Office of Larry E. Reider
Kern County Superintendent of Schools
Advocates for Children

Fourth Grade—Houghton Mifflin

The GEMS guides listed below are suggested supplements to the Houghton Mifflin curriculum. Teachers are encouraged to select the lessons from each guide they find most beneficial to their students' needs. Most guides have kits with hands-on materials available for check-out, at no charge, from KCSOS. Contact Kathy Hill at kahill@kern.org or 661.636.4640.

GEMS uses the strategies of hands-on examination and discovery throughout its program. Therefore, we have not listed the California State Standards correlation of Investigation and Exploration, Standard 6, as one or more strands will be found as a basic component of every GEMS guide.

Unit--Chapter/ Lesson	TE pages	4th grade standard	GEMS Guide **Bold type represents a GEMS unit which addresses all standards in that standard set for the respective strand.**
4th Grade--LIFE SCIENCE			
Unit A: Ecosystems--Chapter 1: Parts of Ecosystems			
L#1: What Are Nonliving Parts of Ecosystems? L#2: What Are Living Parts of Ecosystems?	6-11 12-19	4 LS 3.a	***Aquatic Habitats*** *On Sandy Shores* *Schoolyard Ecology* *Terrarium Habitats*
L#3: What Are Some Land Ecosystems?	20-27	4 LS 3.a, 3.b	***Aquatic Habitats*** *Moons of Jupiter* (3.b) *On Sandy Shores* *Schoolyard Ecology* (3.a) *Terrarium Habitats*
L#4: What Are Some Water Ecosystems?	30-35	4 LS 3.a	***Aquatic Habitats*** *On Sandy Shores* *Schoolyard Ecology* *Terrarium Habitats*
Unit A: Ecosystems--Chapter 2: Interactions of Living Things			
L#1: How Do Organisms Depend on Each Other?	46-53	4 LS 3.c	***Aquatic Habitats***
L#2: How Are Organisms Adapted to Survive?	54-63	4 LS 3.b	***Aquatic Habitats*** *Moons of Jupiter* *On Sandy Shores* *Terrarium Habitats*

L#3: How Do Organisms Compete?	66-71	4 LS 2.b	***Aquatic Habitats*** *On Sandy Shores* *Terrarium Habitats*
Unit B: Energy and Matter in Ecosystems—Chapter 3: Energy in Ecosystems			
L#1: What Are Food Chains?	86-93	4 LS 2.a, 2.b	*Aquatic Habitats* *On Sandy Shores* (2.b) *Terrarium Habitats*
L#2: What Are Food Webs?	94-99	4 LS 2.a, 2.b, 2.c	***Aquatic Habitats*** *On Sandy Shores* (2.b, 2.c) *Terrarium Habitats*
L#3: What Are Microorganisms?	102-107	4 LS 2.a, 2.b, 3.d	***Aquatic Habitats*** *On Sandy Shores* (2.b) *Terrarium Habitats* (2.a, 2.b)
Unit B: Energy and Matter in Ecosystems—Chapter 4: Matter in Ecosystems			
L#1: How Is Matter Cycled in an Ecosystem?	118-125	4 LS 2.b, 2.c, 3.d	***Aquatic Habitats*** *On Sandy Shores* (2.b, 2.c) *Terrarium Habitats* (2.b, 2.c)
L#2: How Do People Affect Ecosystems?	128-133	4 LS 3.b	***Aquatic Habitats*** *Moons of Jupiter* *On Sandy Shores* *Terrarium Habitats*
L#3: How Can Ecosystems Be Conserved?	134-143	4 LS 2.c, 3.b, 3.d	***Aquatic Habitats*** *Moons of Jupiter* (3.b) *On Sandy Shores* (2.c, 3.b) *Terrarium Habitats* (2.c, 3.b)
4th Grade--EARTH SCIENCE			
Unit C: The Solid Earth—Chapter 5: Rocks and Minerals			
L#1: What Are the Properties of Minerals? L#2: How Are Minerals Identified?	158-165 166-171	4 ES 4.b	***Stories in Stone***
L#3: How Do Rocks Differ? L#4: What Is the Rock Cycle	174-181 184-189	4 ES 4.a	***Stories in Stone***
Unit C: The Solid Earth—Chapter 6: Rapid Changes on Earth			
L#1: What Are Earthquakes? L#2: What Are Volcanoes? L#3: What Are Landslides?	198-205 208-213 216-221	4 ES 5.a	*On Sandy Shores* ***Stories in Stone***

Unit C: The Solid Earth—Chapter 7: Slow Changes on Earth			
L#1: What Are Weathering and Erosion?	230-235	4 ES 5.a, 5.b, 5.c	*On Sandy Shores* ***Stories in Stone***
L#2: How Does Water Shape the Land?	236-243		
L#3: How Do Ice and Wind Shape the Land?	248-55		

4th Grade--PHYSICAL SCIENCE

Unit D: Electricity and Magnetism—Chapter 8: Electricity			
L#1: How Do Charges Behave?	270-275	4 PS 1.e	No GEMS guides were found to align with standard
L#2: What Is Electric Current?	280-289	4 PS 1.a, 1.g	*Electric Circuits*
L#3: How Is Electricity Used?	290-297	4 PS 1.g	*Electric Circuits*
Unit D: Electricity and Magnetism--Chapter 9: Magnetism and Electromagnets			
L#1: How Do Magnets Behave?	308-313	4 PS 1.f	No GEMS guides were found to align with standard
L#2: What Is Earth's Magnetic Field?	314-319	4 PS 1.b	No GEMS guides were found to align with standard
L#3: How Are Electromagnets Used?	322-329	4 PS 1.c, 1.d	No GEMS guides were found to align with standard
L#4: How Can Energy Be Conserved?	332-337	4 PS 1.g	*Electric Circuits*

4th Grade--INVESTIGATION AND EXPERIMENTATION

While the guides listed below do not address specific 4th grade standards in Life, Earth, or Physical Science, they do meet standards within the Investigation and Experimentation standard set.

Bubble Festival
Crime Lab Chemistry
Fingerprinting
Microscopic Explorations
Mystery Festival
Of Cabbages and Chemistry
Oobleck