EPSD Curriculum and HMH SCIENCE DIMENSIONS 2018 Alignment TEMPLATE

GRADE 3

EPSD Unit 3: Electrical and Magnetic Forces
Second Marking Period

<table>
<tr><td colspan="2" rowspan="2">Overview: In this unit of study, students determine the effects of balanced and unbalanced forces on the motion of an object and the cause-and-effect relationships of electrical or magnetic interactions to define a simple design problem that can be solved with magnets. The crosscutting concept of cause and effect, and the interdependence of science, engineering, and technology, and the influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade appropriate proficiency in asking questions and defining problems. Students are also expected to use these practices to demonstrate understanding of the core ideas. This unit is based on 3-PS2-3, 3-PS2-4, and 3-5-ETS1-1.</td><td colspan="3">HMH Science Dimensions Program Resources</td></tr>
<tr><td colspan="3">Unit 2: Forces
Unit Video (soccer player kicking a soccer ball); Unit Overview p. 65; Vocabulary p. 67; Making Connections p. 67H; Unit Project p. 401K; Unit Performance Task pp. 130-131; Unit Review pp. 132-134</td></tr>
<tr><td colspan="2"></td><td colspan="3">Standard for all Units: Interactive Glossary (D); Leveled Readers (D); Beginning-of-Year Test (D/P); Unit Pretest (D/P); Lesson Quizzes (D/P); Unit Test (D/P)

Note: Refer to the Curriculum Alignment Common Language (CACL) Guide to decipher acronyms.</td></tr>
<tr><td rowspan="2">Standards: (3-PS2-3) Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. (3-PS2-4) Define a simple design problem that can</td><td rowspan="2">Instructional Days: 15-20</td><td>Lesson 1: What Are Forces? pp. 68-87

D/P- CYEI (video) Dogs pulling a sled across the snow p. 69

P-ENB (prompt) Does it take a strong force or a weak force to move the dog sled? How do you turn the sled left or right? p. 69
D/P-Forces Everywhere: I like to Move It, Move It</td><td>Lesson 2: What Are Some Types of Forces? pp. 88-107

D/P- CYEI (video) Indoor sky diving p. 89

P- ENB (prompt) Students look at picture and identify the forces pushing or pulling on the indoor skydiver; students identify if the forces are balanced or unbalanced? p. 89</td><td>Lesson 3: Engineer It-What Forces Act from a Distance? pp. 108-129

D/P- CYEI (digital image) Magnets being placed on a rod p. 109

P- ENB (prompt) Students identify what they see happening in the picture or video and write what they observe. p. 109
D/P- Magnets Everywhere: Stick to This (Students</td></tr>
</table>

be solved by applying scientific ideas about magnets. (3-5-ETS1-1) Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.		(Students watch video and explore online to discover about push/pull forces.) p. 70-71 P- AWYK HO Activity Playground Pushes and Pulls (Students observe push/pull forces on the playground at their school and record the number of times they see pulls and pushes; students use data to make a graph on paper, comparing the number of pushes and the number of pulls.) p. 71 D/P- Special Delivery (Using pictures, students take a closer look at force to move a dog sled.) p. 72 D/P- ENGIT Engineering a Dog Sled (Students connect technologies that can improve a sled dog team's chances of winning a race within the race environment.) p. 73 D/P-LS Give an Oral Report (Students research one technology used to assist in dog sled racing.) p. 73	D/P- Touchy, Touchy: Pushing Back (Students explore online to learn more about contact and non-contact forces. pp. 90-91 P- ENB (prompt) Students consider a big, strong bird and a small, weak bird pulling on opposite ends of a stick to use in a nest; students use evidence to predict which bird will get the stick and tell why they think their bird will get the stick. p. 91 D/P- Funny Car Forces: Stop It (Students watch video of the race cars racing and explore on line to learn more about how forces change from balanced to unbalanced. p. 92 D/P- DTM Strong Pull (Students watch video and use math symbols to show balanced and unbalanced.) p. 93 D/P- What Are Everyday Forces? (Students watch videos and explore online	explore online to find out about force fields.) pp. 110 D/P- What Pulls to the Poles (Students watch video of iron filings and discover how they can be used to show force pull and pushes.) p. 111 P- ENGIT Students define a simple design problem that they can use magnets to solve (e.g., a cabinet door). p. 111 P- ENB (prompt) How are iron fillings evidence that shows the relationship between a magnet's poles? p. 113 D/P- AWYK Compass (Without allowing them touch, students move a compass around a bar magnet, observe what happens, and then answer the questions. p. 113 P- ENB (prompt) Students think about a storm that could knock out one of the electrical lines in their neighborhood and identify evidence from the pictures on pages 115 and 116 that
Objective 1: Students will be able to understand that the magnetic force is greatest when the object is the closest to the magnet, and that the magnetic force decreases as the distance increases between the object and the magnet. **Objective 2:** Students will be able to label the poles of a magnet and investigate the attraction and repulsion of magnets. **Objective 3:** Students will investigate and record what attracts and repels the charged balloon. Students will discover how static electricity relates to lightning. **Objective 4:** Students will demonstrate understanding of magnets and separating mixtures by designing a magnetic tool to retrieve change from 10 feet above sand dune.				
Topics: Electricity; Magnets				

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Twenty-First Century Themes and Skills include: Environmental Literacy • The Four C's • Global Awareness **Essential Questions**: What are the relationships between magnetic and electrical forces? How can magnets be used to solve problems?	D/P- Strong Enough: Strong or Weak (Students explore forces of differing strengths online.) pp. 74-75 P- ENB (prompt) Students think about the pizza toss and the basketball throw and identify evidence they can provide for these two examples that show either a weak force or strong force. p. 75 D/P--DTM How Many Dogs? (Students discover if more dogs can pull with more force by completing the table to show how many boxes can be pulled by 3 dogs, 4 dogs or more.) p. 76 D/P- HO Activity Demonstrating How Forces Affect Motion (Students conduct a qualitative investigation of how a force's strength affects the speed and distance traveled by a toy truck.) pp. 77-79 D/P- Which Way? (Students watch video and explore online to learn	to find out more about friction. pp. 94-95 P- AWYK Sliding Along (Students gently push a few objects made of different materials across the surface of their desk and determine which material causes the most friction; students discuss observations with a partner and compare materials used.) p. 95 D/P- Gravity and Net Force (Students watch video and explore online to discover more about rockets and gravity, as well as adhesives.) pp. 98-99 D/P- HO Activity Exploring Forces (Students collaborate with peers to plan and conduct their own investigation to observe and measure contact forces.) pp. 100-102 P- CER Students work with a partner to critique each other's claims and evidence in step 9 of the HO Activity. p. 102	explains why they would lose electricity; students record responses in their ENB. p. 116 D/P- AWYK HO Activity Meter Reader (With an adult, students find an electrical meter and identify if the numbers on the meter are changing slowly or quickly; students answer questions in the table.) p. 116 P- ENGIT Foot Energy (Students read the Engineer It text on page 117 and work with a partner to discuss the image; each pair of students identify one additional way the electricity generated by the bike could be used.) p. 117 D/P- LS Body Power (Students research other methods that allow people to convert energy from their own bodies to provide energy to small electrical devices; students describe on device and

	more about the forces involved in air hockey.) pp. 80-81 P-ENB (prompt) Students draw a diagram to show the force that puts an air hockey puck in motion and force that can make an air hockey puck change direction. p. 81 D/P-LS Asking Questions (Students choose two activities they do that require motion and write one question about the forces involved in each activity; students use words such as weak, strong, push, pull, and direction in their questions.) p. 81 D/P- LS Compare and Contrast (Students write a sentence about going uphill or walking on level ground using the terms: stronger force and weaker force.) p. 82 D/P- TIF (enrich) Simple Machines pp. 83-84 D- Predicting Motion: Golf D- Safety Engineer	D/P- TIF (enrich) People in Science and Engineering: Christine Darden and The Wright Brothers pp. 103-104 D- Extreme Sports D- Birds of a Feather D/P- Lesson Check pp. 105-106 D/P- Lesson Roundup p. 107 D- Lesson Quiz P- DI (ELL/RTI) p. 67G P-Extension p. 67G P- COLLAB p. 67H P- Making Connections p. 67H D- Science Safety HB D- CCC-HB D- ELA-HB D- M- HB D- SEP - HB D- ScienceSarurs Reference HB	explain how it works.) p. 117 D/P- Jump Spark (Students watch video to learn about static electricity.) p. 119 D/P- Making Magnetism (Students watch animation video to observe an electromagnet in action.) p. 120 D/P- HO Activity Build an Electromagnet (Students collaborate with a partner to build an electromagnet and test its strength.) pp. 121-124 P- CER Students work with a partner to critique each other's claims and evidence in Step 11 of the HO Activity. p. 124 D/P- TIF (enrich) Careers in Science and Engineering: Electrician pp. 125-126 D- Maglev Train D- Make a Compass D/P- Lesson Check pp. 127-128 D/P- Lesson Roundup p. 129 D- Lesson Quiz

	D/P- Lesson Check pp. 85-86 D/P- Lesson Roundup p. 87 D- Lesson Quiz P- DI (ELL/RTI) p. 67G P-Extension p. 67G P- COLLAB p. 67H P- Making Connections p. 67H D- Science Safety HB D- CCC-HB D- ELA-HB D- M- HB D- SEP - HB D- ScienceSarurs Reference HB D- YSI Simulation Launch a Roller Coaster		P- DI (ELL/RTI) p. 67G P-Extension p. 67G P- COLLAB p. 67H P- Making Connections p. 67H D- Science Safety HB D- CCC-HB D- ELA-HB D- M- HB D- SEP - HB D- ScienceSarurs Reference HB

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Curriculum Alignment Common Language (CACL) Guide K-5		
Acronym	**Word/Phrase**	**Description**
AWYK	Apply What You Know	Hands on opportunities for students to apply learning.
CER	Claims Evidence Reasoning	Students make a claim and gather evidence along the way (during EXPLORATORY activities) to support claim.
CYEI	Can You Explain It	Lesson phenomenon used to ENGAGE students in learning at the beginning of the lesson.
CYSI	Can You Solve It	Lesson phenomenon used to ENGAGE students in learning at the beginning of the lesson.
D	Digital	Program resources and features in interactive digital form.
DI (ELL/RTI) **Extension** **COLLAB** **Connections to Science**	Differentiated Instruction (English Language Learner/Response to Intervention) Collaboration Connections to Science	A page that lists all learning activities used to differentiate learning, engage students in collaborative activities and connect learning to other subjects.
DTM	Do the Math	Integrated subject learning.

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ENB	Evidence Notebook (prompt)	Student notebook or journal used to gather evidence during EXPLORATORY learning activities to support their claims.
ENGIT	Engineer It	Integrated subject learning.
HB **CCC-HB** **ELA-HB** **M-HB** **SEP-HB**	Handbooks Crosscutting Concepts English Language Arts Math Science and Engineering Practices	Students who need extra support in grasping concepts or to refresh student knowledge of skills.
HO	Hands-On (Activity)	Student collaboration activities.
LS	Language Smarts	Integrated subject learning.
P	Print	Program resources and features in print form.
TIF	Take It Further (enrich)	Enrichment activities for students in print or digital.
YSI	You Solve It (Simulation)	Open-ended simulation-based learning with multiple answer options.