

## Alignment to Texas Essential Knowledge and Skills

### Rotational Equilibrium

Lesson focuses on exploring the basic concepts of rotational equilibrium. Students work in teams to estimate and determine the force within a mobile design, then groups compare results and discuss findings.

IPC	Physics
<b>Strand: Scientific Investigation and Reasoning</b>	
1.A Demonstrate safe practices during laboratory and field investigations.	1.A Demonstrate safe practices during laboratory and field investigations.
1.B Demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.	1.B Demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.
2.B Plan and implement investigate procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology.	2.E Design and implement investigative procedures including making observations, asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness.
2.C Collect data and make measurements with precision.	2.H Make measurements with accuracy and precision and record data using scientific notation and International System (SI) units.
2.D Organize, analyze, evaluate, make inferences, and predict trends from data.	2.J Organize and evaluate data and make inferences from data including the use of tables, charts, and graphs.
2.E Communicate valid conclusions.	2.K Communicate valid conclusions supported by the data through various methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.
	2.L Express and manipulate relationships among physical variables quantitatively including the use of graphs, charts, and equations.
3.D Evaluate the impact of research on scientific thought, society, and the environment.	3.D Explain the impacts of the scientific contributions of a variety of historical and contemporary scientists on scientific thought and society.
3.E Describe connections between physics and chemistry and future careers.	3.E Research and describe the connections between physics and future careers.
	3.F Express and interpret relationships symbolically in accordance with accepted theories to make predictions and solve problems mathematically including problems requiring proportional reasoning and graphical vector addition.
<b>Strand: Matter and Energy</b>	
6.A Examine differences in physical properties of solids, liquids and gases as explained by the arrangement and motion of atoms, ions or molecules of the substances and the strength of the forces of attraction between those particles.	
6.C Analyze physical and chemical properties of elements and compounds such as, color, density, viscosity, buoyancy, boiling point, freezing point, conductivity, and reactivity.	

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IPC	Physics
<b>Strand: Force, Motion and Energy</b>	
4.A Describe and calculate an object’s motion in terms of position, displacement, speed and acceleration.	4.D Calculate the effect of forces on objects including the law of inertia, the relationship between force and acceleration, and the nature of force pairs between objects.
4.C Investigate how an object’s motion changes only when a net force is applied, including activities and equipment such as toy cars, vehicle restraints, sports activities and classroom objects.	4.E Develop and interpret free-body force diagrams.
4.D Assess the relationship between force, mass and acceleration, noting the relationship is independent of the nature of the force, using equipment such as dynamic carts, moving toys, vehicles and falling objects.	
5.A Recognize and demonstrate that objects and substances in motion have kinetic energy such as vibration of atoms, water flowing down a stream moving pebbles, and bowling balls knocking down pins.	
5.B Demonstrate common forms of potential energy including gravitational, elastic, and chemical, such as a ball on an inclined plane, springs and batteries.	