8th Grade Science
Long Range Plans

Trimester 1

Physics

Trimester 2

Astronomy

Biology

Trimester 3

Biology

Year in Review

Computer Science

August

Waves
Sound Waves
Light Waves

Lessons 8/5/20 - 8/25/20

1	Teacher Showcase/Student Showcase Connection Project
2	Bitmoji Science Classroom
3	Sound Waves Hearing Test Lab
4	Animal Hearing Ability, Journey of Sound
5	Amplify (1.2) Light Waves: Lights & Energy & Sunlght Virtual Lab
6	Amplify Light Waves: Virtual Laser Lab
7	Amplify Light Waves: Virtual Lightbulb Lab

Standards: Click on Standard Hyperlink for More Details

MS-PS4-1 Waves and their Applications in Technologies for Information Transfer

Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.

MS-PS4-2 Waves and their Applications in Technologies for Information Transfer

Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.

Lessons 8/26/20 - 9/14/20

8	Light Waves: Transmission, Reflection, Absorption Lab
9	Amplify (1.3) Explaining Changes from Light
10	Amplify (2.1) Investigating Light Sources, Wave Properties
11	Amplify (2.5) Analyzing Evidence About Melanin and UV Light
12	Pixton Creative Project: Explaining Austrailia's Skin Cancer Rate
13	Review/Practice Test
14	Amplify Light Waves Final Test

Standards: Click on Standard Hyperlink for More Details

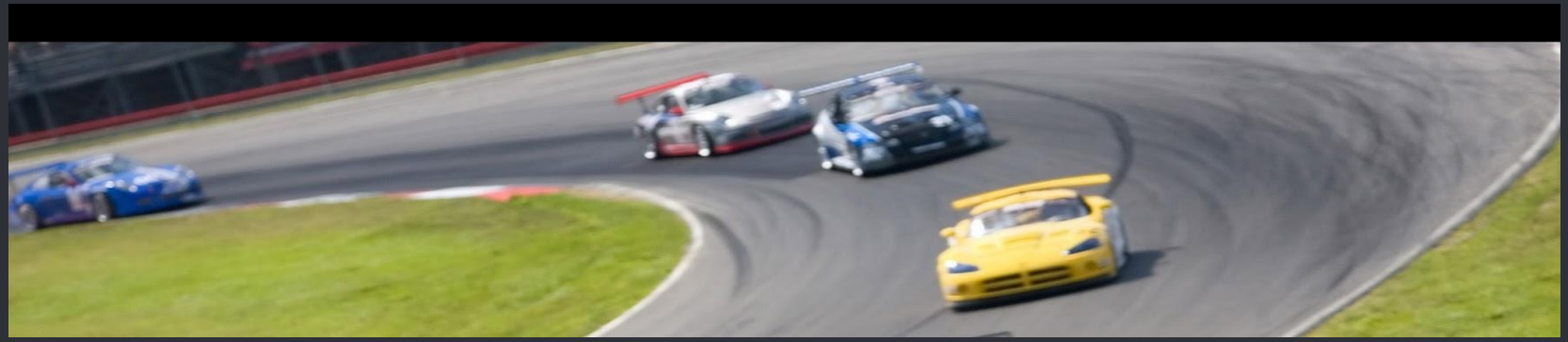
MS-PS4-1 Waves and their Applications in Technologies for Information Transfer

Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.

MS-PS4-2 Waves and their Applications in Technologies for Information Transfer

Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.

September



Force and Motion

Force and Motion Engineering

Lessons 9/15/20 - 9/24/20

1	Amplify (1.2) Unit Intro Force and Motion Describing Changes in Motion
2	Amplify (1.3) Investigating the Direction of Force
3	Newton's Laws of Motion
4	Amplify (2.3) Explaining Mass, Force, and Velocity
5	Amplify Engineering Internship: Virtual Design Pods
6	Amplify Engineering Internship: Virtual Design Pods Final Design
7	Investigating Brain Injury, Helmets, & Amplify (3.3) Effect of Collisions

Standards: Click on Standard Hyperlink for More Details

MS-PS2-2 Motion and Stability: Forces and Interactions
Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object

MS-PS3-1 Energy
Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.

MS-PS2-1 Motion and Stability: Forces and Interactions
Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.

MS-PS3-2 Energy
Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.

Lessons 9/25/20 - 10/5/20

8	Ampify (3.4) Reasoning About the Pod's Motion, Solve Unit Question
9	Pixton Creative Project: Forces and Motion
10	Review/Practice Test
11	Amplify Forces and Motion Final Test
12	Natural Forces: The Great California Shakeout (10/15/20): Earthquakes and Plate Tectonics Simulation

Standards: Click on Standard Hyperlink for More Details

MS-PS2-2 Motion and Stability: Forces and Interactions
Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object

MS-PS3-1 Energy
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MS-PS2-1 Motion and Stability: Forces and Interactions
Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.

MS-PS3-2 Energy
Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.

October

Electromagnetism
Magnetic Fields

Lessons 10/6/20 -10/16/20

1	Amplify (1.2) Unit Intro Magnetic Fields, Space Agency Magnetic Launch Program: Introducing the Magnetic Spacecraft
2	Amplify (1.5) Investigating Magnetic Field Lines Simulation
3	Static Electricity Virtual Balloon Lab
4	Kinetic vs.Potential Energy Activity
5	Amplify (2.3) Magnetic Fields Magentic Force and Potential Energy
6	Amplify (3.3) Magenetic Fields Modeling the Spacecraft Launches
7	Pixton Creative Project: Electromagnetism

Standards: Click on Standard Hyperlink for More Details

MS-PS2-5 Motion and Stability: Forces and Interactions

Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.

MS-PS2-3 Motion and Stability: Forces and Interactions

Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.

Lessons 10/19/20 - 10/30/20

8	Review/Practice Test
9	Amplify Magentic Fields Final Test
10	Chemistry Review (Physical and Chemical Change)
11	Chemistry Review (Bioluminescence/Chemiluminescence)

Standards: Click on Standard Hyperlink for More Details

MS-PS2-5 Motion and Stability: Forces and Interactions

Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.

MS-PS2-3 Motion and Stability: Forces and Interactions

Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.

November

Astronomy
Earth, Moon, Sun

Lessons 11/2/20 - 11/18/20

1	Objects in Our Solar System Lab & Universe Scale
2	Amplify (1.2) Earth, Moon, and Sun Unit Intro: Picturing the Moon
3	Amplify (1.4) Simulating Light and Dark on the Moon
4	Why We Have Seasons Activity
5	Amplify (2.3) Simulating Moon Phases
6	Amplify (2.5) Moon Phases, Moon Phases Simulation
7	Amplify (3.3) Gathering Evidence About Lunar Eclipses

Standards: Click on Standard Hyperlink for More Details

MS-PS2-4 Motion and Stability: Forces and Interactions
Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.

MS-ESS1-1 Earth's Place in the Universe
Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.

MS-ESS1-2 Earth's Place in the Universe
Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.

MS-ESS1-3 Earth's Place in the Universe
Analyze and interpret data to determine scale properties of objects in the solar system.

Lessons 11/19/20 - 12/4/20

8	Pixton Creative Project: Astronomy
9	Review/Practice Test
10	Amplify Astronomy Final Test

Standards: Click on Standard Hyperlink for More Details

MS-PS2-4 Motion and Stability: Forces and Interactions

Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.

MS-ESS1-1 Earth's Place in the Universe

Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.

MS-ESS1-2 Earth's Place in the Universe

Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.

MS-ESS1-3 Earth's Place in the Universe

Analyze and interpret data to determine scale properties of objects in the solar system.

December

Intro to Life Science

Lessons 12/7/20 - 12/18/20

1	Photosynthesis Lab
2	Ecosystems Lab
3	Carbon Cycle Lab
4	Biotic and Abiotic Factors in Ecosystems
5	Biotic and Abiotic Factors in Ecosystems Quiz
6	Earth's Resources Lab
7	Microscopic Organisms and Microscopes

Standards: Click on Standard Hyperlink for More Details

MS-LS1-6 From Molecules to Organisms: Structures and Processes

Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

MS-LS2-3 Ecosystems: Interactions, Energy, and Dynamics

Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

January

Natural Selection

Lessons 1/11/21 - 1/27/21

1	Amplify Unit Intro Natural Selection (1.2) Mystery of the Poisonous Newts
2	Birds & Worms Natural Selection Lab
3	Amplify (1.3) Histogram, Exploring Variation and Distribution in Populations
4	Amplify (1.4) SIM Investigating Changes in Trait Distribution
5	Amplify (2.1) Hands-on Histograms Reproduction and Traits
6	Amplify (2.2) Survival and Reproduction
7	Amplify (2.4) Reasoning About the Newt Mystery

Standards: Click on Standard Hyperlink for More Details

MS-LS4-4 Biological Evolution: Unity and Diversity

Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.

MS-LS4-6 Biological Evolution: Unity and Diversity

Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time

Lessons 1/28/21 - 1/29/21

8	(3.2) Mutations in a Population
9	(3.3) Wrapping Up the Newt Mystery
10	

Standards: Click on Standard Hyperlink for More Details

MS-LS4-4 Biological Evolution: Unity and Diversity

Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.

MS-LS4-6 Biological Evolution: Unity and Diversity

Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time

MS-LS3-1 Heredity: Inheritance and Variation of Traits

Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.

February

Natural Selection

Natural Selection Engineering

Lessons 2/1/21 - 2/24/21

1	Embrological Development Lab
2	Embryology Lab Aids Lab
3	Amplify Natural Selection Engineering Internship: Fighting Drug Resistant Malaria
4	Pixton Creative Project: Natural Selection
5	Review/Practice Test
6	Amplify Natural Selection Final Test
7	Canine Genetics Activity, DNA Structures, Wolf to Dog Activity

Standards: Click on Standard Hyperlink for More Details

MS-LS4-4 Biological Evolution: Unity and Diversity

Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.

MS-LS4-6 Biological Evolution: Unity and Diversity

Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time

MS-LS4-3 Biological Evolution: Unity and Diversity

Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.

March

Evolutionary History

Lessons 2/25/21 - 3/5/21

1	Geographical Changes to the Earth & Pangaea Lab
2	Fossils Classification & Fossils Timeline
3	Amplify (1.2) The Mystery Fossil
4	Amplify (1.3) Evolutionary History Simulation
5	Fossil Footprint Investigation Lab Aids
6	Amplify (1.5) Finding Similarities With the Mystery Fossil
7	Whale Anatomical Structure Investigation Lab Aids

Standards: Click on Standard Hyperlink for More Details

MS-LS3-1 Heredity: Inheritance and Variation of Traits Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.

MS-LS4-1 Biological Evolution: Unity and Diversity

Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past

MS-LS4-2 Biological Evolution: Unity and Diversity

Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships

Lessons 3/8/21 - 3/26/21

8	Amplify (2.1) How Body Structures Differ
9	Fossil Cores Lab Aids Lab
10	Amplify (2.3) Investigating Speciation
11	Amplify (2.4) How Differences Build Over Time
12	Amplify (3.1) Exploring Relatedness
13	Amplify (3.2) Determining Species Relatedness (3.3) Placing the Fossil
14	Pixton Creative Project: Fossil History
15	Practice Test/Review, Amplify Evolutionary History Final Test

Standards: Click on Standard Hyperlink for More Details

MS-LS4-1 Biological Evolution: Unity and Diversity

Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past

MS-LS4-2 Biological Evolution: Unity and Diversity

Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships

April

The Year in Review
Final Labs + Final Assessment

Lessons 4/12/21 - 4/21/21

1	Physics Review: Light Waves Light Investigation Final Lab
2	Physics Review: Light Waves Presentation and Assessment
3	Physics Review: Forces and Motion Egg Drop Challenge Final Lab
4	Physics Review: Forces and Motion Presentation and Assessment
5	Physics Review: Electromagnetism Back to the Future Clock Tower Final Lab
6	Physics Review: Electromagnetism Presentation and Assessment
7	Astrononmy Review: Sun Earth Moon Model & Eclipse Final Lab

Standards: Click on Standard Hyperlink for More Details

MS-PS4-1 Waves and their Applications in Technologies for Information Transfer MS-PS4-2 Waves and their Applications in Technologies

MS-PS2-5 Motion and Stability: Forces and Interactions MS-PS2-2 Motion and Stability: Forces and Interactions

MS-PS3-1 Energy MS-PS2-1 Motion and Stability: Forces and Interactions MS-ESS1-1 Earth's Place in the Universe

MS-PS3-2 Energy MS-PS2-5 Motion and Stability: Forces and Interactions MS-PS2-3 Motion and Stability: Forces and Interactions

Lessons 4/22/21 - 4/30/21

8	Astronomy Review: Presentation and Assessment
9	Biology Review: Natural Selection Bird Beak Progression Final Lab
10	Biology Review: Natural Selection Presentation and Assessment
11	Biology Review: Evolutionary History Fossil Evidence Final Lab
12	Biology Review: Fossils Presentation and Assessment
13	CAST Practice Test: Guided
14	CAST Practice Test: Independent

Standards: Click on Standard Hyperlink for More Details

MS-PS2-4 Motion and Stability: Forces and Interactions

MS-ESS1-1 Earth's Place in the Universe

MS-ESS1-2 Earth's Place in the Universe

MS-ESS1-3 Earth's Place in the Universe

MS-LS4-4 Biological Evolution: Unity and Diversity

MS-LS4-6 Biological Evolution: Unity and Diversity

MS-LS3-1 Heredity: Inheritance and Variation of Traits

MS-LS4-3 Biological Evolution: Unity and Diversity

MS-LS4-1 Biological Evolution: Unity and Diversity

MS-LS4-2 Biological Evolution: Unity and Diversity

May

CAST Testing
Computer Science

Lessons 5/3/21 - 5/11/21 (Projects completed after CAST testing block)

1	Warm-up, Intro to Computer Science Code Stars Link: Why Computer Science is Important
2	Sequencing A
3	Sequencing B
4	Sequencing C
5	Sequencing D
6	Loops A
7	Loops B

Standards:

- 1A-AP-09 - Model the way programs store and manipulate data by using numbers or other symbols to represent information.
- 1A-AP-10 - Develop programs with sequences and simple loops, to express ideas or address a problem.
- 1A-AP-11 - Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.
- 1B-AP-12 - Modify, remix or incorportate portions of an existing program into one's own work, to develop something more advanced
- 1A-AP-14 - Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.

Lessons 5/12/21 - 5/20/21 (Projects completed after CAST testing block)

8	Loops C
9	Loops D
10	Loops E
11	Conditionals A
12	Conditionals B
13	Conditionals C
14	Conditionals D

Standards:

- 1A-AP-09 - Model the way programs store and manipulate data by using numbers or other symbols to represent information.
- 1A-AP-10 - Develop programs with sequences and simple loops, to express ideas or address a problem.
- 1A-AP-11 - Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.
- 1B-AP-12 - Modify, remix or incorportate portions of an existing program into one's own work, to develop something more advanced
- 1A-AP-14 - Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.

Lessons 5/21/21 - 5/28/21 (Projects completed after CAST testing block)

15	Conditionals E
16	Functions A
17	Functions B
18	Functions C
19	Variables A
20	Variables B
21	Variables C

Standards:

- 1A-AP-09 - Model the way programs store and manipulate data by using numbers or other symbols to represent information.
- 1A-AP-10 - Develop programs with sequences and simple loops, to express ideas or address a problem.
- 1A-AP-11 - Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.
- 1B-AP-12 - Modify, remix or incorportate portions of an existing program into one's own work, to develop something more advanced
- 1A-AP-14 - Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.

June

Promotion Activities

Promotion Field Trip

Promotion Breakfast & Slideshow

Promotion Picnic

Promotion Ceremony