

Amplify - 8th Grade Science Curriculum Map

Overview of Grade Eight Integrated Science Course

[Unit: Harnessing Human Energy](#)

[Unit: Force and Motion](#)

[Unit: Force and Motion Engineering Internship](#)

[Unit: Magnetic Field](#)

[Unit: Light Waves](#)

[Unit: Earth, Moon, and Sun](#)

[Unit: Natural Selection](#)

[Unit: Natural Selection Engineering Internship](#)

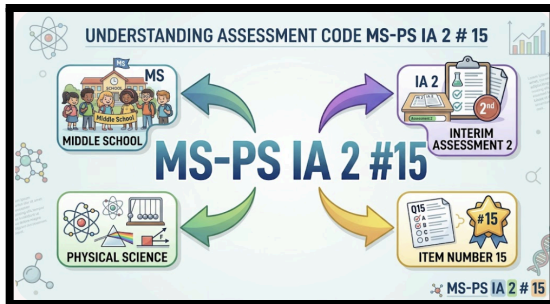
[Unit: Evolutionary History](#)

NEW!!!

CAST Interim Assessment alignment for each unit was added in the green section. Connect with your testing coordinator for Interim Assessment access via the CAASPP website

Resources from the publisher's textbook

Resources from outside sources



Unit: Harnessing Human Energy

Time	Content, Language, and ISTE Standards	Learning Targets	Assessments	Curriculum and Unit Resource Connections
Chapter 1 4 days Chapter 2 3 days Chapter 3 4 days	MS-PS3-1 MS-PS3-2 MS-PS3-5 MS-ESS3-1 MS-ETS1-1  ELA/ELD Framework  ISTE Standards	I can analyze and interpret data, both qualitative and quantitative, from various sources. Proficiency Scale I can develop models to explain phenomena. Proficiency Scale I can engage in argumentation to construct convincing arguments that support or refute claims about the natural or created world with relevant and sufficient evidence. Proficiency Scale I can construct explanations supported by multiple sources of evidence consistent with scientific ideas, principles, and theories. Proficiency Scale	Formative Assessment Lesson 1.2, Act 3 Lesson 1.3, Act 4 Lesson 1.4, Act 3 Lesson 1.4, Act 4 Lesson 2.1, Act 3 Lesson 2.3, Act 2 Lesson 3.1, Act 3 Lesson 3.3, Act 2	Anchor Phenomenon In this unit, students assume the role of student energy scientists in order to help a team of rescue workers with an energy problem. Students work to find a way to get energy to the batteries in the rescue workers' electrical devices, even during power outages, and this serves as the design problem for the unit. This problem serves as the anchor phenomenon that students focus on throughout the unit. Unit (Guiding) Questions How can rescue workers get energy for their equipment during rescue missions? ● Chapter 1 (4 lessons): ○ What is energy and why does it matter to the rescue team? ● Chapter 2 (3 lessons): ○ How can the rescue workers get energy to the batteries in their equipment during rescue missions? ● Chapter 3 (4 lessons): ○ What is the best way for rescue workers to capture energy from their bodies' motion during rescue missions?



		I can define problems that can be solved with scientific knowledge. Proficiency Scale	CAST Interim Assessment for Harnessing Human Energy MS-PS IA 1 # 1,2 MS-PS IA 2 # 1, 4, 6, 10, 11, 12, 13, 14, 15 MS-ESS IA 2 # 8, 11 Concord NGSS Assessments	<u>Supplemental Resources</u> <u>Supplemental Resources</u> MS-PS3-1 • Energy Skate Park: Basics (PhET) • Energy Skate Park (PhET)
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Unit: Force and Motion Docking Failure in Space				
Time	Content, Language, and ISTE Standards	Learning Targets	Assessments	Curriculum and Unit Resource Connections
Chapter 1 6 days	MS-PS2-1	I can design solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories. Proficiency Scale	Formative Assessment Lesson 1.1, Act 1-3 Lesson 1.4, Act 3 Lesson 1.6, Act 3 Lesson 2.1, Act 2 Lesson 2.2, Act 2 Lesson 2.2, Act 3 Lesson 2.3, Act 3 Lesson 3.1, Act 2 Lesson 3.1, Act 3 Lesson 3.2, Act 4 Lesson 3.4, Act 4 Lesson 3.4, Act 4 Lesson 4.1, Act 4	Anchor Phenomenon: In this unit, students engage in authentic work as they take on the role of student physicist working for the fictional Universal Space Agency (USA). They are called upon to assist in the investigation of one recent mishap. Students apply their developing knowledge of force and motion to explain why a space pod failed to dock at the space station as planned. This mystery serves as the anchor phenomenon for the unit.
Chapter 2 5 days	MS-PS2-2			
Chapter 3 4 days	MS-PS3-1	I can plan and carry out investigations to collect evidence to develop explanations and/or solutions. Proficiency Scale	Summative Assessment Lesson 4.3 Lesson 4.4, Act 1-3	Unit (Guiding) Questions: What happened in the missing seconds when the space pod should have docked with the space station? ● Chapter 1 (6 lessons): ○ What caused the pod to change directions? ● Chapter 2 (5 lessons): ○ The thrusters on the ACM pod exerted the same strength force as thrusters on other pods, so why did this pod move differently? ● Chapter 3 (4 lessons): ○ After the collision, how does the pod's motion compare to the motion of the space station? ● Chapter 4 (4 lessons): ○ Students apply what they learn to a new questions - Why did vehicle 2 fall off the cliff in Clair's test of the collision scene, but Vehicle 2 did not fall off the cliff in the film <i>Iceworld Revenge</i>?
Chapter 4 4 days	 ELA/ELD Framework  ISTE Standards			

				Design Problem <i>(See Force and Motion Engineering Internship: Pods for Emergency Supplies)</i>
			CAST Interim Assessment for Force and Motion MS-PS IA 1 # 1 MS-PS IA 2 # 7 Concord NGSS Assessments	Supplemental Resources Supplemental Simulations and Videos MS-PS2-1 • Newton's Third Law - Complete Toolkit • Collisions Lab (PhET) MS-PS2-2 • Forces and Motion: Basics (PhET) • Forces in 1 Dimension (PhET) • Forces and Motion (PhET) • The Moving Man (PhET) MS-PS2-4 • Gravity and Orbits (PhET) • Gravity Force (PhET) MS-PS3-1 • Energy Skate Park: Basics (PhET) • Energy Skate Park (PhET) Supplemental Lessons & Labs MS-PS2-4 • Gravity and Orbits (PhET)

Unit: Force and Motion Engineering Internship
Pods for Emergency Supplies

Time	Content, Language, and ISTE Standards	Learning Targets	Assessments	Curriculum and Unit Resource Connections
Chapter 1 8 days	MS-ETS1-1 MS-ETS1-2 MS-ETS1-3 MS-ETS1-4 MS-PS2-1 MS-PS2-2 MS-PS2-4  ELA/ELD Framework  ISTE Standards	I can define problems that can be solved with scientific knowledge. Proficiency Scale I can engage in argumentation to construct convincing arguments that support or refute claims about the natural or created world with relevant and sufficient evidence. Proficiency Scale I can analyze and interpret data, both qualitative and quantitative, from various sources. Proficiency Scale I can develop models to explain phenomena. Proficiency Scale I can design solutions supported by multiple	<u>Summative Assessment</u>	<u>Anchor Phenomenon (Design Problem):</u> Design a supply drop pod for areas affected by natural disaster. <u>Unit (Guiding) Questions</u> How can we design delivery pods that are damaged as little as possible when dropped? • Chapter 1 (9 lessons): <u>Design Problem</u> Students acting as mechanical engineering interns to design pods of emergency supplies that will be dropped in areas experiencing a natural disaster.
			CAST Interim Assessment for Force and Motion Engineering MS-PS 2 # 1, 2, 7, 10, 11, 12, 13, 14, 15 MS-LS IA 2 # 9 MS-ESS IA 2 # 4 Concord NGSS Assessments	<u>Supplemental Resources</u> MS-PS2-1 • Collisions Lab (PhET) MS-PS2-2 • Forces and Motion: Basics (PhET) • Forces in 1 Dimension (PhET) • Forces and Motion (PhET) • The Moving Man (PhET) <u>Supplemental Lessons & Labs</u> MS-PS2-4 • Gravity and Orbits (PhET)

		sources of evidence consistent with scientific ideas, principles, and theories. Proficiency Scale I can plan and carry out investigations to collect evidence to develop explanations and/or solutions. Proficiency Scale		

Unit: Magnetic Fields Launching a Spacecraft				
Time	Content, Language, and ISTE Standards	Learning Targets	Assessments	Curriculum and Unit Resource Connections
Chapter 1 6 days Chapter 2 4 days Chapter 3 5 days Chapter 4 4 days	MS-PS2-3 MS-PS2-4 MS-PS2-5 MS-PS3-1 MS-PS3-2 MS-PS3-5  ELA/ELD Framework  ISTE Standards	I can ask questions to understand better and/or investigate scientific phenomena. Proficiency Scale I can engage in argumentation to construct convincing arguments that support or refute claims about the natural or created world with relevant and sufficient evidence. Proficiency Scale I can plan and carry out investigations to collect evidence to develop explanations and/or solutions. Proficiency Scale I can analyze and interpret data, both qualitative and quantitative, from various sources. Proficiency Scale	Formative Assessment Lesson 1.1, Act 1-3 Lesson 1.4, Act 2 Lesson 1.4, Act 3 Lesson 1.6, Act 1 Lesson 2.1, Act 2 Lesson 2.1, Act 3 Lesson 2.4, Act 4 Lesson 3.2, Act 3 Lesson 3.3, Act 3 Lesson 4.2, Act 4 Lesson 4.3, Act 3 Summative Assessment Lesson 4.3 Lesson 4.4, 1-3	Anchor Phenomenon In the role of physicists working for the Universal Space Agency, a fictional agency that resembles NASA, students investigate the unexpected results from one test launch of a magnetic spacecraft. While scientists at the USA were testing the launch system, they found that the spacecraft in their third test traveled much faster than expected, and it's this unexpected outcome that serves as the anchor phenomenon for student investigations in the unit. Unit (Guiding) Questions Why did the tests of a magnetic spacecraft launcher not go as planned? • Chapter 1 (6 lessons): ○ How can the launcher make the model spacecraft move without touching it? • Chapter 2 (4 lessons): ○ Chapter Question: Where did the energy to launch the model spacecraft come from? • Chapter 3 (5 lessons): ○ Why was there so much more potential energy stored in the launcher system on Wednesday than on Tuesday? • Chapter 4 (4 lessons): ○ Students apply what they learn to a new question - Which design will launch the roller coaster car the fastest? ○

		I can develop models to explain phenomena. Proficiency Scale I can engage in argumentation to construct convincing arguments that support or refute claims about the natural or created world with relevant and sufficient evidence. Proficiency Scale	CAST Interim Assessment for Magnetic Field MS-PS IA 1 # 1, 2, 6, 8 MS-PS IA 2 # 2, 4, 6	<u>Supplemental Resources</u> MS-PS3-1 • Energy Skate Park: Basics (PhET) • Energy Skate Park (PhET) <u>Supplemental Lessons & Labs</u> MS-PS2-3 • Static Electricity MS-PS2-4 • Gravity and Orbits • Gravity Force • My Solar System Gravity Force Lab MS-PS2-5 Charges and Fields

Unit: Light Waves Skin Cancer in Australia				
Time	Content, Language, and ISTE Standards	Learning Targets	Assessments	Curriculum and Unit Resource Connections
Chapter 1 4 days	MS-PS4-1	I can use mathematical and computational thinking in order to identify patterns in data sets and use mathematical concepts to support explanations and arguments. Proficiency Scale	Formative Assessment Lesson 1.1, Act 1-3 Lesson 1.2, Act 3 Lesson 1.3, Act 4 Lesson 1.4, Act 2 Lesson 2.1, Act 2 Lesson 2.2, Act 2 Lesson 2.2, Act 3 Lesson 2.4, Act 2 Lesson 3.2, Act 2 Lesson 3.2, Act 3 Lesson 3.3 Act 3 Lesson 4.3 Act 3	Anchor Phenomenon Taking on the role of student spectroscopists working for the fictional Australian Health Alliance, students investigate why Australia's cancer rate is so high, analyzing real data that scientists might consider. This problem serves as the anchor phenomenon that students focus on throughout the unit.
Chapter 2 4 days	MS-PS4-2			
Chapter 3 6 days	MS-PS4-3	I can develop, use, and evaluate models to explain phenomena. Proficiency Scale		Unit (Guiding) Questions Why is there a higher rate of skin cancer in Australia than in other parts of the world? • Chapter 1 (4 lessons): ◦ How does light from the sun cause skin cancer? • Chapter 2 (4 lessons): ◦ How can the same amount of sunlight cause different rates of skin cancer? • Chapter 3 (6 lessons): ◦ Why does Australia get more ultraviolet light than other parts of the world? • Chapter 4 (4 lessons): ◦ Students apply what they learn to a new question - Can the crabs see the plankton they eat near the ocean floor?
Chapter 4 4 days	MS-LS1-1			
	MS-LS1-2	I can obtain, evaluate and communicate info that critiques and evaluates the merit, accuracy, and validity of ideas and methods. Proficiency Scale	Summative Assessment Lesson 4.3 Lesson 4.4, Act 1-3	
	MS-LS1-6			
	MS-LS1-8	I can plan and carry out investigations to collect evidence to develop explanations and/or		
	MS-ESS3-5			
				
	ELA/ELD Framework			
				
	ISTE Standards			

		solutions. Proficiency Scale I can construct explanations supported by multiple sources of evidence consistent with scientific ideas, principles, and theories. Proficiency Scale I can ask questions to understand better and/or investigate scientific phenomena. Proficiency Scale	CAST Interim Assessment for Light Waves MS-PS IA 1 # 3, 5, 9 MS-PS IA 2 # 9, 10, 11, 12 MS-LS IA 1 # 1, 6 MS-LS IA 2 # 12, 13, 14, 15 MS-ESS IA 1 # 8 MS-ESS IA 2 # 1 Concord NGSS Assessments SNAP: Sound Wave Assessment (MS-PS4-1)	<u>Supplemental Resources</u> MS-PS4-2 • Bending Light (PhET) • Sounds (PhET - Java) • Intro to Waves (PhET) • Waves Interference (PhET) • Waves on a String (PhET)

Unit: Earth, Moon and Sun An Astrophotographer's Challenge				
Time	Content, Language, and ISTE Standards	Learning Targets	Assessments	Curriculum and Unit Resource Connections

Chapter 1 4 days	MS-ESS1-1	I can develop, use, and evaluate models to explain phenomena. Proficiency Scale	Formative Assessment Lesson 1.2, Act 3 Lesson 1.3, Act 3 Lesson 1.4, Act 2 Lesson 2.1, Act 2 Lesson 2.1, Act 3 Lesson 2.2, Act 2 Lesson 2.3, Act 3 Lesson 2.4, Act 3 Lesson 2.5, Act 2 Lesson 3.1, Act 3 Lesson 3.2, Act 2 Lesson 3.2, Act 3 Lesson 3.3, Act 2 Lesson 3.4, Act 3 Lesson 4.3, Act 3	Anchor Phenomenon The astrophotographer can only take pictures of specific features on the Moon at certain times, and this serves as the anchor phenomenon for the unit.
Chapter 2 7 days	MS-ESS1-2			
Chapter 3 4 days	MS-ESS1-3	I can analyze and interpret data, both qualitative and quantitative, from various sources. Proficiency Scale		
Chapter 4 4 days	 MS-PS2-4 ELA/ELD Framework  ISTE Standards			
			Summative Assessment Lesson 4.3 Lesson 4.4, Act 1-3	
			CAST Interim Assessment for Earth, Moon, and the Sun MS-PS IA 2 # 2 MS-ESS IA 1 # 2, 7 MS-ESS IA 2 # 3, 6	Supplemental Resources MS-PS2-4 • My Solar System (PhET) ◦ uses flash • Gravity Force Lab (PhET)

			Concord NGSS Assessments	MS-PS2-3 • Static Electricity (PhET) MS-PS2-5 • Charges and Fields (PhET) MS-ESS1-2 • Gravity and Orbits (PhET) <u>Supplemental Lessons & Labs</u> MS-ESS1-1 • Eclipse Interactive (with quiz)

Unit: Natural Selection Poisonous Newts				
Time	Content, Language, and ISTE Standards	Learning Targets	Assessments	Curriculum and Unit Resource Connections
Chapter 1 6 days	MS-LS2-4	I can engage in argumentation to construct convincing arguments that support or refute claims about the natural or created world with relevant and sufficient evidence. Proficiency Scale	Formative Assessment Lesson 1.3, Act 4 Lesson 1.4, Act 2 Lesson 1.5, Act 3 Lesson 1.6, Act 3 Lesson 2.3, Act 2 Lesson 2.3, Act 3 Lesson 2.4, Act 2 Lesson 3.1, Act 2 Lesson 3.1, Act 3 Lesson 3.2, Act 2 Lesson 3.3, Act 2 Lesson 4.2, Act 3	Anchor Phenomenon In the role of student biologists, students investigate what caused this newt population to become more poisonous - which serves as the anchor phenomenon for the unit. Unit (Guiding) Questions What caused the newt population in Oregon State Park to become more poisonous? • Chapter 1 (6 lessons): ◦ What caused this newt population to become more poisonous? • Chapter 2 (6 lessons): ◦ How did the trait for increased poison level become more common in the newt population? • Chapter 3 (3 lessons): ◦ How did a poisonous-level trait that wasn't always present in the newt population become the most common trait? • Chapter 4 (5 lessons): ◦ Students apply what they learn to new questions - What caused the stickleback population to have less armor and become faster? Design Problem <i>(See Natural Selection Engineering Internship: Fighting Drug-Resistant Malaria)</i>
Chapter 2 6 days	MS-LS3-1			
Chapter 3 3 days	MS-LS4-4	I can develop, use, and evaluate models to explain phenomena. Proficiency Scale	Summative Assessment Lesson 4.3 Lesson 4.4	
Chapter 4 5 days	MS-LS4-5 MS-LS4-6 MS-ESS3-4			
	 ELA/ELD Framework  ISTE Standards	I can construct explanations supported by multiple sources of evidence consistent with scientific ideas, principles, and theories. Proficiency Scale I can obtain, evaluate and communicate info that critiques and evaluates the merit, accuracy, and		

		validity of ideas and methods. Proficiency Scale I can use mathematical and computational thinking in order to identify patterns in data sets and use mathematical concepts to support explanations and arguments. Proficiency Scale I can engage in argumentation to construct convincing arguments that support or refute claims about the natural or created world with relevant and sufficient evidence. Proficiency Scale	CAST Interim Assessment for Natural Selection MS-LS IA 1 # 1, 4, 7, 8, 10, 11, 12, 13, 14, 15 MS-LS IA 2 # 6, 7, 8 MS-ESS IA 1 # 9, 11, 12, 13 Concord NGSS Assessments	<u>Supplemental Resources</u> MS-LS3-1 • Natural Selection: Bunnies take over the world (PhET) • Not for iPad or Chromebook <u>Supplemental Lessons and Labs</u> MS-LS4-3 • Arthropod bodies have similar structures which can be Hox Genes • How Genes Direct Development • Learn Genetics: Homeotic Genes and Body Patterns • Homologous structures in arms • NOVA Guess the Embryo • NOVA The Zoo of You - (companion lesson) MS-LS4-4 • Clipbirds - Bird survival • What is the evidence for evolution • Enrichment - Natural Selection patterns • Natural selection of bacteria with beans • Problem with Antibacterial Products • Darwin's Finches explained with 40 years of research • Evolutionary Technology MS-LS4-5 • Antibiotic Resistance • Popped Secret • Genetically Modified Corn • Cloning Activities

Unit: Natural Selection Engineering Internship
Fighting Drug-Resistant Malaria

Time	Content, Language, and ISTE Standards	Learning Targets	Assessments	Curriculum and Unit Resource Connections
Chapter 1 9 days	MS-ETS1-1 MS-ETS1-2 MS-ETS1-3 MS-ETS1-4 MS-LS4-4 MS-LS4-6 MS-LS3-1  ELA/ELD Framework  ISTE Standards	I can define problems that can be solved with scientific knowledge. Proficiency Scale I can engage in argumentation to construct convincing arguments that support or refute claims about the natural or created world with relevant and sufficient evidence. Proficiency Scale I can analyze and interpret data, both qualitative and quantitative, from various sources. Proficiency Scale I can develop, use, and evaluate models to explain phenomena. Proficiency Scale	<u>Summative Assessment</u>	<u>Anchor Phenomenon (Design Problem)</u> Design a malaria treatment that minimizes drug-resistant malaria. <u>Unit (Guiding) Questions</u> How can we design treatments for malaria that don't lead to drug resistance? • Chapter 1 (10 days): <u>Design Problem</u> Students design a malaria treatment that minimizes drug-resistant malaria.
			CAST Interim Assessment for Natural Selection Engineering MS-LS IA 1 # 4, 8 MS-LS IA 2 # 6, 7, 9 MS-ESS IA 1 # 10, 11, 12, 13, 14-15 Concord NGSS Assessments	<u>Supplemental Resources</u> MS-LS3-1 • Natural Selection: Bunnies take over the world (not for iPad or Chromebook) <u>Supplemental Lessons and Labs</u> MS-LS4-4 • Clipbirds - Bird survival • What is the evidence for evolution • Enrichment - Natural Selection patterns • Problem with Antibacterial Products • Darwin's Finches explained with 40 years of research



		I can construct explanations supported by multiple sources of evidence consistent with scientific ideas, principles, and theories. Proficiency Scale I can use mathematical and computational thinking in order to identify patterns in data sets and use mathematical concepts to support explanations and arguments. Proficiency Scale		- Video (interactive video with quiz questions available) • Evolutionary Technology
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Unit: Evolution History
Advising a Paleontology Museum

Time	Content, Language, and ISTE Standards	Learning Targets	Assessments	Curriculum and Unit Resource Connections
Chapter 1 5 days	MS-ESS1-4	I can construct explanations supported by multiple sources of evidence consistent with scientific ideas, principles, and theories. Proficiency Scale	Formative Assessments Lesson 1.3, Act 2 Lesson 1.3, Act 3 Lesson 1.4, Act 3 Lesson 1.5, Act 4 Lesson 2.2, Act 2 Lesson 2.3, Act 2 Lesson 2.5, Act 2 Lesson 3.1, Act 2 Lesson 3.2, Act 3 Lesson 3.3, Act 3 Lesson 3.3, Act 4 Lesson 4.2, Act 3	Anchor Phenomenon Students will take on the role of student paleontologists investigating a mystery fossil, which serves as the anchor phenomenon for the unit. Unit (Guiding) Questions Is this Mystery Fossil more closely related to wolves or to whales? ● Chapter 1 (5 lessons): ○ Where in the museum does this new fossil belong? ● Chapter 2 (7 lessons): ○ How did wolves, whales, and the Mystery Fossil become so different from their common ancestor population? ● Chapter 3 (3 lessons): ○ How can we tell if the Mystery Fossil is more closely related to wolves or to whales? ● Chapter 4 (4 lessons): ○ Students apply what they learn to a new question - Is the Tometti fossil more closely related to ostriches or to crocodiles?
Chapter 2 6 days	MS-LS4-1			
Chapter 3 3 days	MS-LS4-2	I can analyze and interpret data, both qualitative and quantitative, from various sources. Proficiency Scale	Summative Assessments Lesson 4.3 Lesson 4.4, Act 1-3	Supplemental Resources MS-ESS1-4 ● GeoSleuth - Murder Mystery ● Geological Time Scales - Lessons Options ● Geological Time Scale - Adding
Chapter 4 4 days	 ELA/ELD Framework  ISTE Standards			

			MS-ESS IA 2 # 5 Concord NGSS Assessments	• Geological Time Scale - Interactive • Fossil layer relative dating - Card sorting activity • Foraminifera data