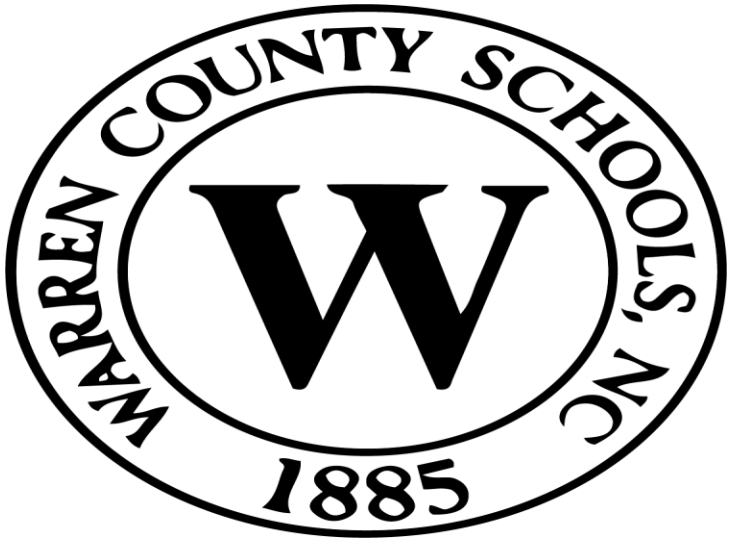
Warren County Pacing Guide



Fourth Grade Science

NC Standards	Vocabulary	Timeframe
Unit of Study: Electricity & Magnetism **Essential Standard:** 4.P.1 Explain how various forces affect the motion of an object. **Clarifying Objectives:** 4.P.1.1 Explain how magnets interact with all things made of iron and with other magnets to produce motion without touching them. 4.P.1.2 Explain how electrically charged objects push or pull on other electrically charged objects and produce motion. **Essential Questions:** How do forces affect the motion of object? How do magnets interact with other objects? Why do electrically charged objects interact with other objects? **Annotated TEACHING Resources:** Magnets 1: Magnetic Pick-ups http://www.sciencenetlinks.com/lessons.php?BenchmarkID=4&DocID=175 This lesson provides students with an understanding that certain materials are attracted to magnets while others are not. It is the first in a two-lesson series on magnets. In Magnets 1: Magnetic Pick-ups, students will look at various objects, make predictions about whether they are magnetic, and then test their predictions. This exploration is an introductory activity to magnets and magnetism. Magnets 2: How Strong is Your Magnet? http://www.sciencenetlinks.com/lessons.php?BenchmarkID=4&DocID=159 In this lesson, students will experimentally measure the strength of a magnet and graph how the strength changes as the distance from the magnet increases, and as the barrier (masking tape) is built between the magnet and an iron object. This lesson is the second in a two-lesson series on magnets.	force field magnetism charges electricity electric discharge magnet attract repel circuit north south poles	8/17-914/2020

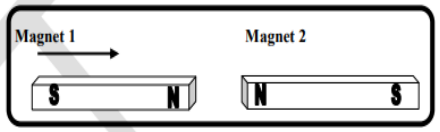
Charge It! http://www.teachengineering.org/view_activity.php?url=http://www.teachengineering.org ... Students use balloons to perform several simple experiments to explore static electricity and charge polarization. Get Charged! http://www.teachengineering.org/view_lesson.php?url=http://www.teachengineering.org/c ... Students are introduced to the idea of electrical energy. They learn about the relationships between charge, voltage, current and resistance. They discover that electrical energy is the form of energy that powers most of their household appliances and toys. In the associated activities, students learn how a circuit works and test materials to see if they conduct electricity. Building upon a general ... Take Charge! http://www.teachengineering.org/view_lesson.php?url=http://www.teachengineering.org/c ... Students come to understand static electricity by learning about the nature of electric charge, and different methods for charging objects. In a hands-on activity, students induce an electrical charge on various objects, and experiment with electrical repulsion and attraction. Carrying Charges http://www.sciencenter.org/chemistry/d/carryingcharges.pdf Learners are challenged to create solutions that conduct electricity and make a buzzer buzz (or an LED light up). They are given water, salad oil, alcohol, and vinegar as liquids, salt and sugar as solids, and a conductivity tester to see which combinations conduct electricity. Some liquids conduct by themselves (vinegar), and others can be made to conduct when salt, but not sugar, is added. Holding Charge http://www.exo.net/~emuller/activities/Holding%20Charge.pdf		

In this trick, learners discover how to stick a straw to the palm of their hand, window door, or anywhere using static electricity. This activity introduces learners to negative and positive charges and shows how opposites attract. Note: this trick works best in low humidity (dry air). Build a Charge Detector http://www.teachengineering.org/view_activity.php?url=http://www.teachengineering.org ... In this hands-on activity, students explore the electrical force that takes place between two objects. Each student builds an electroscope and uses the device to draw conclusions about objects' charge intensity. Students also determine what factors influence electric force. Do It: Get Charged Up http://pbskids.org/dragonflytv/superdoit/get_charged_up.html In this science experiment, kids create electrical charge in pieces of tape. Do It: Charged Comb and Water http://pbskids.org/dragonflytv/superdoit/charged_comb_water.html In this science experiment, kids use a comb to discover the positive and negative charges in hair and water molecules. Electricity http://www.teachersdomain.org/resource/idptv11.sci.phys.energy.d4kele/ This video segment from IdahoPTV's D4K explains some electrical vocabulary and follows the route of electricity from its generation to the home. Physics4Kids – magnetism and electricity http://www.physics4kids.com/files/elec_intro.html Electricity – free power points http://science.pppst.com/electricity.html Electricity and magnetism Demonstrations http://www.physics.isu.edu/~shropshi/emact.htm **Video Resources:** Video Game for Magnets, Electrical Conductors, Electrical Circuits http://www.bbc.co.uk/bitesize/ks2/science/physical_processes/		

Circuit games http://www.bbc.co.uk/bitesize/ks1/science/electricity/play/ http://www.bbc.co.uk/schools/scienceclips/ages/10_11/changing_circuits.shtml Magnet Games http://www.bbc.co.uk/schools/scienceclips/ages/7_8/magnets_springs.shtml **Text Resources:** Physics4Kids – magnetism and electricity http://www.physics4kids.com/files/elec_intro.html Kidipede Magnets http://www.historyforkids.org/scienceforkids/physics/electricity/magnet.htm Kids Research Express http://kidsresearchexpress-2.blogspot.com/2008/09/electricity-and-magnetism.html Static Electricity http://www.sciencemadesimple.com/static_electricity.html#easyread ***Writing Prompts:*** 1. You are being sent to the local department store to go on a treasure hunt for materials that are attracted to a magnet. The only 'catch' is - you are not allowed to take a magnet with you. Choose five items to buy that you think will be attracted to your magnet. Make sure you explain why you believe this will be true for each item. 2. Write a story about the day that magnetism went on vacation. 3. Think of one item in your home that uses magnetism. Write a short essay describing the item and how it uses magnetism to perform a useful function. 4. Develop an emergency plan for what your family would do if the electrical power in your home were to go off for a week. 5. You are going to get a renovated room! New paint, new power, new décor! No more electrical extension cords, ever. Describe how many power receptacles you are going to ask to have installed on each of the four walls, and explain how each will be used.		

Assessment

4.P.1.1 ***The picture below shows the motion of magnet 1 across a smooth table.***



1. What will happen to the motion of magnet 2 as magnet 1 gets closer?
2. Why will this happen?
3. Explain your thinking.

4.P.1.1 A magnet attracts an object on the table. The object must contain:
A. iron B. wood C.rubber D. glass
Draw a picture showing the magnet acting on the object.

4.P.1.2 Sue rubs a balloon on her hair. The balloon is then able to stick to the wall. This is an example of:
A. static charge B. magnetism C. Poles D. iron
Explain your answer.

4.P.1.2 *Performance Assessment*

Given the following materials, build a circuit that will permit the light to turn on and off.

Light bulb **Knife switch** **battery and wires**

Unit of Study: Matter, Properties & Change

Essential Standard:

4.P.2 Understand the composition and properties of matter before and after they undergo a change or interaction.

4.P.2.1 Compare the physical properties of samples of matter (strength, hardness, flexibility, ability to conduct heat, ability to conduct electricity, ability to be attracted by magnets, reactions to water and fire).

4.P.2.2 Explain how minerals are identified using tests for the physical properties of hardness, color, luster, cleavage and streak.

4.P.2.3 Classify rocks as metamorphic, sedimentary or igneous based on their composition, how they are formed and the processes that create them.

Essential Questions:

How can we compare and categorize objects and substances?

How can we understand rocks and minerals?

What are some of the properties of rocks and minerals?

properties
solid
liquid
gas
mass
volume
shape
density
conductor
conductivity
magnetic
heat
electricity
strength
hardness

9/15-10/23/2020

What can we learn by examining the properties of rocks and minerals? How can we identify rocks and minerals? How can we classify rocks and minerals? Do we need rocks and minerals? Why are there different kinds of rocks and minerals? What would the world be like without rocks and minerals? **Annotated TEACHING Resources:** Rader's Chem4Kids http://www.chem4kids.com/files/matter_states.html Explains basic states and properties. This site goes well beyond what elementary students need to know, but it written in an accessible way and may be helpful in guiding students who are prepared for more advanced study. Inquiry in Action www.inquiryinaction.org/pdf/InquiryinAction.pdf This unit from the American Chemical Society includes lessons that examine physical properties. Physical Properties of Matter http://www.cpalms.org/Public/PreviewResourceLesson/Preview/16015 Students will participate in a hands-on lab activity in which they will measure and compare apples based on many of their physical properties. (5E Learning Cycle) Science Online: Matter http://classroom.jc-schools.net/sci-units/matter.htm A collection of lessons for different grade levels concerning matter, properties, and more. SuperSTAAR Teaching Resources http://superstaar.org/grade-5/physical-science/55-properties-of-matter/55a-physical-properties-of-matter/ Students classify matter based on physical properties. These lessons can be adapted to address the physical properties outlined in the clarifying objective. ACS Chemistry http://www.middleschoolchemistry.com/lessonplans/	flexibility reactivity mineral rock igneous sedimentary metamorphic crystal color luster cleavage streak	

http://www.middleschoolchemistry.com/multimedia/ Multimedia and lesson resources that explore matter and properties. This is a middle school site with some resources that might be helpful. You Be the Chemist http://www.chemed.org/programs/activity-guides/ The activity guides on this site encompass students in grades K-8. There are some lessons here that might be good additions to a unit. Structure and Properties of Matters Unit http://www.mccracken.kyschools.us/Downloads/5th%20Grade%20Structures%20and%20Properties%20of%20Matter.pdf http://www.mccracken.kyschools.us/Downloads/2%20NGSS%20UNIT%20Matter.pdf Properties of Matter Inquiry explorations ideas http://thesciencepenguin.com/2014/07/time-to-teach-properties-of-matter.html Properties of Matter Stations Ideas http://thesciencepenguin.com/2013/09/getting-started-with-science-stations-with-properties-of-matter.html Ducksters Rocks and Rock Cycle http://www.ducksters.com/science/rocks.php An introduction to types of rocks and how they are formed. Rock Hound Kids http://www.rockhoundkids.com/ Information, games, family and teacher resources. Geology links. Rocks and Minerals Unit Blueprint http://www.csus.edu/indiv/j/jelinekd/EDTE%20226/Unit/Rock%20and%20Mineral%20Unit%20Plan%20Summer%202009%20%282%29.pdf A blueprint for unit development on the topic of Rocks and Minerals.		

Rocks and Minerals Unit http://www.wallingford.k12.ct.us/uploaded/curriculum/science_k-8/sci_grade_4/sci_gr_4_rock_minrls_sci_kit_curriculum.pdf A unit of lesson plans related to rocks and minerals. Rocks and Minerals with 21st Century Learning www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=14&**ved=0ahUKEwinl_7Ims_JAhUJ6yYKHcYcB8QQFghaMA0&url=http%3A%2F%2Fwww.bedminsterschool.org%2Fcms%2Flib6%2FNJ01000206%2FCentricity%2FDomain%2F46%2FRocks%2520and%2520Minerals.doc&usg=AFQjCNHBzPPgIl5TlLJljJrYbfSRWgu6yA&sig2=dAHbGCefBzNYCPDmeGMIwg&cad=rja** **Beyond Penguins and Polar Bears: Rocks and Minerals** **http://beyondpenguins.ehe.osu.edu/issue/rocks-and-minerals/** **A collection of teaching resources and information for professionals wanting to teach about rocks.** **Teachnology Rocks and Minerals** **http://www.teach-nology.com/teachers/lesson_plans/science/earth_sciences/rocks/** **Video Resources:** **Study Jams: Properties of Matter** **http://studyjams.scholastic.com/studyjams/jams/science/matter/properties-of-matter.htm** **Physical Science for Children: All About Properties of Matter** **https://www.youtube.com/watch?v=8ta4HygRCpk** **Study JAMS: The Rock Cycle** **http://studyjams.scholastic.com/studyjams/jams/science/rocks-minerals-landforms/rock-cycle.htm** **Geology Kitchen #2 – Identifying Minerals** **https://www.youtube.com/watch?v=cjA2-MrWAVU** **Geology Kitchen #1 – What is a Mineral?**		

https://www.youtube.com/watch?v=rTXSwnkieZc **Study Jams: Minerals** http://studyjams.scholastic.com/studyjams/jams/science/rocks-minerals-landforms/minerals.htm **Study jams: Sedimentary** http://studyjams.scholastic.com/studyjams/jams/science/rocks-minerals-landforms/sedimentary-rocks.htm **Study Jams: Igneous** http://studyjams.scholastic.com/studyjams/jams/science/rocks-minerals-landforms/igneous-rocks.htm **Study Jams: Metamorphic** http://studyjams.scholastic.com/studyjams/jams/science/rocks-minerals-landforms/metamorphic-rocks.htm **Text Resources:** **Properties of Matter** http://schools.bcsd.com/fremont/5th_Sci__matter_Properties_of_matter.htm **One Geology** http://www.onegeology.org/extra/kids/rocks_and_minerals.html **Earth Facts – Rocks and Minerals** http://www.sciencekids.co.nz/sciencefacts/earth/rocksandminerals.html **Rocks for Kids** http://www.rocksforkids.com/ **Writing Prompts:** 1. Imagine that you are turned into a snowman while you are sleeping. You know the sun will come out and start melting and evaporating your body. Write a story about how you survived the day without melting and evaporating. Be sure to use science words such as solid, liquid, and gas.		

2. What is the most important mineral? Explain why you believe this is so.

3. The properties of a rock or mineral determine how the rock or mineral is used. Choose a rock or a mineral. Discuss its properties and how we use it.

4. Research different rocks and minerals. Create a baseball card for 3 rocks or minerals that you research with important details unique to that rock or mineral.

Assessments

4.P.2.1 *Use the table below to answer the question..*

Solids	Liquids	Gases	Solids with Liquids in them
logs	Glue	Air	Wet bathing suit

In which column would juice be placed? Why would you place it there?

A. Solids **B. Liquids**

C. Gases D. Solids with liquids in them

4.P.2.2 Jaime's teacher gave her a mineral to identify. It is white in color, has a glassy luster and a hardness of 5. The table below shows some properties of other minerals in her sample box.

Mineral	Color(s)	Luster	Hardness
Calcite	White	Dull or Pearly	3
Fluorite	White, Blue, Green, Violet	Glassy	4
Apatite	White, Brown, Green, Violet	Glassy or Greasy	5
Topaz	White, Blue, Red, Yellow	Glassy	8

Based on the information in the table, explain how Jaime knows that her mineral is apatite and not fluorite.

Same item with foils:

Based on the information in the table, which mineral is Jaime's mineral most similar to?

a. calcite.

b. fluorite.

c. apatite.

d. topaz.

4.P.2.2 Which attribute is the best way to identify a mineral? Why?

A. Size **B. Hardness**

C. Shape D. Mass

4.P.2.3 What type of rock is formed when rocks are changed by heat or pressure? Explain how other rocks are formed.

A. Metamorphic B. Igneous

C. Sedimentary D. Basalt

Unit of Study: Energy **Essential Standard:** **4.P.3 Recognize that energy takes various forms that may be grouped based on their interaction with matter.** 4.P.3.1 Recognize the basic forms of energy (light, sound, heat, electrical, and magnetic) as the ability to cause motion or create change. 4.P.3.2 Recognize that light travels in a straight line until it strikes an object or travels from one medium to another, and that light can be reflected, refracted, or absorbed. **Essential Questions:** What is energy? What is light? How does light travel? What happens when light strikes a surface? How does light affect what we see? **TEACHING Resources:** Teach Engineering https://www.teachengineering.org/view_curricularunit.php?url=collection/cub_/curricular_units/cub_energy2/cub_energy2_curricularunit.xml Through nine lessons, students are introduced to a range of energy types — electrical, light, sound and thermal — as well as the renewable energy sources of wind, hydro (water) and solar power. Energy Kids http://www.eia.gov/KIDS/energy.cfm?page=1 Learn about the definition of energy, the forms that it comes in, and the difference between renewable and nonrenewable sources. Department of Energy Resources http://www.energy.gov/science-innovation/science-education Annenberg Science of Light	light sound heat electricity magnetism reflect refract absorb	10/26-11/24/2020

https://www.learner.org/teacherslab/science/light/ The activities in this lab are designed to give teachers ideas about light—and also about how teachers can use technology to explore light with their students. Teach Engineering https://www.teachengineering.org/view_curricularunit.php?url=collection/van_/curricular_units/van_troll/van_troll_curricularunit.xml This four-lesson "legacy cycle" unit for middle school, science and technology classes is structured with a contextually-based Grand Challenge followed by a sequence of instruction in which students first offer initial predictions and then gather information from multiple sources. A rigorous lesson cycle, but could be adapted for use in upper elementary classrooms. Physics for Fun http://sciencediscovery.colorado.edu/wp-content/uploads/2012/08/PFF-Light.pdf An older unit of activities that could be adapted to create a center cycle, or individual lessons with strong concrete learning components. Light a Rainbow of Explorations http://www.sde.ct.gov/sde/lib/sde/pdf/curriculum/gifted_and_talented/light05152008.pdf A unit developed for AIG students in grades 4 and 5. There are some very good lessons here; teachers could adapt them for use in a unit of study focused on SCOS. Light Energy https://www.wallingford.k12.ct.us/uploaded/Curriculum/SCIENCE_K-8/SCI_GRADE_5/Light_gr_5_curr_guide_for_web_w_out_article_all_sections.pdf A unit that explores light energy in great depth. This unit includes study of the		

human eye as well as engineering design problems that are appropriate for upper elementary grades. **Video Resources:** Scholastic Study JAMS http://studyjams.scholastic.com/studyjams/jams/science/energy-light-sound/electricity.htm http://studyjams.scholastic.com/studyjams/jams/science/energy-light-sound/current-electricity-elec-circuits.htm http://studyjams.scholastic.com/studyjams/jams/science/energy-light-sound/magnetism.htm http://studyjams.scholastic.com/studyjams/jams/science/energy-light-sound/heat.htm http://studyjams.scholastic.com/studyjams/jams/science/energy-light-sound/sound.htm http://studyjams.scholastic.com/studyjams/jams/science/energy-light-sound/light.htm http://studyjams.scholastic.com/studyjams/jams/science/energy-light-sound/light-absorb-reflect-refract.htm Text Resources: Rader's Physics4Kids http://www.physics4kids.com/ Duckster's Light http://www.ducksters.com/science/light.php Facts on Light for Kids		

http://www.kidsbuilder.com/FunFactsForKids/light.html Optics for Kids https://optics.synopsys.com/learn/kids/optics-kids-light.html Science Kids http://www.sciencekids.co.nz/light.html **Writing Prompts:** 1. Write a paragraph explaining what energy is. Use examples from your life to help explain. 2. Create a comic book for students in the grade below you that explains basic forms of energy. 3. Research prisms. Write and illustrate a picture book that explains prisms and how they affect light. 4. What would the world be like if it was always dark on one side and always light on the other? Explain. 5. Research hydrothermal vents. Write a report describing the different types of organisms that have adapted to living where there is virtually no visible light. **Assessment:**		

4.P.3.1 ***Performance Assessment and Constructed response***

Given the following materials, build a circuit that will permit the light to turn on and off.

Light bulb **Knife switch** **battery and wires**

Identify each form of energy that results when the circuit is complete and the light is on.

4.P.3.1 Which item turns electrical energy into sound energy? Explain how this happens.

A. lamp **B. doorbell**
C. calculator D. candle

4.P.3.2 A pencil placed in a glass of water appears broken because the light is: A. reflected **B. refracted** C. absorbed D. bright Draw a picture that shows your answer choice. **4.P.3.2** The picture below shows a farmhouse on a lake.  A student sees a mirror image of the farmhouse and trees in the water of the lake. What causes this mirror image? How? a. black light b. refracted light **c. reflected light** d. absorbed light			
Unit of Study: Earth in the Universe **Essential Standard:** **4.E.1 Explain the causes of day and night and phases of the moon.** **Clarifying Objectives:** 4.E.1.1 Explain the cause of day and night based on the rotation of Earth on its axis. 4.E.1.2 Explain the monthly changes in the appearance of the moon, based on the		Day night earth moon sun sky appearance change	11/30/2020 -1/22/2021

moon's orbit around the Earth. **Essential Questions:** What causes day and night? How does the moon's appearance change over time? What patterns of change can we observe in the sky? What causes the phases of the moon to change? **TEACHING Resources:** American Museum of Natural History http://www.amnh.org/explore/ology/astronomy Lunar phase booklets http://www.lpi.usra.edu/education/space_days/activities/moon/documents/Moon_Phases_Flip_Book.pdf Oreo Phases http://www.lpi.usra.edu/education/space_days/activities/moon/documents/Moon_Oreo_Phases.pdf Model of earth/moon/sun system http://www.sciencekids.co.nz/gamesactivities/earthsunmoon.html Moon Phase Activity http://www.ehow.com/way_5482039_phases-moon-activities-kids.html Moon Phases http://www.nasa.gov/centers/jpl/education/moonphases-20100913.html Day and Night http://www.lpi.usra.edu/education/explore/marvelMoon/activities/whatIf/spin/ Moon Phase activity http://www.kidscosmos.org/solar_system/moon_phases.php Moon Phases Images (choose the date) http://tycho.usno.navy.mil/vphase.html Lunar Cycle http://sciencenetlinks.com/interactives/moon/moon_challenge/moon_challenge.html	pattern month	

Phases diagram and background information article http://www.teachersdomain.org/resource/ess05.sci.ess.eiu.mphase/ Modeling Day and Night (activity one) http://www.teachersdomain.org/resource/ess05.sci.ess.eiu.mphase/ Day and Night Modeling http://www.eyeonthesky.org/lessonplans/05sun_daynight.html Day and Night http://serc.carleton.edu/sp/mnstep/activities/25483.html Day and Night http://solarsystem.nasa.gov/educ/lesson-view.cfm?LS_ID=891 Science Class Night http://science-class.net/archive/science-class/Astronomy/MoonPhases.htm **Video Resources:** Moon http://solarsystem.nasa.gov/news/whatsup-view.cfm?WUID=42 http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Why_Does_the_Shape.html https://www.youtube.com/watch?v=bWeaQctUp1c **READING Resources** Moon Phases Read and React https://www.exploringnature.org/graphics/space/moon_phases_read_react_quiz.pdf K-12 Reader http://www.k12reader.com/reading-		

comprehension/Gr3_Wk16_Phases_of_the_Moon.pdf NASA STARCHILD https://starchild.gsfc.nasa.gov/docs/StarChild/questions/question3.html **Writing Connections** 1) Write an informative/explanatory text to explain the reason we experience day and night. 2) Use digital tools to create a book showing moon phases and write information to explain images. 3) Write an informative text explaining why the moon appears different over the course of a month. 4) Write about an imaginary trip to the moon. Explain what you would need to bring and why? 5) Write an opinion piece about whether you think astronauts should return to the moon. **Assessment**		

4.E.1.1 Which statement best explains why the Sun appears to rise and set each day? Draw a picture showing what happens. **a. Earth rotates.** b. The Sun rotates. c. The Sun revolves around Earth. d. Earth revolves around the Sun. **4.E.1.1** The earth rotates on its axis once every: **A. day** B. month C. year D. week The day is caused by: a. the moon circling the Earth b. the moon blocking the sun for part of the day **c. the Earth rotating on its axis** d. the Earth revolving around the sun Make a model that shows how the earth rotates on its axis. **4.E.1.2** What causes the moon phases? A. the distance from Earth B. an eclipse **C. the position of the moon relative to the Earth and the Sun** D. astronomers Create a model that explains and supports your response.		
Unit of Study: Earth History **Essential Standard:** **4.E.2 Understand the use of fossils and changes in the surface of the Earth as evidence of the history of the Earth and its changing life forms.** **Clarifying Standards:** 4.E.2.1 Compare fossils (including molds, casts, and preserved parts of plants and animals) to one another and to living organisms. 4.E.2.2 Infer ideas about Earth's early environments from fossils of plants and animals that lived long ago**.** 4.E.2.3 Give examples of how the surface of the Earth changes due to slow processes such as erosion and weathering, and rapid processes such as landslides, volcanic eruptions, and earthquakes.	fossil mold fossil cast fossil imprint trace fossil organism prehistoric preserved paleontologist extinct decay resin	1/25- 2/19/2021

Essential Questions: What can we learn about the Earth and its history by studying fossils? How can we use fossils to learn about organisms that can no longer be observed alive? What does fossil evidence tell us about the way the environment around the fossil has changed over time? Where can we usually find fossils, and why are they located there? What types of events change the Earth's surface slowly, over time? What types of events change the Earth's surface very quickly? **Instructional Resources:** Fossil Unit - Beyond Penguins and Polar Bears An effective unit on fossils involves developing concepts in a logical and sequential manner. Students should first understand what a fossil is, the differences between fossils and other natural objects, and that not all plants and animals become fossilized. Next, students learn about the various types of fossils and model the process of fossilization. Finally, students can model the excavation process and use fossils to make inferences about past environments. http://beyondpenguins.ehe.osu.edu/issue/learning-from-the-polar-past/learning-about-fossils-through-hands-on-science-and-literacy Compare and Contrast Fossils Students observe and describe fossil samples. http://classroomsol.weebly.com/uploads/1/1/2/0/1120439/fossil_lesson.pdf i4c comparing fossils resources http://www.internet4classrooms.com/grade_level_help/life_science_compare_fossils_second_2nd_grade_science.htm	erosion weathering avalanche uplift crust earthquake volcano shield volcano composite volcano cinder cone volcano seismology volcanology landform sedimentary metamorphic igneous	

Fossil Formation A fun activity that illustrates how fossils are formed. http://www.earthsciweek.org/classroom-activities/fossil-formation Discovering Fossils Students will explore the process used by paleontologists. http://www.earthsciweek.org/classroom-activities/discovering-fossils Mud Fossils Students will observe real fossils in this activity. Modify this activity to address the clarifying objective by asking students to compare the fossils, adapting guiding questions accordingly. http://www.earthsciweek.org/classroom-activities/mud-fossils Watch out for landslides Students learn how slope and earth materials are connected to landslides. http://www.earthsciweek.org/classroom-activities/watch-out-landslides The Slope of Land Students learn how communities control slope in land development. http://www.earthsciweek.org/classroom-activities/slope-land-your-community Coastal Erosion Poster http://water.usgs.gov/outreach/Posters/coastal_hazards/images/CoastalhazGrade_BW.jpg Rock Abrasion In this activity, students observe weathering. http://www.earthsciweek.org/classroom-activities/rock-abrasion The Changing Earth		

This unit, developed in conjunction with WestEd, focuses on Earth's continuous process of change. Some portions of it are well-aligned to the NCSCOS. http://sbsciencematters.com/lesson-units/4th-grade/4earth-the-changing-earth/ Weathering and Erosion This unit, developed in conjunction with WestEd, focuses on Earth's continuous process of change. Some portions of it can be adapted for use. http://sbsciencematters.com/lesson-units/6th-grade/6th-earth-science-weathering-erosion/ Earthquakes and Volcanoes Parts of this unit can be adapted for use. http://sbsciencematters.com/lesson-units/6th-grade/6earth-earthquakesvolcanoes/ USGS Volcano Education http://volcanoes.usgs.gov/vhp/edu_resources.html Map of Volcano Activity http://volcanoes.usgs.gov/index.html Earthquakes for Kids http://earthquake.usgs.gov/learn/kids/ **Online Interactives**: http://www.mylearning.org/fossils-game/interactive/2402/ http://www.sheppardsoftware.com/scienceforkids/dinosaurs/fossil_study.htm http://www.amnh.org/ology/features/layersoftime/		

http://www.ngkids.co.uk/games/dinosaurCove http://www.e-learningforkids.org/science/lesson/exploracion-de-fosiles/ http://www.fossilsforkids.com/Cool_Links.html http://discoverykids.com/games/volcano-explorer/ http://earthquake.usgs.gov/learn/kids/kidsLearningLinks.php http://www.dropcoverholdon.org/beatthequake/game/ http://www.wartgames.com/themes/science/earthquakes.html **Video Resources:** Mr. Mejia's paleontology videos http://www.psd1.org/Page/4324 http://www.planet-science.com/categories/under-11s/our-world/2011/10/what-makes-fossils.aspx http://studyjams.scholastic.com/studyjams/jams/science/rocks-minerals-landforms/weathering-and-erosion.htm http://studyjams.scholastic.com/studyjams/jams/science/rocks-minerals-landforms/volcanoes.htm http://studyjams.scholastic.com/studyjams/jams/science/rocks-minerals-landforms/earthquakes.htm http://www.teachertube.com/video/how-fossils-are-formed-		

107671?utm_source=video-google&utm_medium=video-view&utm_term=video&utm_content=video-page&utm_campaign=video-view-page **Text Resources:** http://www.ducksters.com/science/earth_science/erosion.php http://www.ducksters.com/science/volcanoes.php http://www.ducksters.com/science/earthquakes.php http://www.ducksters.com/science/earth_science/fossils.php **Writing Prompts:** **1**) Study a real fossil or a picture of a real fossil. Write about it. -What is it? Where did it come from? What can it tell us? 2) Give each student a clam or oyster shell. Ask them to imagine that scientists 10,000 years from now find a fossil of a clam or oyster. What would they learn about us from looking at the clam or oyster? 3) Imagine you have a chance to interview a scientist who studies dinosaur fossils. Write three questions you would ask. Then perform research and use your notes from the unit to answer the questions. 4) Create a pamphlet to inform people about the different types of volcanoes and volcano safety. 5) Read several of the earthquake poems found here http://hellopoetry.com/words/980/earthquake/poems/ Write a haiku devoted to the one you like the most and explain why (in the haiku). **Assessment:**		

4.E.2.1 Which type of rock is most often found to contain fossils? Why?

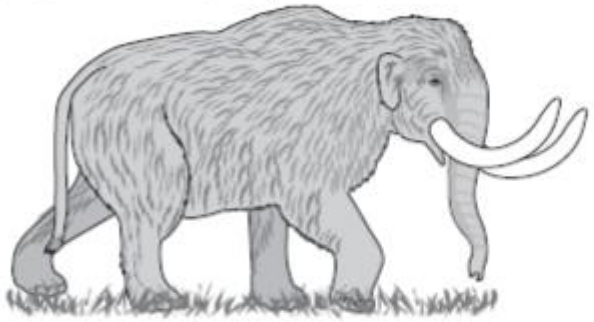
A. Igneous

B. sedimentary

C. metamorphic

D. Granite

4.E.1.1 The fossils of many mastodons have been discovered in Michigan.



Mastodon

The fact that so many mastodon fossils have been found but no live mastodons have been found anywhere is evidence that mastodons are

a. Threatened

b. Endangered

c. Extinct

d. Protected

Explain.

4.E.2.2 What can we learn from studying fossils?

A. the ways that organisms have changed over time

B. how weather is predicted

C. how islands are formed

D. how volcanoes erupt

*Use the same question but ask for more than one thing that we can learn.

4.E.2.3 The landform below is a sea arch.  What is responsible for shaping this arch? a. plate tectonics b. earthquakes c. deposition **d. erosion** Explain your answer, using the picture as a model. ***Constructed response*** Many years ago, the shape of this landform was very different. Describe how the landform may have appeared in the past and explain how water is connected to creating the current landform.			
Unit of Study: Ecosystems **Essential Standard:** **4.L.1 Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats.** **Clarifying Standards:** 4.L.1.1 Give examples of changes in an organism's environment that are beneficial to it and some that are harmful. 4.L.1.2 Explain how animals meet their needs by using behaviors in response to information received from the environment. 4.L.1.3 Explain how humans can adapt their behavior to live in changing habitats (e.g., recycling wastes, establishing rain garden, planting trees and shrubs to prevent flooding and erosion). 4.L.1.4 Explain how differences among animals of the same population sometimes give individuals an advantage in surviving and reproducing in changing		adaptation camouflage organism predator prey herbivore carnivore omnivore behavior habitat environment survival hibernate migration mimicry	3/22- 4/9/2021

habitats. **Essential Questions:** What do living things need to survive? How does the structure of an organism help it to survive? How does the behavior of an organism help it to survive? How do adaptations sustain life? … in individual organisms? … in species? What changes in an environment might lead to adaptations? How can human behavior affect organisms and their environment? **Instructional Resources:** PBS Environmental Change Materials http://www.pbslearningmedia.org/search/?q=Environmental+change&order=&selected_facets=&selected_facets=grades_exact%3A3&selected_facets=grades_exact%3A4&selected_facets=grades_exact%3A5&selected_facets=grades_exact%3A6&selected_facets=grades_exact%3A7&selected_facets=grades_exact%3A8 http://www.pbslearningmedia.org/resource/tdc02.sci.life.oate.lp_changeenviron/effects-of-environmental-change/ CLA Unit Adaptation and Behavior http://learning-in-action.williams.edu/opportunities/elementary-outreach/science-lessons/5th-grade-adaptation-and-behavior-unit/ This grade 5 unit includes information about human inheritance as an introduction to concepts of inherited, adaptive structures and behavior in living things. Amazing Adaptations http://www.cpalms.org/Public/PreviewResourceLesson/Preview/31239 This Engineering Design Challenge is intended to help fifth grade students apply the concept of how structural and behavioral adaptations contribute to the survival of an animal species. Adaptations Unit http://www.unr.edu/Documents/education/nneli/4th%20Grade%20Lesson%204-DI-S.pdf	instinct extinction	

Students learn how adaptations increase possibilities for survival. OSU Organisms, Adaptations, Environments https://beyondweather.ehe.osu.edu/issue/we-depend-on-earths-climate/lessons-about-organisms-adaptations-and-environments Before students can understand how changes in climate affect living organisms, they first must understand that all organisms are adapted for life in certain climates. The lessons highlighted here help build that important foundational knowledge in the elementary years. UEN Adaptations and Traits http://www.uen.org/core/lessonList.do?courseNum=3050&itemId=1239 A collection of lessons that explore how traits and survival are connected. Behavioral Adaptations http://weblessons.com/Teacher/guide.php?lessonID=1810&hono This lesson introduces adaptations. In order to survive and thrive in a particular environment, animals must develop a variety of amazing characteristics (adaptations). Some adaptations, such as bright colors or sharp beaks, are structural (physical). Others, like migration and nest building, are behavioral adaptations. Structural Adaptations http://weblessons.com/Teacher/guide.php?lessonID=1809&hono Students are introduced to the two types of adaptation - structural and behavioral. This WebLesson will focus predominantly on structural adaptations; behavioral adaptations will be covered more extensively in the next WebLesson. Migration http://www.learner.org/jnorth/tm/AdaptationsLesson.html Students explore the meaning of physical and behavioral adaptation, consider how migration fits in, and identify adaptations that help the Journey North species they track survive. Animal Adaptations Unit		

http://www.polk.k12.ga.us/userfiles/449/Classes/2959/AnimalAdaptations.pdf A collection of lessons and support materials. Science Net Links **http://sciencenetlinks.com/lessons/animal-adaptations/** In this lesson, students will participate in classroom discussions and visit a website to learn more about animals and how well (or poorly) they've adapted to satisfying their needs in their natural habitats. **NC ZOO Adventures in Ecotourism** **http://www.nczoo.org/Documents/AdventureinEcotourism.pdf** Students explore unique climates and organisms of the world's major biomes while making connections to NC Zoo exhibits. **National Park Service** **http://www.nps.gov/cany/learn/education/upload/FourthGrade_Animals.pdf** This field trip will work in any area where there is evidence of beavers. A wide open area for migration and a wooded area for deer's ears would be an asset. Areas along the Colorado River such as Big Bend Campground and Negro Bill Canyon are excellent. These materials can be adapted for use in other states as well. **Learn NC** **http://www.learnnc.org/search?phrase=animal+behavior+and+adaptation.** Animal behavior and adaptations resources from Learn NC. **eThemes: Animal Adaptations** **https://ethemes.missouri.edu/themes/905** **These sites are about the behaviors and physical traits that enable animals to survive in their environments. Topics cover camouflage, mimicry, and natural selection. Includes images, games, and lesson plans. There is a link to eThemes Resource on natural selection.**		

Endangered Species Units **http://www.scholastic.com/teachers/lesson-plan/balancing-act** **http://taryndarlow.weebly.com/uploads/1/9/7/1/19719981/science_endangered_species_unit.pdf** **Online Interactives** http://interactivesites.weebly.com/animal-adaptations.html http://www.quia.com/mc/655672.html?AP_rand=1171082618 http://www.quia.com/rr/109974.html http://www.harcourtschool.com/activity/animalneeds/ http://desertmuseumdigitallibrary.org/kids/Games/Adaptations.html https://www.eduplace.com/kids/hmsc/activities/simulations/gr3/unitb.html http://www.pbslearningmedia.org/resource/lsps07.sci.life.evo.buildafish/build-a-fish/ **Video Resources:** **PBS** **http://www.pbslearningmedia.org/search/?q=Adaptation%2C+Behavior%2C+and+Survival&selected_facets=** **Kidport** **http://www.kidport.com/reflib/science/Videos/Animals/AnimalSurvival.htm**		

Watch Know Learn http://www.watchknowlearn.org/SearchResults.aspx?SearchText=Animal+Adaptations http://www.watchknowlearn.org/SearchResults.aspx?SearchText=Endangered+Species **Study Jams: Adaptations** http://studyjams.scholastic.com/studyjams/jams/science/animals/animal-adaptations.htm **Study Jams: Changes in Ecosystems** http://studyjams.scholastic.com/studyjams/jams/science/ecosystems/changes-ecosystems.htm **Top Ten Adaptations** http://www.animalplanet.com/wild-animals/animal-adaptations/ **Text Resources:** **Study Jams: Changes in Ecosystems** http://studyjams.scholastic.com/studyjams/jams/science/ecosystems/changes-ecosystems.htm **Study Jams: Adaptations** http://studyjams.scholastic.com/studyjams/jams/science/animals/animal-adaptations.htm **BBC online** http://www.bbc.co.uk/nature/adaptations **Natureworks**		

http://www.nhptv.org/natureworks/nwep1.htm **Exploring Nature** http://www.exploringnature.org/db/view/1693 **NY Gov** http://www.dec.ny.gov/docs/remediation_hudson_pdf/hrlpadapt.pdf **Science A-Z Adaptations** http://teacherweb.com/ma/heightselementaryschool/leary/adaptations5-6_nfbook_mid.pdf **Writing Prompts:** • Research and report about an endangered species. Write about a possible way to increase populations of this species. • Write a report on animal adaptations and how these adaptations help an animal survive in its environment. • Write an essay about the differences between two different types of insects. Give examples of how each type is adapted to its environment. • Snowy owls are well adapted to their Arctic habitat, with even their toes covered by a feathery coat. How do you adapt to snowy weather? **Assessment:** 4.L.1.1 What may happen to many plants and animals in the Neuse River basin if there is a hurricane with severe flooding? Why? a. there will be less polluted water b. plants and animals will die from the effects of the flood c. plants and animals will move to other areas and survive there d. plants and animals will help one another to survive 4.L.1.2 *See Attachment 1 4.L.1.3 During the La Nina cycle, there tends to be drought in North		

Carolina. Which behavior would do more harm than good during this climate cycle? Why is this so? a. watering the lawn in the morning hours b. installing a rain barrel c. turning the water off while brushing your teeth d. planting native plants that need less water 4.L.1.4 A North Carolina male pheasant has bright colors and long tail feathers. This is an advantage because: a. the weight of the feathers makes flying challenging b. the color of the feathers makes the pheasant easier to see c. the long tail feathers dry off faster d. the colors attract female pheasants. Explain why this is important.		
Unit of Study: Molecular Biology **Essential Standard:** **4.L.2 Understand food and the benefits of vitamins, minerals, and exercise.** 4.L.2.1 Classify substances as food or non-food items based on their ability to provide energy and materials for survival, growth, and repair of the body. 4.L.2.2 Explain the role of vitamins, minerals, and exercise in maintaining a healthy body. **Essential Questions:** What makes a body healthy? How do/does vitamins/minerals/exercise keep a body healthy? What is the best source of vitamins and minerals for the human body? How is the body affected by the lack of vitamins, minerals and/or exercise? **Instructional Resources:** Kids.gov https://kids.usa.gov/teachers/exercise-fitness-nutrition/index.shtml A collection of useful sites for teaching about food, nutrition, and exercise.	food nutrients macronutrients micronutrients energy vitamins minerals	4/12-6/3/2021

Nourish Interactive Printables http://www.nourishinteractive.com/nutrition-education-printables Kids, parents, and teachers enjoy free printables for kids from Nourish Interactive- The Fun Way to Learn About Nutrition! Just 'click to print' educational and fun activity worksheets: matching, crossword puzzles, word searches, family nutrition tip sheets, and kids coloring printables. Food Folks Nutrition Curriculum http://www.childrenshungeralliance.org/assets/childrenshungeralliance/files/cms/100/1665.pdf The Food Folks nutrition education curriculum was designed to educate elementary-aged children about the importance of a healthy diet. Serving Up MyPlate: A Yummy Curriculum http://www.fns.usda.gov/tn/serving-myplate-yummy-curriculum Serving Up MyPlate is a collection of classroom materials that helps elementary school teachers integrate nutrition education into Math, Science, English Language Arts, and Health. This curriculum introduces the importance of eating from all five food groups using the MyPlate icon and a variety of hands–on activities. Food, Nutrition, and Physical Activity http://www.american.edu/cas/health/cvhealth/upload/TN_CVH_LessonsFinal.pdf This curriculum, created for middle grades, has many lessons that might be adapted for use in upper elementary grades. This unit can also provide materials that extend student understanding of the basic upper elementary curriculum in this area. Healthy Active Kids https://www.healthyactivekids.com.au/teachers/victoria/unit-1-food-nutrition/ A classroom unit about food and nutrition.		

Good Food, Good health http://sciencenetlinks.com/lessons/nutrition-2-good-food-good-health/ In this investigation, students will use online resources to help them explore how food can affect their overall health. Got Broccoli? http://sciencenetlinks.com/lessons/nutrition-3-got-broccoli/ This lesson encapsulates what students have learned about nutrients, their different forms, and their importance for particular tasks in the body. Teaching the Food System http://www.jhsph.edu/research/centers-and-institutes/teaching-the-food-system/curriculum/ Some of these modules can be adapted for use in an elementary level unit. These are particularly useful with students whose needs for differentiated curriculum extend beyond the basic requirements. The project offers a curriculum, comprised of eleven classroom-ready modules, that spans issues in the food system from field to plate. The material is focused on issues in the U.S. food system but also touches on some of their global implications. American Heart Association Elementary Lesson Plans http://www.heart.org/HEARTORG/Educator/FortheClassroom/ElementaryLessonPlans/Elementary-Lesson-Plans_UCM_001258_Article.jsp#.V3-uR2b6vcs A large collection of heart health education lesson plans and materials. Some of these would be useful in educating about nutrition and exercise. Food System Tools http://www.nourishlife.org/teach/food-system-tools/ This site includes tools that encourage systems thinking. These tools can help students to visualize where our food comes from and how it gets to us.		

Superkids Nutrition http://www.superkidsnutrition.com/ Superkids Nutrition's mission is to create future healthier generations through good nutrition. Superkids Nutrition aims to empower children and families to reach their full potential by having the energy and good health needed to accomplish their life goals. Superkids Nutrition helps parents and the community become more knowledgeable about nutrition and enable children to make healthy choices every day. Cruciferous Crusaders Curriculum http://leafy-greens.org/all-about-greens/ A collection of lessons and trading cards focused on promoting the consumption of cruciferous greens. Kids will love the dinosaur crucifers. There's A Rainbow on my Plate http://pbhfoundation.org/pub_sec/edu/cur/rainbow/ The activities in this unit are teaching us important lessons about fruits and vegetables, and the role they play in maintaining good health. The Great Garden Detective Adventure http://www.fns.usda.gov/tn/great-garden-detective Discover what fruits and vegetables are sweetest, crunchiest, and juiciest through a series of investigations and fun experiences connecting the school garden to the classroom, school cafeteria, and home. Dig In! http://www.fns.usda.gov/tn/dig-standards-based-nutrition-education-ground Explore a world of possibilities in the garden and on your plate using ten inquiry-based lessons that engage 5th and 6th graders in growing, harvesting, tasting, and learning about fruits and vegetables. Eat Smart Be Smart http://opi.mt.gov/Programs/SchoolPrograms/School_Nutrition/eatsmart.html#gpm1_1		

A kindergarten through fifth grade curriculum for teaching nutrition through math, science, language arts, and health enhancement. Pick a better Snack http://idph.iowa.gov/inn/pick-a-better-snack/fact-sheets This site includes lessons, posters, bingo cards and more to help teachers teach about and promote good nutrition, and health. Create a Classroom that Moves! https://healthymeals.nal.usda.gov/state-resources/create-classroom-moves Classroom-based physical activity is an instructional tool teachers can use to improve mood, energy levels, and facilitate student learning. Activity can be introduced into existing routines and transitions, into academic lessons, or introduced as a 'brain break.' This kit consists of three core classroom tools: Grade-level nutrition lessons; Physical activity breaks; My Classroom Physical Activity Pyramid. DINE Elementary School Nutrition lesson collection http://www.dineforlife.org/elementary-school-curriculum.php Move for Thought https://healthymeals.nal.usda.gov/hsmrs/Iowa/moveforthought.pdf Physical activity cards that can be conducted in the academic classroom. Choose My Plate http://www.theicn.org/ResourceOverview.aspx?ID=440 Nutrition and dietary guidance for choosing a healthy lifestyle, with links to a variety of resources. Look for guidance on building a healthy plate, SuperTracker to keep track of dietary intake and physical activity, and resources for consumers, educators, and health care professionals. My Plate Kids' Place http://www.choosemyplate.gov/kids/ From the USDA, this site includes games, activity sheets, videos, songs and recipes geared toward helping students build a better plate.		

Vitamins and minerals http://canucks.nhl.com/v2/ext/1314-COM-2773-PowerPlay%20Gr6-7_Final%20-%20Unit%202.pdf Students can identify the main food sources of specific vitamins and minerals. Vitamins and Minerals http://www.uen.org/Lessonplan/preview.cgi?LPid=5027 A comprehensive lesson on the study of Vitamins and Minerals, their functions in the body, how fruits and vegetables are a good food source, the deficiencies in the body that may occur due to a lack of and some of the characteristics relating to them. When Something's Missing: Diagnosing Vitamin Deficiencies http://learning.blogs.nytimes.com/2012/03/14/when-somethings-missing-diagnosing-vitamin-deficiencies/?_r=0 What happens when essential vitamins and minerals are missing from our diets? In this lesson, students consider what they already know and believe about vitamins and supplements, research nutrient deficiencies and then create, analyze and discuss patient case studies. Online Interactives http://www.fns.usda.gov/tn/blast-game http://www.nourishinteractive.com/ http://www.nourishinteractive.com/kids/healthy-games/22-nutrient-machine-vitamins-minerals-game-children Video Resources: http://www.choosemyplate.gov/videos		

Text Resources: http://www.sciencekids.co.nz/food.html http://www.cyh.com/HealthTopics/HealthTopicCategories.aspx?p=284 http://healthy-kids.com.au/food-nutrition/nutrients-in-food/ **Writing Prompts:** 1. Construct a three paragraph essay addressing the following: Do you believe exercise is important? How can you implement this belief into your life? 2. Construct a three paragraph essay addressing the following: Is it more important to exercise or eat right – or both? 3. Write a poem: Write about your favorite food. What is it? Where do you eat it? What makes it your favorite? 4. What is your favorite sandwich? Explain how to make it starting from the bottom to the top layer. 5. Write a story with a potato as the superhero. 6. Describe the worst meal you ever had in your life, include as many details as you can straight through to your last bite. http://writingprompts.tumblr.com/post/56544095055/writing-prompts-for-a-food-unit **Assessment:** 4.L.2.1 Which of the following coverings could be food? Why? a. a candy wrapper b. a walnut shell c. an apple peel d. a paper lunch bag 4.L.2.2 In order to maintain optimal health, humans need _____, _____, and _____. Explain why each of these is important individually and why they are important together.		

a. good grades, nice clothes, and many friends b. vitamins, minerals, and exercise c. vaccinations, minerals, and haircuts d. minerals, rocks, and exercise		