HOUSTON MUSEUM
of NATURAL SCIENCE

Texas Essential Knowledge and Skills

MATTER AND MOTION: QUANTUM CHEMISTRY TO ASTROPHYSICS

UPDATED JUNE 2025

Thank you for choosing the Houston Museum of Natural Science for your class field trip. We are delighted to have the opportunity to enrich your students' learning experience. To simplify planning your trip, we have provided the Texas Essential Knowledge and Skills (TEKS) for the *Matter and Motion Hall* by grade level, updated to reflect the 2024–2025 standards. This resource is designed to help you align your trip with your curriculum, ensuring your visit is educational and enjoyable.

We look forward to welcoming you and your students for an unforgettable journey through the wonders of discovery.

For help with high school TEKS, please email curriculum@hmns.org.

Kindergarten

Science K.1.A

The student is expected to ask questions and define problems based on observations or information from text, phenomena, models, or investigations.
Students can experiment with simple machines such as levers and pulleys to ask questions about how they make work easier and solve real-world problems by moving heavy objects with less effort.

Science K.1.D

The student is expected to use science tools safely and appropriately.
Students use ramps and pulleys in the exhibit, practicing safe and appropriate use of science tools.

Science K.5.C

The student is expected to identify and describe systems with organized parts.
Students observe how parts of a lever or pulley work together as a system.

Science K.6.A

The student is expected to classify objects by observable properties, including shape, color, texture, and material.
Students explore the periodic table display, describing and classifying objects by their observable properties.

Science K.7.A

The student is expected to explain how pushes and pulls can start, stop, or change the speed or direction of an object's motion.
Students use levers and pulleys to explore how different forces change motion.

1st Grade

Science 1.1.A

The student is expected to ask questions and define problems based on observations or information from text, phenomena, models, or investigations.
Students interact with models to ask questions such as, "How do different forces affect motion?"

Science 1.1.D

The student is expected to use science tools safely and appropriately.
Students use balances and measuring tapes to explore motion and forces.

Science 1.5.B

The student is expected to identify cause-and-effect relationships in science.
Students observe how applying force to objects changes their motion.

Science 1.6.A

The student is expected to classify objects by observable properties and compare attributes.
Students compare objects by size and weight at various exhibits.

Science 1.7.A

The student is expected to explain how pushes and pulls can start, stop, or change the speed or direction of an object's motion.
Students use simple machines to see how forces affect motion.

2nd Grade

Science 2.1.A

The student is expected to ask questions and define problems based on observations or information from text, phenomena, models, or investigations.
Students ask questions about how simple machines make work easier by interacting with models.

Science 2.1.D

The student is expected to use science tools safely and appropriately.
Students use spring scales and thermometers to measure forces and temperature.

Science 2.5.B

The student is expected to predict and investigate cause-and-effect relationships.
Students experiment with how the strength of a push or pull changes motion.

Science 2.6.A

The student is expected to classify matter by observable properties, including texture, flexibility, and relative temperature, and identify whether a material is a solid or liquid.
Students classify objects at the periodic table display and identify solids and liquids.

Science 2.7.A

The student is expected to explain how objects push on each other and may change shape when they touch or collide.
Students use hands-on exhibits to explore how forces cause changes in shape and motion.

3rd Grade

Science 3.1.A

The student is expected to ask questions and plan investigations using models.
Students plan investigations using exhibit models to explore force and motion.

Science 3.1.D

The student is expected to use science tools safely and appropriately.
Students use magnets and balances in their investigations.

Science 3.5.B

The student is expected to identify and investigate cause-and-effect relationships.
Students investigate how changing variables affects motion and energy.

Science 3.6.A

The student is expected to demonstrate and describe forces acting on an object in contact or at a distance, including magnetism, gravity, and pushes and pulls.
Students use machines and magnets to demonstrate these forces.

Science 3.8.A

The student is expected to identify everyday examples of energy, including light, sound, thermal, and mechanical.
Students find and describe examples of different types of energy throughout the exhibit.

4th Grade

Science 4.1.A

The student is expected to plan and conduct investigations using models.
Students plan and conduct investigations using exhibit models of machines.

Science 4.1.D

The student is expected to use science tools safely and appropriately.
Students use graduated cylinders and spring scales to measure and observe.

Science 4.5.B

The student is expected to investigate cause-and-effect relationships to explain scientific phenomena.
Students explore how applying different forces leads to different motion outcomes.

Science 4.6.A

The student is expected to model the parts of a system and their interdependence.
Students observe and model how levers, pulleys, and gears work together in machines.

Science 4.7.A

The student is expected to investigate and explain how equal and unequal forces acting on an object cause patterns of motion and transfer of energy.
Students experiment with the "Air Track" to observe how forces affect motion.

5th Grade

Science 5.1.A

The student is expected to develop and use models to explain scientific concepts.
Students develop and use models to explore force, motion, and energy.

Science 5.1.D

The student is expected to use science tools safely and appropriately.
Students use digital thermometers and stopwatches in investigations.

Science 5.5.B

The student is expected to identify and investigate cause-and-effect relationships to explain phenomena.
Students manipulate variables to investigate cause-and-effect in motion and energy.

Science 5.6.A

The student is expected to examine and model parts of a system and their interdependence.
Students observe how components like levers, pulleys, and gears work together.

Science 5.7.A

The student is expected to investigate and explain how forces cause motion and energy transfer.
Students experiment with machines to see how forces transfer energy.

6th Grade

Science 6.1.A

The student is expected to ask questions and plan investigations using models.
Students plan investigations using machines and periodic table models.

Science 6.1.D

The student is expected to use science tools safely and appropriately.
Students use microscopes and spring scales to investigate properties of matter.

Science 6.5.B

The student is expected to analyze cause-and-effect relationships in scientific phenomena.
Students analyze how changing force or mass affects motion.

Science 6.6.C

The student is expected to identify elements on the periodic table as metals, nonmetals, metalloids, and rare Earth elements based on their physical properties and importance to modern life.
Students use interactive periodic table exhibits to classify elements and explore their uses.

Science 6.7.A

The student is expected to identify and explain how forces act on objects, including gravity, friction, magnetism, applied forces, and normal forces, using real-world applications.
Students use pulleys and levers to explore applied forces and mechanical advantage.

7th Grade

Science 7.1.A

The student is expected to plan and conduct investigations using models.
Students conduct investigations using exhibit machines and systems.

Science 7.1.D

The student is expected to use science tools safely and appropriately.
Students use balances and graduated cylinders in their investigations.

Science 7.5.B

The student is expected to diagram the flow of energy through systems and investigate cause-and-effect relationships.
Students diagram energy flow in mechanical systems and investigate effects of force.

Science 7.6.A

The student is expected to compare and contrast elements and compounds in terms of atoms, molecules, chemical symbols, and chemical formulas.
Students use the periodic table to compare elements and compounds.

Science 7.6.B

The student is expected to use the periodic table to identify the atoms and the number of each kind within a chemical formula.
Students use interactive exhibits to identify elements in chemical formulas.

8th Grade

Science 8.1.A

The student is expected to plan and conduct investigations using models.
Students use exhibit models to investigate force, motion, and matter.

Science 8.1.D

The student is expected to use science tools safely and appropriately.
Students use digital probes and force plates to collect data.

Science 8.5.B

The student is expected to identify and investigate cause-and-effect relationships in scientific phenomena.
Students manipulate variables to explore cause-and-effect in matter and motion.

Science 8.5A

The student is expected to describe the structure of atoms, including the masses, charges, and locations of protons, neutrons, and electrons.
Students use periodic table and atomic models to explore atomic structure.

Science 8.5B

The student is expected to identify that protons determine an element's identity and valence electrons determine chemical properties, including reactivity.
Students explore how atomic structure relates to chemical properties.

Science 8.5C

The student is expected to interpret the arrangement of the periodic table, including groups and periods, to explain how properties are used to classify elements.
Students use interactive periodic table displays to interpret element classification.

Science 8.5D

The student is expected to recognize that chemical formulas are used to identify substances and determine the number of atoms of each element in formulas with subscripts.
Students use models and exhibits to analyze chemical formulas.

Science 8.5E

The student is expected to investigate evidence of chemical reactions and the law of conservation of mass.
Students observe and model chemical reactions using interactive displays.