, song, skit, or monologue related to one of the scientific concepts or science innovators you've learned about.
- ☐ Build a diorama of a science scene related to one of the concepts you've learned.
- ☐ Create a piece of process art using the scientific concepts you've learned. Examples may include: ☐
    - Chemical reaction art
    - Spin Art
    - Magnet painting
    - Sun prints
    - Leaf prints
    - Soundwave art

- ☐ Write and illustrate a fiction story or record a short film about a science-related topic. Examples might include:
  - The moon, stars, or planets
  - A severe weather event
  - A plant or animal that is native to your area
  - An invention that could change the world

DATE COMPLETED: _____

EXCELLENCE IN SCIENCE
A MENSA® FOUNDATION PROGRAM

BADGE SHEET (GRADES K-2)

Record the date you completed each badge, then sign below. Mail this page to the Mensa Foundation, along with your award order form. **This page is required to receive your award.**

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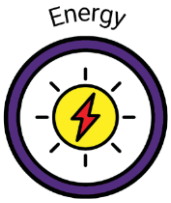

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By signing, we attest that _____ has completed all the activities required to earn each Excellence in Science badge and that this record is true.

_____ _____

Participant's signature Adult's signature

EXCELLENCE IN SCIENCE AWARD ORDER FORM

Thank you for participating in the Mensa Foundation's **Excellence in Science Award Program!**
Participants who complete an entire badge workbook are eligible to receive a commemorative certificate and an Excellence in Science T-shirt.
We're excited to celebrate your achievement and love of science!

To receive your awards, complete this form and mail it along with your signed badge sheet to the address below. **Both the badge sheet and order form are required to receive your certificate and T-shirt.** Please allow up to 6 weeks for processing and delivery.
Send your badge sheet and order form to:

Mensa Foundation
Excellence in Science
1315 Brookside Dr
Hurst, TX 76053.

(Completed lists must be mailed. We do not accept scans or faxes.)

Scientist's Name	Scientist's Age	Mensa Membership Number (if applicable)
House Address (City, State ZIP code)		
Email Address		Phone Number

Scientist's T-shirt Size

❑ Youth S ❑ Youth M ❑ Youth L ❑ Youth XL ❑ Adult S ❑ Adult M ❑ Adult L ❑ Adult XL

Parent/Teacher's Name	Mensa Membership Number (if applicable)

MENSA FOUNDATION