

**Science
Physics
Unit 2: Dynamics**

Essential Understandings	<ul style="list-style-type: none"> ▪ Causation: Nothing “just happens.” Everything is caused. ▪ Interrelatedness: Everything in the universe is connected to everything else in the universe. ▪ Dynamism: Everything is changing in some way all the time. ▪ Entropy: Change has direction. Generally, simple precedes complex. Generally, order changes toward disorder. ▪ Uniformitarianism: The way the universe works today is the way it worked yesterday and the way it will work tomorrow.
Essential Questions	<ul style="list-style-type: none"> ▪ How does friction affect the motion of objects? ▪ How does Newton’s First Law describe the behavior of objects with respect to inertia? ▪ How does Newton’s Second Law describe the acceleration of objects? ▪ How does Newton’s Third Law describe the interaction of objects?
Essential Knowledge	<ul style="list-style-type: none"> ▪ Mass is a measure of inertia. ▪ Only a net force will change the state of motion of an object. ▪ All change in motion is caused by interactions between objects.
Vocabulary	<ul style="list-style-type: none"> ▪ <u>Terms:</u> <ul style="list-style-type: none"> ○ equilibrium, force, friction, inertia, mass, net force, Newton, Newton’s first law, normal force, weight, air resistance, Newton’s second law, pressure, terminal speed, terminal, velocity, action force, reaction force, interaction, Newton’s third law
Essential Skills	<ul style="list-style-type: none"> ▪ Use mathematics to calculate force, mass, and acceleration. ▪ Analyze force diagrams to determine net forces. ▪ Determine if objects are in equilibrium.
Related Maine Learning Results	<p><u>Science and Technology</u> D. The Physical Setting D4. Force and Motion Students understand that the laws of force and motion are the same across the universe.</p> <ol style="list-style-type: none"> a. Describe the contribution of Newton to our understanding of force and motion, and give examples of and apply Newton’s three laws of motion and his theory of gravitation. b. Explain and apply the ideas of relative motion and frame of reference.
Sample Lessons And Activities	<ul style="list-style-type: none"> ▪ Word problem worksheets ▪ Dynamics Labs (i.e., acceleration, net forces) ▪ Lectures ▪ Motion demonstrations ▪ Motion Videos

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Sample Classroom Assessment Methods	<ul style="list-style-type: none">▪ Chapter tests▪ Dynamic quizzes▪ Laboratory reports
Sample Resources	<ul style="list-style-type: none">▪ <u>Publications:</u><ul style="list-style-type: none">○ <u>Physical Science</u> - Glencoe○ MARVEL Data bases○ GALE Resource Data bases▪ <u>Videos:</u><ul style="list-style-type: none">○ <u>The Mechanical Universe</u>○ <u>ESPN Sports Figures</u>