

Bachelor of Education (Elementary) &
Bachelor of Education (Secondary) STEM/BETT
Unit Plan Template

Unit Title: <u>Dynamics</u>	Number of Lessons: <u>20</u>	Time (in weeks): <u>4</u>
Name: <u>Lauren Mark</u>	Subject(s): <u>Physics</u>	Grade(s): <u>11</u>

Rationale

This unit is important to help students understand how the world around them works. The ideas explored in this unit allows them to interpret events that happen in their lives, understand the motion of objects, predict the forces and energy associated with different motions, and evaluate the risks in activities they do by understanding cause and effect relationships. They will be able to explain and predict these things using evidence, mathematical reasoning and models. The knowledge gained from these lessons will give students background knowledge to use in other areas in physics, engineering, math, health sciences, and environmental studies.

Overview:

This Dynamics is foundational in the BC Curriculum and builds on students' understanding of motion by examining the forces that cause changes in motion. Students will identify and classify types of forces, construct and interpret free body diagrams, and calculate net force to predict acceleration using Newton's Laws. The unit explores friction, multi body systems, springs and Hooke's Law, and universal gravitation to extend force analysis from everyday surface interactions to large scale planetary motion. Emphasis is placed on mathematical modeling, diagram interpretation, and systems thinking to develop students' ability to analyze real world situations. Through inquiry stations, simulations, labs, structured review, and design-based applications, students engage in critical and creative thinking while developing communication skills and personal responsibility. By the end of the unit, students will be able to apply force models to explain and predict motion in both simple and complex systems.

CORE COMPETENCIES

Communication	Thinking	Personal & Social
- Communicating: ☒ Constructing and interpreting free body diagrams as visual scientific representations. ☒ Explaining reasoning during class discussions and structured reviews. ☒ Writing lab reports and completing activities using scientific language in multiple formats - Collaboration: ☒ Working in groups or teams during projects and labs. ☒ Designating roles in the "Force of Nature" group project ☒ Doing structured review as a class to prepare for assessments.	- Critical thinking ☒ Analyzing force interactions and breaking multi-body systems into separate free body diagrams ☒ Distinguishing between balanced and unbalanced forces ☒ Interpret patterns from collected data during labs. ☒ Identify common misconceptions during review sessions and evaluate which concepts require further practice during the index card reflection. - Creative thinking ☒ Designing a planet using UG principles. ☒ Generating multiple hypotheses in lab investigations. ☒ Applying knowledge to real life scenarios.	- Personal awareness and responsibility ☒ Preparing for quizzes and tests with structured reviews as a class while reflecting on likely mistakes before assessments promotes class-wide academic responsibility. - Social responsibility ☒ Collaborative group roles in the rescue activity. ☒ Safe and responsible lab conduct. ☒ Respectful class discussions. ☒ Evaluating risk in real world scenarios (i.e., "Force of Nature").

BIG IDEAS

(multiple subject areas for integrated unit)

Subject Name – Physics 11

- Forces influence the motion of objects

LEARNING STANDARDS

Curricular Competencies	Content
Applying and Innovating ☒ Implement multiple strategies to solve problems in real-life, applied, and conceptual situations.	• Contact Forces and the factors that affect magnitude and direction • Mass, force of gravity, and apparent weight • Newton's laws of motion and free-body diagrams. • Balanced and unbalanced forces in systems
Processing and analyzing data and information ☒ Seek and analyze patterns, trends, and connections in data, including describing relationships between variables, performing calculations, and identifying inconsistencies. ☒ Construct, analyze, and interpret graphs, models, and/or diagrams	
Communicating ☒ Formulate physical or mental theoretical models to describe a phenomenon.	
Questioning and Predicting ☒ Formulate multiple hypotheses and predict multiple outcomes. ☒ Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal, local, or global interest	

Prerequisite Concepts and Skills:

- Kinematics (position, displacement, distance, velocity vs. speed, acceleration)
- Basic force concepts
- Graphing
- Using a calculator for multistep calculations
- Algebra
- Arithmetic
- Exponent rules
- Unit cancellation
- Mass, weight, and gravity
- Measurement and observation skills (using measurement devices such as a ruler and stopwatch)

Teacher Preparation Required:

Lesson #	Teacher Preparation Required
Lesson 1	- Forces and FBD inquiry stations - Teacher notes to refer to on types of forces - iPad (or whatever I am writing the notes on) - Station objects - Station worksheet
Lesson 2	- Teacher notes: FBD's - FBD Practice Questions.
Lesson 3	- Teacher notes: Net Force - iPad (or whatever I am writing the notes on) - Practice questions
Lesson 4	- Force of Nature worksheet - Force of Nature rubric

Lesson 5	- Teacher notes: Newton's Laws - iPad (or whatever I am writing the notes on) - Newton's Laws practice questions. - Review practice questions.
Lesson 6	- Review handout for quiz. - Review practice questions.
Lesson 7	- Quiz - PhET simulation Friction worksheet. - Chromebooks
Lesson 8	- Teacher notes: Friction - iPad (or whatever I am writing the notes on) - Friction practice questions. - Friction Lab worksheet.
Lesson 9	- Friction Lab worksheet. - Friction Lab materials
Lesson 10	- Teacher notes: MBS - iPad (or whatever I am writing the notes on) - MBS practice questions - Friction and MBS practice questions.
Lesson 11	- Atwood's Machine worksheet - Atwood's Machines - Review handout for quiz. - Review practice questions.
Lesson 12	- Friction and MBS Quiz. - PhET simulation Hooke's Law worksheet. - Chromebooks
Lesson 13	- Teacher notes: Hooke's Law and Springs - iPad (or whatever I am writing the notes on) - Hooke's Law practice questions - Spring Lab pre-lab
Lesson 14	- Spring Lab worksheet. - Spring Lab materials.
Lesson 15	- Teacher notes: UG - iPad (or whatever I am writing the notes on) - UG practice questions
Lesson 16	- Designing a planet project specifications. - Art supplies
Lesson 17	- Unit Test review sheet. - Unit Test review practice questions.
Lesson 18	- Unit Test review sheet. - Unit Test review practice questions. - Index Cards
Lesson 19	- Unit Test review sheet. - Unit Test review practice questions. - Additional Review questions.
Lesson 20	- Unit Test - Unit Test Formula Sheet

Cross-Curricular Connections:

Mathematics:

- Algebraic rearranging of formulas
- Graph Interpretation in labs
- Unit analysis
- Systems of equations

Earth Science:

- Universal gravitation and planetary motion
- Natural disaster scenarios in the rescue activity

Engineering and ADST:

- Springs and load systems
- Mechanical systems like Atwood's Machine
- Modeling real world problem solving (like the final question in the rescue activity)

Aboriginal Connections/ First Peoples Principles of Learning:

FPPL:

Learning is holistic, reflexive, reflective, experiential, and relational. In this unit, we will be doing hands on labs and activities to connect the theory we learn to lived experience. Students will also be reflecting on their learning throughout the course, especially before the quizzes and tests where there will be structured opportunity to do so.

Learning involves recognizing consequences of actions. "Force of Nature" activity highlights the rescue and safety applications of forces by connecting it to real world outcomes.

Learning is embedded in memory, history, and story. Throughout the unit, the course content is connected to narrative stories to create different learning contexts for students to relate to. The "Force of Nature" activity is an example of this because it is rooted in a relational story.

Universal Design for Learning (UDL)

Representation:

- Notes, diagrams, simulations, demonstrations, videos
- Visual modeling of FBD's
- Physical labs

Action and Expression:

- Written quizzes
- Lab reports
- Group activities
- Visual planet design project

Engagement:

- Real world rescue videos
- Interactive simulations
- Anonymous misconception activity
- Design-based planet project

Differentiated Instructions (DI)

Will support individual student needs when in the classroom and will consult with my TM on the IEP's of students in the class and their specific learning plans.

Overview of Lessons:

Lesson number	Outline/Overview of Lesson	Student activities	Assessments	Special requirements or preparation	Other resources needed
1	Types of forces Intro: - Attendance question - True or false questions about dynamics (displayed on the board). - Run through learning outcomes (LO's) displayed on the board. Body: - Notes: types of forces - Inquiry activity: identify each type of force from a real-life scenario (either picture or set up IRL in the class). Closure: - Review the different types of forces we learned about and ask students to volunteer to share out what each station is. Discuss any misconceptions that arise or any tricky stations. - Tell them to put their station worksheet and notes in a safe space because we will be working on them again in the next class.	Intro: - Students will answer the attendance question. - Students will answer true or false questions about dynamics. - Listen to intended learning outcomes for the lesson. Body: - Students will follow along with notes and write them in their personal notebooks. - Once given the go-ahead, students will walk around the class and identify the different forces acting on an object. Closure: - Review the stations and share out about what they learned from each station. - Put notes and worksheet in a safe space.	Diagnostic: Forces and FBD worksheet.	Stations prepared before class starts.	- Teacher notes to refer to on types of forces - iPad (or whatever I am writing the notes on) - Station objects - Station worksheet
2	Free Body Diagrams Intro: - Ask a volunteer to come to the front of the class to hold a book.	Intro: - One student will volunteer to help with the demo.	Diagnostic: Forces and FBD worksheet.	Stations taken down at the end of class.	- Teacher notes: FBD's - iPad (or whatever I

	- Discussion with the class: 1. Draw a dot on the board to represent the book. Draw arrows representing the forces as we run through the scenario. 2. What lifts the book up? What pulls it down? Are the forces balanced? 3. What if we lower or raise the book? Or if they drop it? Body: - Notes: Free Body Diagrams (FBD's) and reference frames. - Return to Inquiry activity from before the break: draw the FBD's of each station now. - FBD practice questions for remaining class time. Closure: - Ask students which station was the most confusing to draw the FBD's and we will review it as a class. - Discuss LO's for next class.	- The rest of the students will participate in the group discussion. Body: - Students will follow along with notes and write them in their personal notebooks. - Continue working on their inquiry activity from the previous class and walk around the classroom to draw the FBD's at each station. - Hand-in Forces and FBD station worksheet once completed. - Start working on more FBD practice questions for remaining class time. Closure: - Students will participate in a discussion about a difficult station that we will review together. - Listen to LO's for next class.			am writing the notes on) - Station objects - Station worksheet - FBD Practice Questions.
3	Net Force +Newton's Laws (Changed) Intro: - Attendance question - Run through LO's for today's class. - PhET simulation of Net Force □ I do this and I will ask a student	Intro: - Answer attendance question - One student comes up for the demo while the rest answer questions I ask about what is happening in the simulation.	N/A	PhET simulation of Net Force (https://phet.colorado.edu/sims/html/forces-and-motion-basics/latest/forces-	- Teacher notes: Net Force - iPad (or whatever I am writing

	volunteer to come up and try it out Body: - Review the PhET simulation and ask students about what they noticed about different forces. - Notes: Net force - Net force practice questions with posted solutions. Closure: - Review the concept of net forces and how we could see it through the simulation and our practice questions. - Talk about the quiz that will happen after we finish the unit on Newton's laws. Everything that we do up until that point is fair game. - Talk about LO's for next class.	Body: - Participate in review of the simulation. - Students will follow along with notes and write them in their personal notebooks. - Start working on practice questions for remaining class time. Closure: - Listen to closure and participate in discussion.		and-motion-basics-en.html)	the notes on) - Practice questions
4	Net Force Activity Intro: - https://www.youtube.com/watch?v=351ColcC1Ps □ actual helicopter rescue - https://www.youtube.com/watch?v=RVDc1h7Xcso □ BC flooding and rescue video CTV news - Launch group activity by reviewing the first page as a class. - Let them get into their own groups and ensure they write down their roles on the activity sheet.	Intro: - Watch videos - Listen to activity instructions - Get into groups of 4 and decide on group roles.	Formative: "Force of Nature" activity	N/A	- Force of Nature worksheet - Force of Nature rubric

	Body: - "Force of Nature" activity work block. Closure: - Remind everyone to hand in their worksheets, taking care to fill out the Final Questions at the end. - Talk about the quiz that is coming up soon and discuss the content that will be on it.	Body: - Work on the "Force of Nature" group activity worksheet. Can work on the white boards or separate sheet of paper if necessary but must transfer thinking to activity worksheet to hand in. Closure: - Listen to wrap up and hand in activity worksheet. - Listen to information about upcoming quiz.			
5	Newton's Laws → Work block for practice questions and finishing activity Intro: - Attendance question - Run through LO's for today's class. - Slides and a video on the history of Newton (brief ~ 5 minutes) Body: - Notes: Newton's Laws - Practice questions on Newton's Laws - Practice questions to review for upcoming quiz. Closure:	Intro: - Answer attendance question. - Listen to history of Newton. Body: - Students will follow along with notes and write them in their personal notebooks - Work on practice questions on the application of Newton's Laws. - For remaining class time, students will do review questions to prepare for the upcoming quiz. Closure: - Listen to my closure.	N/A	N/A	- Teacher notes: Newton's Laws - iPad (or whatever I am writing the notes on) - Newton's Laws practice questions. - Review practice questions.

	- Brief review of Newton's Laws and what we learned about today. - Talk about the structured review we will do for the quiz next class.				
6	Review for Quiz Intro: - Run through the content that will be on the quiz Body: - Go over the structured review sheet: 1. 10-minute force identification and FBD review 2. 10-minute net force review 3. 10-minute Newton's Laws review 4. 10 minute class discussion on the hardest question/what biggest misconceptions are 5. End with "what mistake are you likely to make on the quiz?" - Remaining time used to work on practice questions and individual review. Closure: - Quiz is next class so they need to remember to bring a calculator, a pencil, and an eraser!	Intro: - Listen to the content that will be on the quiz. Body: - Students will follow along with structured review notes with the handout that is provided to them. - For remaining class time, students will do review questions to prepare for the upcoming quiz. Closure: - Listen to what they need to bring for the quiz next class.	N/A	N/A	- Review handout for quiz. - Review practice questions.
7	Quiz Intro: - Attendance question. - 10 minutes of quick review.	Intro: - Students will answer the attendance question.	Summative: Quiz	Chromebooks. Test dividers.	- Quiz - PhET simulation

	Body: - Quiz: students get the whole block to write their quiz if they need it. - When they're done their quiz, they hand it in and get a worksheet and a Chromebook for some individual work time to explore our next area of study, friction. Closure: - Talk about the quiz and how students feel about it now that it's over. - Ask if they liked having the structured review session before hand. - Ask students to share out about what they learned from the PhET simulation on friction.	- They will review for 10 minutes before writing the quiz. - After 10 minutes have gone by, they can keep their pencils, erasers, and calculators out. Everything else must be put away and phones on silent. Body: - Students will write the quiz. - When they're done their quiz, they hand it in and get a worksheet and a Chromebook and open up the PhET simulation for friction and answer questions about it on the worksheet. Closure: - Participate in class discussion on the quiz. - Participate in class discussion about the PhET simulation on friction.			Friction worksheet.
8	Friction Intro: - Run through LO's for today's class. - Scenario for discussion: pushing a desk on different surfaces. - Demo: sliding blocks across different surfaces. Body: - Notes: Friction	Intro: - Participate in group discussion about scenario and demo. Body:	N/A	N/A	- Teacher notes: Friction - iPad (or whatever I am writing the notes on) - Friction practice questions.

	- Practice questions on friction - Introduce the pre-lab for next class (but they will also get some time to work on this before we do the lab) Closure: - Talk about the lab we are doing next week. - Run through LO's for next class.	- Students will follow along with notes and write them in their personal notebooks - Students will work on practice questions on friction. - Students will listen to what lab we are doing next week and start to work on their pre-lab questions. Closure: - Listen to wrap up.			- Friction Lab worksheet.
9	Friction Lab Intro: - Attendance question - Run through LO's for today's class. - Review friction and go over pre-lab and lab procedures. Body: - Friction Lab - Once all of the lab activities are done, instruct students to complete their lab reports and hand them in. Closure: - Make sure everything is cleaned up and put away. - Hand in their lab report. - Mention quiz on friction and Multi-body systems coming up - Review LO's for next class.	Intro: - Listen to the review or friction and what is expected of them to complete the lab. Body: - Students will complete the Friction Lab and hand in their lab report. Closure: - Listen to wrap up. - Make sure their materials are put away and their lab reports are handed in.	Friction Lab worksheet	Materials for Friction Lab	- Friction Lab worksheet.
10	Multi-Body Systems Intro: - Run through LO's for today's class.	Intro: - Listen to applications of MBS and answer any questions presented to the class.	N/A	N/A	- Teacher notes: MBS - iPad (or whatever I

	- Applications of Multi-Body Systems (MBS) Body: - Notes: MBS - Practice questions on MBS - Hand out practice questions for quiz (MBS and friction) Closure: - Review MBS and Friction - Quiz the class after Atwood's Machine inquiry and review session.	Body: - Students will follow along with notes and write them in their personal notebooks. - For remaining class time, students will do review questions to prepare for the upcoming quiz. Closure: Listen to what they need to bring for the quiz next class.			am writing the notes on) - MBS practice questions - Friction and MBS practice questions.
11	Atwood's Machine & Review Intro: - Attendance question - Run through LO's for today's class. - Look @ Atwood's Machine: why is it important and go through the steps on how to solve it. Body: - Complete activity and worksheet on Atwood's Machine - Structured review for quiz 1. 10-minute friction review 2. 10-minute MBS review (1 question solving together as a class) 3. 10-minute class discussion on the hardest question/what biggest misconceptions are	Intro: - Students will answer attendance question. - Listen to background on Atwood's Machine and follow along with demo on how to solve it. Body: - Students will complete the activity and worksheet on Atwood's Machine. - Hand-in worksheet. - Students will follow along with structured review notes with the handout that is provided to them. - For remaining class time, students will do review questions to prepare for the upcoming quiz.	Formative: Atwood's Machine worksheet.	Atwood's Machine's	- Atwood's Machine worksheet - Review handout for quiz. - Review practice questions.

	4. End with “what mistake are you likely to make on the quiz?” - Remaining time used to work on practice questions and individual review. Closure: - Quiz is next class so they need to remember to bring a calculator, a pencil, and an eraser!	Closure: Listen to what they need to bring for the quiz next class.			
12	Friction and MBS Quiz Intro: - 10-minute review before quiz Body: - Quiz: students get the whole block to write their quiz if they need it. - When they’re done their quiz, they hand it in and get a worksheet and a Chromebook for some individual work time to explore our next area of study, Hooke’s Law. Closure: - Talk about the quiz and how students feel about it now that it’s over. - Ask if they liked having the structured review session before hand.	Intro: - They will review for 10 minutes before writing the quiz. - After 10 minutes have gone by, they can keep their pencils, erasers, and calculators out. Everything else must be put away and phones on silent. Body: - Students will write the quiz. - When they’re done their quiz, they hand it in and get a worksheet and a Chromebook and open up the PhET simulation for Hooke’s Law and answer questions about it on the worksheet. Closure: - Participate in class discussion on the quiz. - Participate in class discussion about the PhET simulation on Hooke’s Law.	Summative: Friction and MBS Quiz	Chromebooks. Test Dividers.	- Friction and MBS Quiz. - PhET simulation Hooke’s Law worksheet.

	- Ask students to share out about what they learned from the PhET simulation on Hooke's Law.				
13	Springs and Hooke's Law Intro: - Attendance question - Run through LO's for today's class. - Video on Hooke's Law - Applications and why we care about Hooke's Law and springs. Body: - Notes: Hooke's Law and springs. - Practice questions on Hooke's Law - Pre-lab for Spring Lab. Closure: - Review Hooke's Law and Springs. - Discuss the Spring Lab we are doing next class. I will give them some time before the lab starts to finish up their pre-lab questions.	Intro: - Students will answer the attendance question. - They will watch the video on Hooke's Law and participate in the class discussion about it. Body: - Students will follow along with notes and write them in their personal notebooks. - For remaining class time, students will do practice questions and work on their pre-lab for the upcoming Spring Lab next class. Closure: - Listen to wrap up and put pre-lab in a safe place for the Spring Lab next class.	N/A	N/A	- Teacher notes: Hooke's Law and Springs - iPad (or whatever I am writing the notes on) - Hooke's Law practice questions - Spring Lab pre-lab
14	Spring Lab Intro: - Review Hooke's Law and content from last class and LO's for today's class. - Give 10 minutes to finish pre-lab questions. - Review lab procedure. Body:	Intro: - Listen to review from last class. - Finish pre-lab. - Listen to review of lab procedure. Body:	Formative: Spring Lab Report	Spring Lab materials	- Spring Lab worksheet.

	- Spring Lab - Once all the lab activities are done, instruct students to complete their lab reports and hand them in. Closure: - Make sure everything is cleaned up and put away. - Hand in their lab report. - Review LO's for next class.	- Students will complete the Spring Lab and hand in their lab report. Closure: - Listen to wrap up. - Make sure their materials are put away and their lab reports are handed in.			
15	Universal Gravitation (UG) Intro: - Attendance question - Review LO's for this class - Look at Earth and other planets - Introduce UG and why it matters. Body: - Notes: Universal Gravitation - Practice questions on UG Closure: - Review concepts from this class and talk about the project they'll be doing next class.	Intro: - Listen to the content that will be on the quiz. Body: - Students will follow along with notes and write them in their personal notebooks. - For remaining class time, students will do practice questions. Closure: - Listen to wrap up.	N/A	N/A	- Teacher notes: UG - iPad (or whatever I am writing the notes on) - UG practice questions
16	Designing a Planet Project Intro: - Review UG - Look at activity specifications. Body: - Work on Designing a Planet Project. Closure:	Intro: - Listen to review of UG and project specifications. Body: - Students will work on their planet project and hand it in when it's done. Closure:	Formative: Designing a Planet Project	- Art supplies for planet posters/designs.	- Designing a Planet project specifications.

	- Share out with the class about the different planets people designed. - <i>Unit test will be happening after spring break.</i> - Happy Spring Break!	- Listen to wrap up. - Take note of the unit test happening after spring break.			
17	Review for Unit Test Intro: - Ask students about their breaks. - Attendance question - Run through the content that will be on the test Body: - Go over the structured review sheet: 1. 10-minute force identification and FBD and net force review 2. 5-minute Newton's Laws review 3. 5-minute Friction 4. 10-minute MBS 5. 5-minute Springs 6. 5-minute UG. - Remaining time used to work on practice questions and individual review. Closure: - Next class will also be review so make sure to put their review sheets in a safe place.	Intro: - Listen to the content that will be on the quiz. Body: - Students will follow along with structured review notes with the handout that is provided to them. - For remaining class time, students will do review questions to prepare for the upcoming quiz. Closure: - Listen to wrap up. - Put notes in a safe place.	N/A	N/A	- Unit Test review sheet. - Unit Test review practice questions.
18	Review for Unit Test Intro: - Hand out index cards and get students to write one thing	Intro: - Get index card and write something they don't understand on it.	N/A	Index Cards	- Unit Test review sheet. - Unit Test review

	from this unit they don't feel good about (anonymous) - Collect the index cards again and distribute them at random. Ask students to rate the content of their card from 1-5 based on how much they agree with it. - Do this 2-3 more times. - The index card with the highest score will be what we focus on for a review question during this class. Body: - Practice questions and individual review. - Class review of the index card that got the highest ranking. Closure: - One more review class before the unit test so make sure to study and review and bring some questions to the next class.	- Hand it back to me and receive a new index card. - Rate the new index card on a scale of 1-5 (1 being disagree and 5 being agree). - Participate in this 2-3 more times. Body: - Students will work on practice questions and individual review. - Participate in the class review of the index card that got the highest ranking. Closure: - Listen to wrap up and think of some questions they want answered next class before the unit test.			practice questions.
19	Review for Unit Test Intro: - Attendance question - Review content that will be on the Unit Test Body: - Practice questions and individual review. Closure: - Unit Test is next block so make sure to bring a calculator, a pencil, and an eraser!	Intro: - Answer attendance question - Listen to the content that will be on the test. Body: - Students will work on practice questions and individual review. Closure: - Listen to wrap up and bring necessary things for Unit Test Next Block.	N/A	N/A	- Unit Test review sheet. - Unit Test review practice questions. - Additional Review questions.

20	Unit Test Intro: - 5 minutes to get settled and put things away - Talk about how the test will be marked □ break down of calculation questions and the necessity of showing all of their work for partial marks. Body: - Students write the Unit Test. Closure: - Students will hand in their tests and make sure all they have answered every question they are able to.	Intro: - Keep their pencils, erasers, and calculators out. Everything else must be put away and phones on silent. Body: - Write the Unit Test. Closure: - Hand in Unit Test.	Summative: Dynamics Unit Test	N/A	- Dynamics Unit Test - Dynamics Unit Test Formula Sheet
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Resources:

Lesson 4: - https://www.youtube.com/watch?v=351ColcC1Ps □ actual helicopter rescue - https://www.youtube.com/watch?v=RVDc1h7Xcso □ BC flooding and rescue video CTV news PhET Simulations: https://phet.colorado.edu/sims/html/forces-and-motion-basics/latest/forces-and-motion-basics_en.html
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Extensions to Unit:

- Increase difficulty of questions, not by making the numbers harder, but by increasing the layering of concepts (i.e., three mass pulley systems, variable forces instead of constant forces) - Introduce more engineering challenges that apply their learning (i.e., design a surface that maximizes or minimizes friction and justify it mathematically) - Biomechanics Applications (i.e., analyze the forces of a knee joint, model ground reaction force during jumping, or estimate tension in the Achilles tendon)

Reflections and Revisions

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