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## Exploring Physics Unit 1: Introduction to Electricity

### Alignment by Activity with Next Generation Science Standards\* Disciplinary Core Ideas and Mathematics Common Core Standards§

*Exploring Physics, The Curriculum App* is an interactive inquiry- and modeling-based conceptual physics curriculum. It combines hands-on activities with a discussion-based pedagogy where students construct mental models of scientific concepts. The content covers a full year's conceptual physics curriculum for 9th grade through early college.

NGSS alignment was conducted by the Biological Science Curriculum Study, BSCS, Colorado Springs, Co, <http://www.bscs.org>.

Activity	NGSS Disciplinary Core Ideas (High School)	Science Practices	Math Common Core Standards	Math Practices
Getting Charged Lab	PS2.B.c, PS3.B.c			
Reading Page: What is Static Electricity?	PS1.A.a, PS2.B.c	SP8		
Getting Charged Lab - Revisited	PS2.B.c, PS3.B.c			
Practice 1.1: Electrical Charges	PS2.B.c	SP2		
A Bulb, A Battery and A Wire		SP2		
Reading Page: Contact Points and Light Bulbs				
Practice 1.2: The Bulb Challenge		SP2		
Reading Page: Circuit Elements				
Electrical Materials Lab	S3.A.d	SP3, SP4, SP6		

The Buzzer and the Motor Lab		SP2, SP6		
Practice 1.3.: Flow Challenge		SP6		
Reading Page: What is Charge?	PS1.A.a, PS3.A.d	SP8		
What is Current?				
Practice 1,4: Current through Devices	PS3.A.d	SP6		
Bulbs and Switches Lab		SP2, SP6		
Reading Page: The Switch*				
Practice 1.5: Circuits with a Switch		SP6		
Electrical Elements Application Lab		SP2, SP4		
The Everyday-Stuff Battery Lab	PS3.A.d	SP1, SP2, SP3, SP4, SP6		
Reading Page: How do Batteries Work?	PS3.A.d, PS3.B.c	SP8	HSN.Q.A.2	
Practice 1.6: Battery Challenge	PS3.A.d	SP6		

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## Exploring Physics Unit 2: Electrical Circuits

### Alignment by Activity with Next Generation Science Standards\* Disciplinary Core Ideas and Mathematics Common Core Standards§

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NGSS alignment was conducted by the Biological Science Curriculum Study, BSCS, Colorado Springs, Co, <http://www.bsos.org>.

Activity	NGSS Disciplinary Core Ideas (High School)	Science Practices	Math Common Core Standards	Math Practices
Current in Series Circuits Lab	PS3.A.d	SP2, SP3, SP4, SP6		
Reading Page: Current in Series Circuits		SP8		
Practice 2.1: Comparing Currents in Circuits	PS3.A.d	SP6		
Resistance in Series Circuits Lab	PS3.B.c	SP2, SP5		MP2
Reading Page: Resistors and Resistance		SP8		
Practice 2.2: Circuit Challenge - Series Circuit Design				MP1, MP2
What Causes Resistance? Lab		SP1, SP2, SP6	HSS.ID.B.6	MP1, MP2, MP4
Reading Page: Resistance		SP8	HSA.CED.A.1	
Practice 2.3: Calculating Resistance			HSA.CED.A.1, HSA.CED.A.4 HSA.REI.B.3	MP1, MP6

Voltage in a Series Circuit Lab	PS3.B.c	SP2, SP6		MP1, MP2, MP4, MP6
Reading Page: What is Voltage?	PS3.B.b	SP8		
Connecting Voltage, Current, & Resistance Lab	PS3.B.c	SP1, SP2, SP3, SP4, SP5, SP6	HSS.ID.B.6	MP1, MP2, MP4, MP6
Reading Page: Ohm's Law	PS3.B.c	SP8		
Practice 2.4: Ohm's Law Problems	PS3.B.c		HSA.CED.A.1, HSA.CED.A.4, HSA.REI.B.3, HSF.IF.B.6, HSS.ID.B.6, HSS.ID.B.6.c, HSS.ID.C.7	MP1, MP2, MP6
Reading Page: Ohm's Law and Series Circuits		SP8	HSA.CED.A.4	
Practice 2.5: Series Circuits and Graph Problems	PS3.B.c	SP6	HSA.CED.A.1, HSA.CED.A.4, HSA.REI.B.3	
Practice 2.6: Ohm's Law for Series Circuit	PS3.B.c	SP6	HSA.CED.A.1, HSA.CED.A.4, HSA.REI.B.3	MP1, MP2, MP6
Parallel Circuit Lab	PS3.A.d	SP2, SP5, SP6		
Practice 2.7: Designing Series and Parallel Circuits				
Current in a Parallel Circuit Lab	PS3.A.d	SP2, SP6		MP1, MP2, MP4
Reading Page: Parallel Circuits	PS3.A.d, PS3.B.c	SP8		
Practice 2.8: Series and Parallel Circuits				
Practice 2.9: Ohm's Law and Parallel Circuits	PS3.B.c	SP6	HSA.CED.A.1, HSA.CED.A.4, HSA.REI.B.3	MP1, MP2, MP6
Batteries in Series and Parallel Lab	PS3A.d, PS3B.c	SP2, SP4, SP6		

Reading Page: Batteries in Series & Parallel	PS3A.d	SP8		
Practice 2.10: Arranging Batteries	PS3B.c	SP6		
Resistance of a Parallel Circuit Lab	PS3.B.c	SP2	HSA.CED.A.1, HSA.CED.A.4	MP1, MP2
Reading Page: The Resistance of a Parallel Circuit	PS3.B.c	SP8		
Practice 2.11: Resistance in Parallel Circuits	PS3.B.c	SP6		
Name That Circuit – Application Lab		SP2, SP6		
Electrical Power Lab	PS3.B.c	SP2, SP3, SP6	HSA.CED.A.1, HSA.REI. B.3	MP4
Reading Page: Power and Energy	PS3.B.c	SP8	HSA.CED.A.4	
Practice 2.12: Power and Energy Problems	PS3.B.c		HSA.CED.A.1, HSA.REI. B.3	MP6
Reading Page: Direct and Alternating Current				
Electrical Widgets Application Lab				

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### Exploring Physics Unit 3: Uniform Motion

#### Alignment by Activity with Next Generation Science Standards\* Disciplinary Core Ideas and Mathematics Common Core Standards§

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Activity	NGSS Disciplinary Core Ideas (High School)	Science Practices	Math Common Core Standards	Math Practices
Bag of Cars Lab		SP2, SP3, SP4, SP6		
Bubble Lab		SP1, SP2, SP3, SP4, SP5, SP6	HSF.IF.B.6, HSS.ID.B.6, HSS.ID.C.7,	MP2, MP4
Reading Page: Distance and Change in Position		SP2, SP4, SP5, SP8	HSA.CED.A.1	
Practice 3.1: Position, Distance, and Change in Position		SP2, SP4, SP5, SP6	HSA.CED.A.1	MP2
Practice 3.2: Analyzing Position, Distance and Slope		SP2, SP4, SP5, SP6	HSA.CED.A.1, HSF.IF.B.6, HSS.ID.B.6, HSS.ID.C.7	MP2, MP6
Reading Page: Unit Conversion		SP2, SP4, SP5, SP8	HSN.Q.A.1	MP6
Practice 3.3: Finding Slope		SP2, SP4, SP5, SP6, SP8	HSA.CED.A.1, HSF.IF.B.6, HSS.ID.C.7	MP2
Practice 3.4: Motion with Constant Speed		SP2, SP4, SP5, SP6	HSA.CED.A.1, HSS.ID.B.6	MP2

Battery Car Lab		SP1, SP2, SP3, SP4, SP5, SP6	HSN.Q.A.1, HSA.CED.A.1, HSF.IF.B.6, HSS.ID.B.6, HSS.ID.C.7	MP1, MP2, MP4, MP6
Reading Page: Motion Diagrams		SP2, SP4, SP5, SP8		
Practice 3.5: Motion Diagrams		SP2, SP4, SP5, SP6		
Student Summary Page - Slow and Fast				
Reading Page: The Speed-Distance-Time Relation		SP2, SP4, SP5, SP6, SP8	HSN.Q.A.1, HSN.VM.A.3	MP6
Practice 3.6: Word Problems – Speed		SP2, SP4, SP5, SP6	HSN.Q.A.1, HSN.VM.A.3, HSA.CED.A.1, HSA.CED.A.4,	MP2, MP4
			HSA.REI.B.3	
Detecting Motion Lab		SP2, SP3, SP4, SP5, SP6	HSS.ID.B.6	MP2, MP4, MP6
Practice 3.7: Simulating Motion		SP2, SP4, SP5, SP6		
Reading Page: Average Speed		SP2, SP4, SP5, SP8	HSA.CED.A.1	MP2
Practice 3.8: Average Speed		SP2, SP4, SP5, SP6	HSN.VM.A.3, HSA.CED.A.1,	MP1, MP2
			HSA.REI.B.3	
Practice 3.9: Words and Graphs		SP2, SP4, SP5, SP6	HSN.VM.A.3	MP2
Motion of Two Bikers – Conceptual Lab		SP2, SP3, SP4, SP5, SP6		MP2
Reading Page: Calculating Displacement		SP2, SP4, SP5, SP8	HSA.CED.A.1	MP2

Practice 3.10: Words, Graphs and Motion Diagrams		SP2, SP4, SP5, SP6	HSA.CED.A.1, HSS.ID.B.6	MP2
Practice 3.11: Equivalent Representations		SP2, SP4, SP5, SP6	HSA.CED.A.1	MP2
Student Summary Page: Comparing Positive and Negative				
Toy Car Application Lab		SP2, SP3, SP4, SP5, SP6		MP4

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## Exploring Physics Unit 4: Accelerated Motion

### Alignment by Activity with Next Generation Science Standards\* Disciplinary Core Ideas and Mathematics Common Core Standards§

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NGSS alignment was conducted by the Biological Science Curriculum Study, BSCS, Colorado Springs, Co, <http://www.bsccs.org>.

Activity	NGSS Disciplinary Core Ideas (High School)	Science Practices	Math Common Core Standards	Math Practices
Bag of Cars – Again	PS2.A.a	SP2, SP3, SP4, SP5, SP6		
Down the Ramp Lab: Part 1	PS2.A.a	SP1, SP2, SP3, SP4, SP5, SP6	HSA.CED.A.1, HSS.ID.B.6, HSS.ID.C.7	MP1, MP4
Reading Page: Motion Diagrams I	PS2.A.a	SP2, SP4, SP5, SP8		MP2
Practice 4.1: Motion Diagrams with Changing Speed	PS2.A.a	SP2, SP4, SP5, SP6, SP8		MP2
Reading Page: Instantaneous Velocity: Geometric Method	PS2.A.a	SP2, SP4, SP5, SP8	HSS.ID.C.7	
Practice 4.2: Velocity of a Toy Car	PS2.A.a	SP2, SP4, SP5, SP6, SP8	HSF.IF.B.6, HSS.ID.C.7	
Reading Page: Calculating a v-t graph for motion with changing speed	PS2.A.a	SP2, SP4, SP5, SP8	HSN.VM.A.2, HSS.ID.C.7	
Down the Ramp Lab: Part 2	PS2.A.a	SP2, SP3, SP4, SP5	HSA.CED.A.1, HSF.IF.B.6, HSS.ID.B.6, HSS.ID.C.7	MP2, MP4

Practice 4.3: Analyze Uniform Acceleration Data I	PS2.A.a	SP2, SP4, SP5, SP6, SP8	HSN.VM.A.2, HSN.VM.A.3, HSS.ID.B.6, HSS.ID.C.7	
Reading Page: Acceleration	PS2.A.a	SP2, SP4, SP5, SP8	HSA.CED.A.2	
Practice 4.4: Velocity and Acceleration	PS2.A.a	SP2, SP4, SP5, SP6, SP8	HSN.VM.A.3, HSF.IF.B.6, HSS.ID.C.7	
Reading Page: Motion Diagrams II	PS2.A.a	SP2, SP4, SP5, SP8		MP2
Practice 4.5: Motion Diagrams with Constant Acceleration	PS2.A.a	SP2, SP4, SP5, SP6, SP8		MP2
Reading Page: Positive and Negative Velocities	PS2.A.a	SP2, SP4, SP5, SP8	HSS.ID.C.7	
Reading Page: Correlating Graphs to Motion Diagrams	PS2.A.a	SP2, SP4, SP5, SP8		MP2
Practice 4.6: Graphs and Motion Diagrams	PS2.A.a	SP2, SP4, SP5, SP6, SP8	HSF.IF.B.6, HSS.ID.C.7	MP2
Student Summary Page - Accelerated Motion				
Practice 4.7: Motion Diagrams, x-t and v-t Graphs	PS2.A.a	SP2, SP4, SP5, SP6, SP8	HSN.VM.A.3	MP2
Motion Along an Incline - Photogate Lab	PS2.A.a	SP1, SP2, SP3, SP4, SP5, SP6	HSF.IF.B.6, HSS.ID.B.6, HSS.ID.C.7	MP4
Reading Page: How far do accelerating objects travel?	PS2.A.a	SP2, SP4, SP5, SP6, SP8	HSA.CED.A.2, HSA.REI.B.3	
Practice 4.8: Distance traveled - Graphical Calculations	PS2.A.a	SP2, SP4, SP5, SP6, SP8	HSA.REI.B.3	MP6
Speeding Up and Slowing Down Lab	PS2.A.a	SP2, SP3, SP4, SP5	HSF.IF.B.4, HSF.IF.B.6, HSS.ID.C.7	
Practice 4.9: Up and Down the Ramp	PS2.A.a	SP2, SP4, SP5, SP6, SP8		MP1, MP2

Practice 4.10: Simulating Accelerated Motion	PS2.A.a	SP2, SP4, SP5, SP6, SP8		
Reading Page: Using Motion Equations	PS2.A.a	SP1, SP2, SP4, SP5, SP8	HSA.CED.A.1, HSA.CED.A.2	
Practice 4.11: Word Problems Accelerated Motion	PS2.A.a	SP2, SP4, SP5, SP6, SP8	HSS.VM.A.2, HSN.VM.A.3, HSA.REI.B.3, HSF.IF.B.4	MP1, MP2, MP6
Reading Page: Using Motion Equations to Generate Graphs	PS2.A.a	SP2, SP4, SP5, SP6, SP8	HSA.CED.A.1, HSA.CED.A.2, HSF.IF.B.4, HSS.ID.B6	MP1, MP2, MP6
Practice 4.12: Motion with Acceleration - Data Tables and Graphs	PS2.A.a	SP2, SP4, SP5, SP6, SP8	HSS.VM.A.2, HSN.VM.A.3, HSA.REI.B.3, HSF.IF.B.4, HSS.ID.B6	MP1, MP2, MP6
Practice 4.13: Motion with Acceleration - Words & Graphs	PS2.A.a	SP2, SP4, SP5, SP6, SP8	HSS.VM.A.2, HSN.VM.A.3, HSA.REI.B.3, HSF.IF.B.4, HSS.ID.B6, HSS.ID.C7,	MP1, MP2, MP6
Practice 4.14: Motion with Acceleration - Stacks of Graphs	PS2.A.a	SP2, SP4, SP5, SP6, SP8	HSF.IF.B.4, HSF.IF.B.6, HSF.IF.C7	
Two Accelerating Objects - Conceptual Lab	PS2.A.a	SP2, SP3, SP4, SP5	HSF.IF.B.4, HSF.IF.C.9, HSS.ID. C7, HSF.LE.A.1.b	
Student Summary Page - Uniform Motion Accelerated Motion				
Testing Cars - Application Lab	PS2.A.a	SP2, SP3, SP4, SP5		
Framing Questions Revisited				
Accelerated Motion Review				

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**Exploring Physics Unit 5: Forces and Newton’s Laws. Alignment by Activity with Next Generation Science Standards\* Disciplinary Core Ideas and Mathematics Common Core Standards§**

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Activity	NGSS Disciplinary Core Ideas (High School)	Science Practices	Math Common Core Standards	Math Practices
Exerting Forces Lab		SP2, SP3, SP4		
Reading page: What is a force?	PS2.B.b, PS2.B.c	SP2, SP8		
Broom Ball – The Game Lab		SP2, SP3, SP4		
Reading page: Drawing and Analyzing Forces		SP2, SP4, SP5		
Practice 5.1: Force Challenge		SP2, SP4, SP5		
The Normal Force Lab		SP2, SP3, SP4, SP5		
The Force of Gravity Lab	PS2.B.a, PS2.B.b	SP1, SP2, SP3, SP4, SP5, SP6	HSA.CED.A.2, HSF.IF.B.6, HSS.ID.B.6, HSS.ID.C.7	MP4
Reading Page: Measuring the Force of Gravity (Weight)	PS2.B.a, PS2.B.b	SP2, SP6, SP8	HSN.Q.A.1	
Practice 5.2: Force of Gravity and its Strength	PS2.B.a, PS2.B.b	SP4, SP5	HSN.Q.A.1	

The Elastic Force Lab		SP1, SP2, SP3, SP4, SP5, SP6	HSA.CED.A.2, HSF.IF.B.6, HSS.ID.B.6, HSS.ID.C.7	MP4
Practice 5.3: Forces in springs		SP4, SP5	HSS.ID.B.6	
Reading page: Drawing Force Diagrams		SP2, SP8		
Practice 5.4: Force Diagrams		SP2, SP4, SP5		MP2
Newton's First Law Lab		SP2, SP3, SP4, SP6		
Reading Page: Newton's First Law		SP2, SP8		
Practice 5.5: Newton's First Law		SP4, SP6		
Broom Ball Lab Revisited		SP2, SP3, SP4		
Newton's Third Law Lab		SP2, SP3, SP4, SP5		
Newton's Third Law Lab with Force Probes		SP2, SP3, SP4, SP5, SP6		
Reading Page: Newton's Third Law		SP2, SP8		
Practice 5.6: Identifying Pairs of Forces		SP2, SP4, SP5, SP6		MP2
Newton's Second Law Lab		SP2, SP3, SP4, SP5, SP6		
Reading Page: Newton's Second Law	PS2.A.a	SP2, SP8	HSA.CED.A.2	
Practice 5.7: Newton's Second Law Problems	PS2.A.a	SP2, SP4, SP5, SP6	HSA.CED.A.1, HSA.CED.A.4	
Practice 5.8: Forces, Motion and Newton's Laws		SP2, SP4, SP5		MP2

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**Exploring Physics Unit 6: Applications of Newton's Laws: Free Fall and Projectile Motion  
Alignment by Activity with Next Generation Science Standards\* Disciplinary Core Ideas and  
Mathematics Common Core Standards§**

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Activity	NGSS Disciplinary Core Ideas (High School)	Science Practices	Math Common Core Standards	Math Practices
Free Fall Lab	PS2.A.a	SP1, SP2, SP3, SP4, SP5, SP6	HSA.CED.A.1, HSA.CED.A.4, HSF.IF.B.6, HSS.ID.B.6, HSS.ID.C.7	MP1, MP2
Reading Page: Free Fall	PS2.A.a	SP2, SP4, SP5, SP6,	HSA.CED.A.2	
Practice 6.1: Motion of Falling Objects	PS2.A.a	SP5, SP6	HSA.CED.A.1, HSA.REI.B.3, HSS.ID.B.6	
Practice 6.2: Falling Objects - Word Problems	PS2.A.a	SP4, SP5, SP6	HSN.VM.A.3, HSS.ID.B.6	
Throw the Ball Upwards Lab	PS2.A.a	SP1, SP2, SP3, SP4, SP5, SP6	HSN.VM.A.3, HSA.CED.A.1, HSA.REI.B.3, HSF.IF.B.6, HSS.ID.A.3, HSS.ID.B.6, HSS.ID.C.7	MP1, MP2, MP4



Reading Page: Up and Down Under Gravity	PS2.A.a	SP2, SP4, SP5, SP6, SP8	HSN.Q.A.1	
Practice 6.3: What Goes Up, Must Come Down	PS2.A.a	SP5, SP6	HSA.CED.A.1, HSA.REI.B.3, HSS.ID.B.6	
Practice 6.4: What Goes Up, Must Come Down Word Problems	PS2.A.a	SP4, SP5, SP6	HSA.REI.B.3, HSF.IF.B.6, HSS.ID.A.3, HSS.ID.B.6, HSS.ID.C.7	MP1, MP2, MP6
Practice 6.5: Simulating Motion Under Gravity	PS2.A.a	SP4, SP5, SP6	HSN.VM.A.3, HSS.ID.B.6	
Reading Page – Newtons Law of Universal Gravity	PS2.B.a	SP2, SP5	HSA.CED.A.1, HSA.REI.B.3, HSS.ID.B.6	
Practice 6.6: Gravity on other planets	PS2.B.a	SP4, SP5, SP6	HSN.VM.A.3, HSA.CED.A.1, HSA.REI.B.3, HSF.IF.B.6, HSS.ID.A.3, HSS.ID.B.6, HSS.ID.C.7	MP1, MP2, MP6
Student Summary Page: Up and Down				
Motion in Two Dimensions Lab	PS2.A.a	SP2, SP3, SP4, SP5, SP6		MP2
Horizontally Launched Projectile Lab	PS2.A.a	SP2, SP3, SP4, SP5, SP6	HSN.VM.A.3, HSA.CED.A.1, HSS.ID.B.6, HSS.ID.B.6.c	MP4
Reading Page: Motion in Two Dimensions - I	PS2.A.a	SP2, SP4, SP5, SP6, SP8	HSN.Q.A.1, HSN.VM.A.3, HSA.CED.A.2	MP2
Practice 6.7 Motion in 2 Dimensions	PS2.A.a	SP4, SP5, SP6	HSA.CED.A.1, HSA.REI.B.3, HSS.ID.B.6	MP2
Practice 6.8: Motion in 2 Dimensions Word Problems	PS2.A.a	SP4, SP5, SP6	HSN.VM.A.3, HSA.CED.A.1, HSA.REI.B.3	MP1, MP2
Practice 6.9: Simulating Projectile Motion I	PS2.A.a	SP4, SP5, SP6	HSA.CED.A.1, HSA.REI.B.3, HSS.ID.B.6	MP2

Student Summary Page: Free Fall and Projectile Motion				
Forces and Projectile Motion Conceptual Lab	PS2.A.a	SP4, SP5, SP6		MP2
Hit the Target Lab- Practicum	PS2.A.a	SP2, SP3, SP4, SP5, SP6	HSN.VM.A.3, HSA.CED.A.1	MP4
Student Summary Page: Comparing Free Fall to Projectile Motion				
Launching Darts Lab	PS2.A.a	SP1, SP2, SP3, SP4, SP5, SP6	HSS.ID.B.6	
Reading Page: Motion in Two Dimensions, II	PS2.A.a	SP2, SP4, SP5, SP6, SP8		
Practice 6.10: Trajectory Challenge	PS2.A.a	SP4, SP5, SP6		
Practice 6.11: Simulating Projectile Motion II	PS2.A.a	SP4, SP5, SP6	HSA.CED.A.1, HSA.REI.B.3	

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[www.exploringphysics.com](http://www.exploringphysics.com)

## Exploring Physics Unit 7: Linear Momentum

### Alignment by Activity with Next Generation Science Standards\* Disciplinary Core Ideas and Mathematics Common Core Standards§

*Exploring Physics, The Curriculum App* is an interactive inquiry- and modeling-based conceptual physics curriculum. It combines hands-on activities with a discussion-based pedagogy where students construct mental models of scientific concepts. The content covers a full year's conceptual physics curriculum for 9th grade through early college.

NGSS alignment was conducted by the Biological Science Curriculum Study, BSCS, Colorado Springs, Co, <http://www.bscs.org>.

Activity	NGSS Disciplinary Core Ideas (High School)	Science Practices	Math Common Core Standards	Math Practices
Exploring Collisions Lab	PS2.A.b	SP2, SP3, SP4, SP5, SP6		MP1, MP2
Reading Page: Impulse	PS2.A.b	SP4, SP5, SP6	HSA.CED.A.2	MP1, MP2
Practice 7.1: Impulse	PS2.A.b	SP4, SP5, SP6	HSN.VM.A.3, HSA.CED.A.1, HSA.REI.B.3	
Reading Page: Linear Momentum	PS2.A.b	SP2, SP4, SP5, SP6, SP8	HSN.Q.A.1, HSA.CED.A.2	
Practice 7.2: Calculating Linear Momentum	PS2.A.b	SP4, SP5, SP6	HSA.CED.A.1	
Connecting Impulse and Momentum Lab	PS2.A.b	SP2, SP4, SP5, SP6, SP8	HSA.CED.A.2	
Reading Page: Connecting Impulse and Change in Momentum	PS2.A.b	SP2, SP4, SP5, SP6, SP8	HSA.CED.A.2	

Practice 7.3: Impulse and Change in Momentum	PS2.A.b	SP4, SP5, SP6	HSA.CED.A.1, HSA.REI.B.3	MP1, MP2, MP6
Elastic and Inelastic Collisions Lab	PS2.A.b	SP2, SP3, SP4, SP5, SP6		
Reading Page: Types of Collisions	PS2.A.b	SP4, SP5, SP6	HSA.CED.A.2	
Momentum in Collisions Lab	PS2.A.b	SP2, SP3, SP4, SP5, SP6	HSA.CED.A.1	
Reading Page: Conservation of Linear Momentum	PS2.A.b	SP2, SP4, SP5, SP6, SP8	HSA.CED.A.2	
Practice 7.4: Applying Conservation of Momentum	PS2.A.b	SP4, SP5, SP6	HSN.VM.A.3, HSA.CED.A.1, HSA.REI.B.3	MP1, MP2, MP6

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### Exploring Physics Unit 8: Energy

## Alignment by Activity with Next Generation Science Standards\* Disciplinary Core Ideas and Mathematics Common Core Standards§

*Exploring Physics, The Curriculum App* is an interactive inquiry- and modeling-based conceptual physics curriculum. It combines hands-on activities with a discussion-based pedagogy where students construct mental models of scientific concepts. The content covers a full year’s conceptual physics curriculum for 9th grade through early college. NGSS alignment was conducted by the Biological Science Curriculum Study, BSCS, Colorado Springs, Co, <http://www.bscs.org>.

Activity	NGSS Disciplinary Core Ideas (High School)	Science Practices	Math Common Core Standards	Math Practices
Exploring Energy – Lab	PS1.B.a, PS2.A.a, PS2.A.b, PS2.B.a, PS2.B.b, PS3.A.b, PS3.A.c, PS3.B.b, PS3.B.e, PS3.C.a, PS3.D.a	SP2, SP3		
Reading Page: Energy	PS3.A.a, PS3.B.a, PS3.B.b			
Practice 8.1. Physical systems, states, processes	PS1.B.a, PS2.A.a, PS2.A.b, PS2.B.a, PS2.B.b, PS3.A.b, PS3.A.c, PS3.B.b, PS3.B.e, PS3.C.a, PS3.D.a	SP2, SP3		
Reading Page: The Law of Conservation of Energy	PS3.A.a, PS3.B.a, PS3.B.b			
Exploring Energy Transformations Lab	PS2.A.c	SP2, SP3, SP6		
Reading Page: Using Pie Charts to Represent Energy Storage and Transformations	PS3.A.a, PS3.B.a, PS3.D.a	SP2, SP5, SP6	HSA.SSE.B.3	MP2

Practice 8.2. Energy Pie Charts	PS3.A.a, PS3.B.a, PS3.D.a	SP2, SP5, SP6	HSA.SSE.B.3	MP2
Exploring Energy Transfers Lab	PS2.A.c	SP2, SP3, SP6		
Reading Page: Using Energy Bar Graphs to Represent Energy Transfers	PS3.A.a, PS3.B.a, PS3.D.a	SP2, SP5, SP6	HSA.SSE.B.3	MP2
Practice 8.3. Energy Bar Graphs	PS3.A.a, PS3.B.a, PS3.D.a	SP2, SP5, SP6	HSA.SSE.B.3	MP2
What is Work? Lab		SP1, SP2, SP3, SP4, SP5, SP6	HSN.Q.A.1, HSA.CED.A.2, HSA.REI.B.3, HSF.IF.B.6, HSS.ID.B.6, HSS.ID.C.7	MP1, MP2, MP4, MP6
Reading Page: Work and Energy			HSN.Q.A.1	
Practice 8.4. Calculating Work		SP4, SP5	HSA.CED.A.1	MP1, MP2, MP6
Relating Work to Change in Energy Conceptual Lab		SP5	HSA.SSE.A.1, HSA.CED.A.1, HSA.REI.B.3	MP1, MP2, MP6
Reading Page: Gravitational Potential Energy	PS3.B.c	SP5	HSN.Q.A.1	
Practice 8.5. Gravitational Potential Energy	PS3.B.c	SP2, SP5		MP2
How much energy is stored in a spring? Elastic Potential Energy Lab	PS3.B.c	SP1, SP3, SP4, SP5, SP6	HSA.CED.A.1, HSA.CED.A.2, HSA.REI.B.3, HSF.IF.B.4, HSF.IF.B.6	MP2, MP4
Reading Page: Elastic Potential Energy	PS3.B.c		HSA.SSE.A.1.a, HSA.CED.A.2, HSA.REI.A.1	

Practice 8.6. Energy in Springs	PS3.B.c	SP2, SP4, SP5	HSA.CED.A.1, HSA.REI.A.1, HSF.IF.B.4, HSS.ID.B.6	MP1, MP2, MP6
How much energy do we have when moving? Kinetic Energy Lab	PS3.B.c	SP2, SP3, SP4, SP5, SP6	HSN.Q.A.1, HSA.SSE.A.1, HSA.SSE.A.1.a, HSA.CED.A.2, HSA.REI.A.1, HSF.IF.B.4, HSF.IF.B.6, HSS.ID.B.6, HSS.ID.B.6.c, HSS.ID.C.7	MP4
Reading Page: Kinetic Energy	PS3.B.c		HSN.Q.A.1, HSA.CED.A.2	
Practice 8.7. Kinetic Energy	PS3.B.c		HSN.VM.A.3, HSA.CED.A.1, HSF.IF.B.4, HSS.ID.B.6	MP1, MP2, MP6
Practice 8.8. Conservation of Energy Problems	PS3.B.c	SP2	HSN.VM.A.3, HSA.CED.A.1	MP1, MP2, MP6
Human Power Lab		SP3, SP4, SP5, SP6	HSN.Q.A.1, HSA.SSE.A.1, HSA.CED.A.1	MP2, MP4
Reading Page: Power			HSN.Q.A.1, HSA.SSE.A.1, HSA.CED.A.2	
Practice 8.9. Power			HSA.CED.A.1	MP2

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