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SCIENCE LONG TERM TRANSFER GOALS

In support of the K-12 Science Curriculum Frameworks, **Long Term Transfer Goals (LTTG)** provide the overarching practices that ground the foundation for a robust curriculum; thus, all curricula should relate to one or more of the LTTGs detailed below – as they highlight the effective uses of understanding, knowledge, and skill that we seek in the long run; i.e., what we want students to be able to do when they confront new challenges – both in and outside of school.

Students will be able to engage as scientifically literate members of a global society, using their learning to:

1. Approach science as a reliable and tentative way of knowing and explaining the natural world and designed world.
2. Weigh evidence and use scientific approaches to ask questions, investigate, and make informed decisions.
3. Make and use observations to analyze relationships and patterns in order to explain phenomena, develop models, and make predictions.
4. Evaluate systems, in order to connect how form determines function and how any change to one component affects the entire system.
5. Explain how the natural and designed worlds are interrelated and the application of scientific knowledge and technology can have beneficial, detrimental, or unintended consequences.

KEY UNDERSTANDINGS	DRIVING QUESTIONS
A key understanding is the lasting takeaway: the idea students should still understand and be able to use years later. It is an accurate science claim, written in grade-appropriate language in one or two sentences.	A driving question invites investigation into the key understanding, not just recall. It connects to events or objects students can observe and wonder about, and it can be explored across more than one phenomenon.

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Overarching Key Understandings and Driving Questions

The tables below include the overarching key understandings and driving questions that span K-12. Each Science Curriculum Framework adds a grade-appropriate key understanding and driving question for every standard.

LIFE SCIENCE	
KEY UNDERSTANDINGS	**DRIVING QUESTIONS**
Structures and Processes Living things are made of cells, and their parts work together to help them survive, grow, respond to their environment, and reproduce.	How do the parts of a living thing work together to sustain life?
Ecosystems Living things depend on one another and their environment for food, water, and energy, so a change to one component of an ecosystem can affect the entire system.	What happens to living things when their environment changes?
Heredity Parents pass genetic information to their offspring, so offspring resemble their parents. Differences in genes and environment cause individuals of the same kind to vary.	How are traits passed from parents to offspring, and why do individuals vary?
Evolution Populations of living things change over many generations, which explains both the great diversity of life on Earth and the features many species share.	Why are there so many different kinds of living things, and why do many share similar features?

PHYSICAL SCIENCE	
KEY UNDERSTANDINGS	**DRIVING QUESTIONS**
Matter All matter is made of particles too small to see. How those particles are arranged and interact explains a material's properties and how it can change into new substances.	Why do different materials look and behave so differently, and how can they change into something new?
Forces and Motion Objects push and pull on each other, sometimes without touching, and these forces explain why objects start moving, speed up, slow down, change direction, or stay at rest.	Why do objects move the way they do, and how can we predict what they will do next?
Energy Energy can be transferred from one object or place to another and change form, but it is neither created nor destroyed.	Where does energy come from, and where does it go?
Waves Waves, such as sound and light, transfer energy and information from one place to another without carrying matter along with them.	How can waves carry messages across a room or around the world?

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EARTH & SPACE SCIENCE	
KEY UNDERSTANDINGS	**DRIVING QUESTIONS**
Earth's Place in the Universe Earth is a small part of a vast universe, and the motions of Earth, the moon, and the sun create patterns we can observe and predict. Earth's rocks and fossils record a history that spans billions of years.	What can patterns in the sky and evidence in Earth's rocks tell us about our planet's place in space and its long history?
Earth's Systems Earth's land, water, air, and living things constantly interact, shaping the planet's surface, weather, and climate over short and long periods of time.	Why do Earth's surface and weather keep changing, both quickly and over millions of years?
Earth & Human Activity People rely on Earth's resources to meet their needs and are affected by natural hazards. Human activities also change Earth's land, water, air, and climate, affecting people and other living things.	How do natural events and human choices shape the places where we live?