CCPS Science Unit Plan

Grade	10-12	**Subject**	Physics	**Unit #**	2
Unit Name	Mechanics In Two Dimensions		**Timeline**	3 Weeks	
How to use the Framework	This Framework should be used to implement daily science instruction. The resources and instructional strategies reflected in the Framework will provide a foundation for effective implementation and student mastery of standards. Please see the hyperlinked abbreviation document to ensure understanding all abbreviations used with this framework.				
Unit Overview	In this unit, students will seek to answer the question "How can forces cause so many different types of motion?" The modules in this unit each provide part of the answer to this question. • **Module 5:** Displacement and Force in Two Dimensions - Students will learn about the basics analyzing forces in two dimensions, friction, and motion on inclined planes. • **Module 6:** Motion in Two Dimensions - Students will learn that gravity and drag forces determines the path of a projectile, while centripetal forces result in circular motion • **Module 7:** Gravitation - Students will learn that the gravitational is responsible for objects falling to the ground, as well as orbits. • **Module 8:** Rotational Motion - Students will learn that forces can produce changes in rotation.				
Lesson Plan guidance document and template	CCPS Lesson Plan Template Day View Lesson Plan Template Week View Department of Science Guidance Document				

3Dimensional Instruction

GSE	Science and Engineering Practices	Crosscutting Concepts
SP1. Obtain, evaluate, and communicate information about the relationship between distance, displacement, speed, velocity, and acceleration as functions of time. d. Analyze and interpret data of two-dimensional motion with constant acceleration. • Resolve position, velocity, or acceleration vectors into components (x and y, horizontal and vertical). • Add vectors graphically and mathematically by adding components. • Interpret problems to show that objects moving in two dimensions have independent motions along each coordinate axis. • Design an experiment to investigate the projectile motion of an object by collecting and analyzing	**Asking Questions and Defining Problems** Asking questions and defining problems in 9–12 builds on K–8 experiences and progresses to formulating, refining, and evaluating empirically testable questions and design problems using models and simulations. **Obtaining, Evaluating, and Communicating Information** Obtaining, evaluating, and communicating information in 9–12 builds on K–8 experiences	**Stability and Change:** For natural and built systems alike, conditions of stability and determinants of rates of change or evolution of a system are critical elements of study. **Cause and Effect:** Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering. **Patterns:** Observed patterns in nature guide organization and classification and prompt

	data using kinematic equations. • Predict and describe how changes to initial conditions affect the resulting motion. • Calculate range and time in the air for a horizontally launched projectile. SP2. Obtain, evaluate, and communicate information about how forces affect the motion of objects. b. Develop and use a model of a Free Body Diagram to represent the forces acting on an object (both equilibrium and non-equilibrium). c. Use mathematical representations to calculate magnitudes and vector components for typical forces including gravitational force, normal force, friction forces, tension forces, and spring forces. d. Plan and carry out an investigation to gather evidence to identify the force or force component responsible for causing an object to move along a circular path. • Calculate the magnitude of a centripetal acceleration. e. Develop and use a model to describe the mathematical relationship between mass, distance, and force as expressed by Newton's Universal Law of Gravitation.	and progresses to evaluating the validity and reliability of the claims, methods, and designs. **Using Mathematics and Computational Thinking** Mathematical and computational thinking in 9-12 builds on K-8 and experiences and progresses to using algebraic thinking and analysis, a range of linear and nonlinear functions including trigonometric functions, exponentials and logarithms, and computational tools for statistical analysis to analyze, represent, and model data. Simple computational simulations are created and used based on mathematical models of basic assumptions. **Developing and Using Models** Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed world(s).	questions about relationships and causes underlying them. **Systems and System Models:** A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems. **Scale, Proportion, and Quantity:** In considering phenomena, it is critical to recognize what is relevant at different size, time, and energy scales, and to recognize proportional relationships between different quantities as scales change.
NGSS Alignment	NGSS Alignment to Disciplinary Core Ideas		

Weekly Lesson Tasks

Week 1					
GSE: SP1.d., SP2,b.		**Focused Concept: Displacement and Force In Two Dimensions**			
Phenomenon: Why is this specialized train washing the train tracks? TE 113			**DQ: What factors affect an object's motion in multiple dimensions?**		
SEP: Developing and Using Models, Using Mathematics and Computational Thinking, Engaging in Argument from Evidence			**CCC:** Cause & Effect, Systems and System Models		
	Day 1 5.1	**Day 2 5.2**	**Day 3 5.3**	**Day 4 CER**	**Day 5 6.1**
Learning Target	**Students will explore**	**Students will explore**	**Students will explore**	**Students will culminate**	**Students will explore**

	how to graphically and algebraically add vectors into their components. **<u>Focus Question:</u> How can you add forces in two dimensions?**	**kinetic friction, static friction, and coefficients of friction.** **<u>Focus Question:</u> What force causes a train to stop?**	**motion on inclined planes and equilibrium in two dimensions.** **<u>Focus Question:</u> How can you analyze forces on a train as it climbs a hill?**	**their learning about the basic analysis of forces in two dimensions, friction and motion on inclined planes.**	**how the path of a projectile is determined by its launch conditions, gravity, and air resistance.** **<u>Focus Question:</u> What forces affect a basketball's trajectory?**
Opening (Teacher: The Lesson Resource can`be launched or assigned with Know/Want to Know Activity on digital textbook platform)	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**	**Why is this specialized train washing the train tracks?** Revisit The Phenomenon (Claim, Evidence, Reasoning) TE Page 136 phenomenon card Students will create a CER based on the question and using information obtained from Days 1-3, present evidence and reasoning to support the claim.	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**
Guided Practice/ Transition TTW, provide 15-20 minutes of direct instructions. PPT presentations are available for every section of every chapter in the online textbook resources.	**Teacher will:** Explain and model how to graphically and algebraically add vectors in 2-dimensions and how to resolve vectors into their components. This will allow them to analyze the friction forces on the train. Presentation: Vectors Unit 2 Lesson 1 Practice problems: Text - Pg. 116	**Teacher Will:** Play a video about the importance of cleaning train tracks. Teacher Guide for using phet simulation: Friction to students **Essential Vocabulary** *kinetic friction *static friction *coefficient of kinetic friction	**Teacher Will:** **Presentation:** Forces in 2 dimensions Unit 2 Lesson 3 **Teacher Will:** Further expound upon how to graphically add vectors in 2-dimensions and how investigators can use trigonometric functions to solve for net force on a system.	**Teacher Will:** Guide students through an annotation exercise on the Engineering and Technology passage: More or Less-Using Biometrics to control Friction.(pg 134)	**Teacher will:** Show video of phenomena by going online to play 'the path of a projectile? Presentation: Projectile Motion explain and model how to graphically and algebraically add vectors in 2-dimensions and how to resolve vectors into their components. This will

	Essential Vocabulary *component *vector resolution	*coefficient of static friction	Review Physics Challenge problems (pg 129) Find the equilibrant for the entries set of forces listed below, also shown in the figure on page 129. **Essential Vocabulary** *equilibrant		Students will complete Practice Question selected by teacher (p142 #1-2, p143 #1-2, p145 #4-6) **Essential Vocabulary** *projectile *trajectory
Independent Practice (TTW, circulate to monitor student performance and will clarify instructions as needed.)	**Students will:** Access the Smartbook assignment and begin the task by first assessing the Reading exercise; which is slated for 59 min after opening the task. Once students become familiar with the material; they will be ready to access the second tab "Content". 33 concepts. Alternative: *Practice Problems* *#1 - 10* *Page 116-121*	**Students will:** Access your CER chart and explore resources that can help you collect evidence. Access CER online lesson CER Displacement and Forces in Two Dimension Pg. 113	**Student Will:** Complete Practice Problems pg 131	**Student Will:** Use a Model to Describe Activity (pg 134) Draw a labeled diagram to describe how friction can be increased or decreased using biometrics. You might want to carry out additional research to gather details to add to your model.	**Student will:** Use interactive assets that allows them to manipulate variables and answer questions regarding the outcomes as a result of the changes they made PHeT Simulation Activity: Intro.
Assessment Summary (Teachers should maximize the use of all the extended learning/assessment tasks if time permits.)	**TE Page 120-121** **Task:** Students will imagine walking on city streets per the scenario presented and show their displacement with vectors and a coordinate grid from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or	**TE Page 127** **Task:** Students will describe force acting on a box per the scenario provided from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online	**TE Page 132-133** **Task:** Students will set up axes for the motion of a sliding toolbox per the scenario provided from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online	**TE Page 136** **Task: GO Further** - (Who goes down the slide faster) Students will create a CER based on the scenario presented. **Extended:** >Access the online additional resources for a pre-made Chapter/Module Test to assign students.	**TE Page 146** **Task:** Students will describe turning gravity off per the scenario provided from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a

	Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.	additional resources for a pre-made Lesson Check to assign students.	additional resources for a pre-made Lesson Check to assign students.		pre-made Lesson Check to assign students.
Small Group Tasks (TBA)					

Week 2					
GSE: SP1d,		**Focused Concept: Motion In Two Dimensions**			
Phenomenon: Why do thrown basketballs travel in arcs?			**DQ: How are the two different dimensions of an object's motion linked?**		
SEP: Developing and Using Models, Using Mathematics and Computational Thinking			**CCC:** Patterns, Cause & Effect, Systems and System Models		
	Day 6 6.2	**Day 7 6.2**	**Day 8 6.3**	**Day 9 Lab**	**Day 10 7.1**
Learning Targets	**Students will explore centripetal force, centripetal acceleration, and circular motion, and will use Newton's second law for circular motion.** **<u>Focus Question:</u> What force causes an object to move in a circle?**	**Students will continue to explore centripetal force, centripetal acceleration, and circular motion, and will use Newton's second law for circular motion.** **<u>Focus Question(con't):</u> What force causes an object to move in a circle?**	**Students will explore classical relative motion in one and two dimensions.** **<u>Focus Question:</u> Does your description of motion depend on your frame of reference?**	**Students will reinforce their learning that gravity and drag forces determine the path of a projectile, while centripetal forces result in circular motion.**	**Students will explore Kepler's laws and Newton's law of universal gravitation.** **<u>Focus Question:</u> What role does gravity play in planetary motion?**
Opening (Teacher: The Lesson Resource can`be launched or assigned with Know/Want to Know Activity on digital textbook platform)	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should**	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should**	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should**	**Why do thrown basketballs travel in arcs?** Revisit The Phenomenon (Claim, Evidence, Reasoning) TE Page 159 phenomenon card Students will create a CER based on the question and using information obtained from Days 5-8, present evidence and reasoning to	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should**

	record students' questions.	**record students' questions.**	**record students' questions.**	support the claim.	**record students' questions.**
Guided Practice/Transition TTW, provide 15-20 minutes of direct instructions. PPT presentations are available for every section of every chapter in the online textbook resources.	**Teacher will:** lead students through Centripetal Force activity. p147 Use the Teacher-facilitated Pathway to support classroom instruction and spark discourse. Obtain data to inform your instruction by assigning the interactive content, additional resources and assessments. Launch the lesson interactive content can be assigned the night before class as a lesson preview, during class to spark discussion, as a resource during inquiry or as homework. **Circular Motion Presentation** **Essential Vocabulary** *uniform circular motion *centripetal acceleration *centripetal force	**Teacher will:** Facilitate a critical Thinking Exercise - pg 150. Ask Students why the curves on highways are banked? Allow students to write their responses to the question and discuss their justifications; first, amongst themselves, then a representative can share with the class as a collective. Troubleshoot any misconceptions that the students may have before segwaying into the independent practice.	**Teacher will:** Perform the Moving Sidewalk Demonstration p152 Present the concepts of relative velocity via presentation. **Essential Vocabulary** *reference frame	**Teacher will:** Utilize the teacher notes to prepare and instruct students on how to engage in argument-driven inquiry. Facilitate navigating the steps of ADI Lab #3 for projectile motion on page 110 of the virtual ADI manual. **Introduce the seven stages of ADI and provide a brief overview of each stage.** **Task: Introduce a phenomenon to figure out and the task to complete.** **Ideas: Highlight some ideas that can be used during the investigation.** **Plan: Create, share, and revise a plan for collecting and analyzing data.** **Do: Collect the data needed and make sense of it.** **Share: Create, share, critique, and revise evidence-based arguments.** **Reflect: Discuss ways to use core ideas and practices in the future.** **Report: Write, share, critique, and revise reports about what they figured.**	Teacher Will: Open the lesson using Teacher Presentation: Gravitation to give a qualitative explanation of Gravitation and Planetary Motion. Then: Use the Encounter the Phenomenon on pg 160 to quantify gravitation and planetary motion using algebraic expressions. **Essential Vocabulary** *Kepler's first law *Kepler's second law *gravitational force *law of universal gravitation

Independent Practice (TTW, circulate to monitor student performance and will clarify instructions as needed.)	**Student Will:** **2001: A SPACE OD…** Quick Practice pg TE 149 Have Students view one of the scenes from the movie 2001: *A Space Odyssey* that shows the space station rotating. According to the film's scientific consultant, the diameter of the station was supposed to be 305m (1000 ft). Using the video, have students measure the station's period of rotation and calculate the centripetal acceleration of a person in the station . Have students compare this centripetal acceleration to the free-fall acceleration on Earth.	**Student Will:** Check your Progress problems - SE pg 151. **TTW circulate to monitor student performance and will clarify instructions as needed.**	**Students will:** Complete Practice Questions selected by teacher (p156 #25-30) **TTW circulate to monitor student performance and will clarify instructions as needed.**	**Students will:** **make a plan, collect data, analyze data, and make a claim.** **ADI Lab #3** **TTW support students as they develop their plans for collecting and analyzing data.**	Students will: Read the procedure and safety information, and complete the lab form. Use the data table in the LL: Model Mercury's Motion to plot the orbit of mercury using the scale 10 cm = 1 AU. NOte that one astronomical unit, AU, us Earth's distance from the Sun. 1 AU is equal to 1.5 x 10^8 km.
Assessment/Summary (Teachers should maximize the use of all the extended learning/assessment tasks if time permits.)	**TE Page 151** **Task:** Students will explain why airplanes bank to turn from the Formative Assessment Check.	**TE Page 151** **Task:** Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 156** **Task:** Students will make an image prediction based on altering the parameters in Figure 2 per the scenario provided by the Formative Assessment Check. **Extended:** >Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 159** **Task:** Access the online additional resources for a pre-made Chapter/Module Test to assign students.	**TE Page 169-170** **Task:** Students will rank various pairs of masses of varying distances apart by gravitational force strength per instructions in the Formative Assessment Check. (Students can write a CER to show their understanding) **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a

					pre-made Lesson Check to assign students.
Small Group Tasks (TBA)					

Week 3					
GSE: PS2; SP2d		**Focused Concept: Gravitation**			
Phenomenon: How can gravity keep moons orbiting planets but also cause things to fall? Why do all tropical cyclones in the northern hemisphere rotate the same direction?			**DQ: What does gravity do and when/how does it work or not work? Why do objects move with a circular motion?**		
SEP: Developing and Using Models, Using Mathematics and Computational Thinking			**CCC:** Patterns, Cause & Effect, Scale Proportion & Quantity		
	Day 11 7.2	**Day 12**	**Day 13 8.1**	**Day 14 8.2**	**Day 15 8.3**
Learning Targets	**Students will explore the orbits of planets and satellites and the concept of a gravitational field.** **<u>Focus Question:</u>How does gravity affect objects that aren't touching?**	**Students will reinforce their learning that the gravitational force is responsible for objects falling to the ground, as well as orbits.**	**Students will explore how rotational motion can be described in terms of angular displacement, angular velocity, angular acceleration, and angular frequency.** **<u>Focus Question:</u>How would you describe the rotation of a hurricane?**	**Students will explore Newton's second law for rotational motion.** **<u>Focus Question:</u>How does force affect rotation?**	**Students will explore stability, static equilibrium, and rotating reference frames.** **<u>Focus Question:</u>Why are some vehicles more likely to roll over than others?**
Opening (Teacher: The Lesson Resource can`be launched or assigned with Know/Want to Know Activity on digital textbook platform)	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should**	**How can gravity keep moons orbiting planets but also cause things to fall?** Revisit The Phenomenon (Claim, Evidence, Reasoning) TE Page 182 **phenomenon card** Students will create a CER based on the question and using information obtained	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should**	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should**	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should**

	record students' questions.	from Day 10 & 11, present evidence and reasoning to support the claim.	**record students' questions.**	**record students' questions.**	**record students' questions.**
Guided Practice/Transition TTW, provide 15-20 minutes of direct instructions. PPT presentations are available for every section of every chapter in the online textbook resources.	**Teacher Will:** Launch the lesson interactive content can be assigned the night before class as a lesson preview, during class to spark discussion, as a resource during inquiry, or as homework. **Essential Vocabulary** *inertial mass *gravitational mass	**Teacher Will:** Explicitly instruct students on how to complete a few of the check your progress problems. Have students record step by step calculations while solving manipulatives between exercises 18-25.	**Teacher Will:** Teacher Presentation: Describing Rotational Motion Use the Teacher Presentation to support classroom instruction and spark discourse. Assign the interactive content, additional resources, and assessment to obtain data to inform your instruction. **Essential Vocabulary** *radian *angular displacement *angular velocity *angular acceleration	**Teacher Will:** Teacher Presentation: Rotational Dynamics Use the Teacher Presentation to support classroom instruction and spark discourse. Assign the interactive content, additional resources, and assessment to obtain data to inform your instruction. **Essential Vocabulary** *lever arm *torque *moment of inertia *Newton's second law for rotational motion	**Teacher Will:** Quick Demo: pg 202 TE Have students stand with his/her toes against a wall and attempt to stand on tiptoe. He or she will find it extremely difficult, if not impossible. Discuss why this is (5 min) Have students describe when an object is most stable. **Essential Vocabulary** *center of mass *centrifugal "force" *Coriolis "force"
Independent Practice (TTW, circulate to monitor student performance and will clarify instructions as needed.)	**Students will:** Quick Practice: pg. 170 On a large paper, have students draw circles to scale that represents draw circles to scale that represent the orbits of Earth and Mars Label the monthly locations of Earth on its orbit and research the dates when Mars is at conjunction (closest to Earth) or opposition (farthest from the Earth) . Use the periods of Mars (687 Earth Days) to mark	**Students will:** Complete check your Progress: pg. 179. **TTW circulate to monitor student performance and will clarify instructions as needed.**	**Students will:** Students will Complete Practice Problems pg. 188 **TTW circulate to monitor student performance and will clarify instructions as needed.**	**Students will:** Interactive Content: Student-Led Pathway Teacher Presentation: Rotational Dynamics Students can use the online interactive content along with the student edition, science notebook projects, and labs, to collect evidence to support their claim. They can record their evidence to support their Science journals and the class summary table.	**Students will:** Students will bring empty soda cans for balancing activity per the scenario provided from the Formative Assessment Check. Practice problems pg. 204 **TTW circulate to monitor student performance and will clarify instructions as needed.**

	and label the location of Mars once every Earth month . Knowing that at midnight, the night sky is the direction away from the Sun, ask students to find the months when Mars is visible and when it is in the east, south (for inhabitants in the northern hemisphere), and west.				
Assessment/Summary (Teachers should maximize the use of all the extended learning/assessment tasks if time permits.)	**TE Page 178-179** **Task:** Students will research comet Shoemaker-Levy 9 and make evidence based conclusions as to why it hit Jupiter per the Formative Assessment Check. **Extended:** >Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 182** **Task: GO FURTHER** Students will compare Earth's orbit and Neptune's orbit using CER approach per the scenario provided. **Extended:** >Access the online additional resources for a pre-made Chapter/Module Test to assign students.	**TE Page 188** **Task:** Students will determine angular displacement in radians from the clock provided by the teacher per the scenario provided from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 199** **Task:** Students will spin wheel/disc and hypothesize stopping it and then test methods as described in the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 205-206** **Task:** Progress Check Questions (Textbook or Online Science Notebook) **Extended:** >Access the online additional resources for a pre-made Lesson Check to assign students.
Small Group Tasks (TBA)					

Week 4					
GSE: SP2d		**Focused Concept: Rotational Motion**			
Phenomenon: Why do all tropical cyclones in the northern hemisphere rotate the same direction?			**DQ: Why do objects move with a circular motion?**		
SEP: Developing and Using Models, Using Mathematics and Computational Thinking			**CCC:** Cause & Effect, Systems & System Models		
	Day 16 Test				

Learning Targets	**Students will reinforce their learning that forces can produce change in rotation.**				
Opening (Teacher: The Lesson Resource can`be launched or assigned with Know/Want to Know Activity on digital textbook platform)	**Why do all tropical cyclones in the northern hemisphere rotate the same direction?** Revisit The Phenomenon (Claim, Evidence, Reasoning) TE Page 209 **phenomenon card** Students will create a CER based on the question and using information obtained from Day 13-15, present evidence and reasoning to support the claim.				
Guided Practice/Transition TTW, provide 15-20 minutes of direct instructions. PPT presentations are available for every section of every chapter in the online textbook resources.	**The Teacher Will:** Select or create a set of review questions. (Kahoot, Quizizz, Blooket) TSW participate using the platform selected by the teacher.				
Independent Practice (TTW, circulate to monitor student performance and will clarify instructions as needed.)	**Unit 2 Test** **TTW circulate to monitor student performance and redirect students as needed.**				
Assessment/Summary					

(Teachers should maximize the use of all the extended learning/assessment tasks if time permits.)	**Unit 2 Test**				
Small Group Tasks (TBA)					

Assessment Prep
Prepare students for assessment by reviewing the following Assessment Prep concepts.

Labs / Investigations

Mandatory Labs	Explore Learning Gizmo	Pivot Interactives/Phet
	>Vectors **>Adding Vectors** **>Inclined Plane - Sliding Objects** **>Force and Fan Carts** **>Feed the Monkey** **>Golf Range** **>Uniform Circular Motion**	**PhET: Vector Addition** **PhET: Friction** **PhET: Projectile Motion** **PhET: Motion in 2D** **PhET: Gravitational Forces Lab** **PhET: Gravity and Orbits** **PhET: Ladybug Revolution** **PhET: Balancing Act** **PhET: Torque**

Additional Resources/Tasks

Supplemental Resources	☐ McGRAW ONLINE ☐ DRIVING QUESTIONS BOARD & SUMMARY TABLE (TE Page 110B) ☐ STEM UNIT PROJECT (TE Page 111) ☐ LEARNSMART