CURRICULUM COLLECTION

Science Student Course, Lessons 9-18

Read, practice, explain, and review

Name: _____ Date: _____

Level and skill goal: _____

Keep finished work with your parent or caregiver. These original learning units support study but do not themselves constitute a complete annual grade-level curriculum.

Science Course Volume 2 | Student Lessons 9-18

Continuation of Science: Investigating the World, Lessons 1-8 . New lessons provide explanations, factual questions and differentiated independent work. Use credible science references for research and record real observations honestly. No invented laboratory results may be represented as measured data.

The family may also read Proverbs 2:1-6 about pursuing wisdom. Scripture applications are spiritual and ethical discussions; they do not substitute for empirical evidence about the natural world.

Lesson 9: Classifying living organisms

Learn: Scientists classify organisms by shared characteristics and evolutionary relationships. Insects have a head, thorax, abdomen and six legs as adults; spiders are arachnids with eight legs. Living things have varied structures and life cycles.

Check understanding: What features distinguish a typical adult insect from an adult spider?

- Foundations: Draw an insect and spider and count legs.

- Builders: Create a comparison table of insects, spiders and earthworms, noting body regions and legs.

- Advancing: Explain why outward similarity is not sufficient to establish a species' relatedness; identify a credible taxonomy reference.

Record work in a notebook; distinguish illustrations and hypothetical data from actual experiments. Follow safe activity practices.

Lesson 10: Plant structures and functions

Learn: Roots commonly anchor and absorb water; stems support and transport materials; leaves often carry out photosynthesis. Flowering plants produce reproductive structures. Different species have modifications; avoid assuming every plant looks the same.

Check understanding: What evidence could show that roots and leaves have different roles?

- Foundations: Draw roots, stem and leaves and label them.

- Builders: Describe water transport using a clear diagram and a verified reference.

- Advancing: Investigate how leaf structure may relate to light capture; distinguish a hypothesis from an observed result.

Record work in a notebook; distinguish illustrations and hypothetical data from actual experiments. Follow safe activity practices.

Lesson 11: Ecosystems and food webs

Learn: Organisms interact with each other and nonliving environmental factors. Producers use light energy; consumers obtain energy by eating organisms; decomposers break down dead material. A food web connects multiple feeding pathways.

Check understanding: Why is a food web more informative than a single food chain?

- Foundations: Draw sun, grass and rabbit, explaining what each contributes.

- Builders: Create a local ecosystem diagram with two producers, two consumers and a decomposer.

- Advancing: Predict two plausible ecosystem effects of a population decline and label assumptions.

Record work in a notebook; distinguish illustrations and hypothetical data from actual experiments. Follow safe activity practices.

Lesson 12: Weather instruments and climate evidence

Learn: Weather describes short-term atmospheric conditions; climate describes patterns over long periods, typically decades. Thermometers, rain gauges and anemometers measure different variables. A single cold day cannot define long-term climate.

Check understanding: Which instrument measures temperature, rainfall and wind speed?

- Foundations: Draw weather symbols and observe the day’s conditions with an adult.

- Builders: Record safe daily temperature and precipitation observations for five days; calculate simple differences.

- Advancing: Compare a local daily record with multi-decade climate normals from a credible meteorological source and explain limits.

Record work in a notebook; distinguish illustrations and hypothetical data from actual experiments. Follow safe activity practices.

Lesson 13: Earth materials and erosion

Learn: Rocks contain minerals; soil contains mineral particles, organic matter, water and air. Weathering breaks material down; erosion transports sediment by wind, water or gravity. Conservation reduces undesirable erosion.

Check understanding: What is the difference between weathering and erosion?

- Foundations: Examine sand, soil and rock pictures; draw visible differences.

- Builders: Make a labeled diagram of water carrying soil downhill, avoiding unsafe outdoor experiments.

- Advancing: Explain how land cover can affect erosion and design a fair, small-scale comparison with safety precautions.

Record work in a notebook; distinguish illustrations and hypothetical data from actual experiments. Follow safe activity practices.

Lesson 14: Light and sound

Learn: Light travels through space and can be absorbed, transmitted or reflected by materials. Sound involves vibrations traveling through matter; it cannot travel through a vacuum. The energy and properties differ.

Check understanding: Why can we see sunlight across space but cannot hear a sound through outer-space vacuum?

- Foundations: Use a flashlight with an adult to observe a shadow, without shining into eyes.

- Builders: Compare how a safe opaque and translucent material affect light.

- Advancing: Explain reflection and refraction with different examples and note what measurement would test a claim.

Record work in a notebook; distinguish illustrations and hypothetical data from actual experiments. Follow safe activity practices.

Lesson 15: Health, nutrition and exercise

Learn: Food provides energy and nutrients; water, sleep, movement and hygiene support health. People have varied needs, and no single food cures disease. Medical claims require reliable evidence and qualified guidance.

Check understanding: Name three evidence-based habits that support health without claiming they prevent every illness.

- Foundations: Draw a varied meal and practice safe handwashing.

- Builders: Read a nutrition label, identify serving size and compare two nutrient quantities.

- Advancing: Analyze a public-health recommendation from a credible agency, including limits and context.

Record work in a notebook; distinguish illustrations and hypothetical data from actual experiments. Follow safe activity practices.

Lesson 16: Science evidence and independent investigation

Learn: A well-framed scientific question uses measurable variables. Controlled comparisons attempt to hold other factors constant. Repeated trials, accurate units and honest reporting support conclusions. A correlation does not necessarily prove cause.

Check understanding: What can repeated trials improve, and what cannot be proved from a small dataset?

- Foundations: Ask an observable question and draw how you could record the answer.

- Builders: Plan a plant-growth comparison stating a changed factor, measured outcome and controlled conditions.

- Advancing: Propose a study, describe confounders and possible sources of bias, and write a results template without inventing data.

Record work in a notebook; distinguish illustrations and hypothetical data from actual experiments. Follow safe activity practices.

Lesson 17: Scientific communication and data

Learn: Graphs must label axes and units. Summary measures can hide important variation. Scientists distinguish measured results, uncertainty and interpretations, and make methods transparent.

Check understanding: Why is a chart without axis units difficult to interpret?

- Foundations: Make a picture graph of 2,4,3 colored counters.

- Builders: For fictional data 4,6,8,10,12 find mean, range and construct a labeled bar graph.

- Advancing: For fictional data 3,5,5,7,20 find mean, median and range, explain outlier effects and limitations.

Record work in a notebook; distinguish illustrations and hypothetical data from actual experiments. Follow safe activity practices.

Lesson 18: Independent science assessment

Learn: Scientific understanding requires correct concepts and applying methods to unfamiliar situations. Record what was actually observed rather than what was assumed.

Check understanding: New scenario: Three identical containers receive equal water and soil, but different amounts of sunlight. Leaf number is counted weekly. What is changed, measured and controlled?

- Foundations: Draw a plant with two labeled parts and say one need.

- Builders: Identify the changed factor and measured outcome, then list two conditions to keep alike.

- Advancing: Identify independent, dependent and two controlled variables, plus two plausible confounders and a limitation.

Record work in a notebook; distinguish illustrations and hypothetical data from actual experiments. Follow safe activity practices.

Science Course Review

Review the independent scenario in Lesson 18, then revisit weak prerequisites. Scientific inquiry continues across disciplines and grade levels. These 18 lessons do not establish complete annual science standards coverage.

Academy course directory .