Butler County Schools

2019-2020 Earth/Space Science Pacing Guide: Grade 8

School Calendar 2017-2018					Days
August					
X	X	7	8	9	1-3
12	13	14	15	16	4-8
19	20	21	22	23	9-13
26	27	28	29	30	14-18
X	X	X	X	X	
September					
2	3	4	5	6	19-23
9	10	11	12	13	24-28
16	17	18	19	20	29-33
23	24	25	26	27	34-38
30	X	X	X	X	39
October					
X	1	2	3	4	40-43
7	8	9	10	11	
14	15	16	17	18	44-48
21	22	23	24	25	49-53
28	29	30	31	X	54-57
November					
X	X	X	X	1	58
4	5	6	7	8	59-61
11	12	13	14	15	62-66
18	19	20	21	22	67-71
25	26	27	28	29	72-73
December					
2	3	4	5	6	74-78
9	10	11	12	13	79-83

Big Idea(s) and Topic(s)

*****The pacing included in this document is flexible, and should be adjusted as needed to meet the individual needs of your students, as well as to allow for sufficient time for assessment and re-teaching as needed.**

Learner Outcomes

*****The following learning targets were derived from the Reading Standards for Literacy in Science and Technical Subjects 6-12. They are to be integrated and taught throughout the course of the year in all units.**

1. I can cite specific textual evidence to support analysis of science and technical texts.
2. I can determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
3. I can follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
4. I can determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics.*
5. I can analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
6. I can analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.
7. I can integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
8. I can distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
9. I can compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
10. I can by the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.

16	17	18	19	20	84-88
23	24	25	26	27	
30	31	X	X	X	
School Calendar					**Days**
January					
X	X	1	2	3	85-88
6	7	8	9	10	89-93
13	14	15	16	17	94-97
20	21	22	23	24	98-101
27	28	29	30	31	102-106
February					
3	4	5	6	7	107-111
10	11	12	13	14	112-116
17	18	19	20	21	117-120
24	25	26	27	28	121-125
X	X	X	X	X	
March					
2	3	4	5	6	126-130
9	10	11	12	13	131-135
16	17	18	19	20	136-140
23	24	25	26	27	141-145
30	31	X	X	X	146-147
April					
X	X	1	2	3	148-150
6	7	8	9	10	
13	14	15	16	17	151-155
20	21	22	23	24	156-160
27	28	29	30	X	161-164

Scientific Method, Metric Measurement, Process skills
(1 week: Days 1-3)

Earth and the Universe
(5 Weeks: Days 41-62)
- Estimating geological time
- Plate tectonics/internal heat

Scientific Method, Metric Measurement, Process skills

- **I can solve problems using the scientific method.**
- **I can accurately use the metric system to measure length, mass, volume.**
- **I can explain how mass and weight are different.**
- **I can describe the difference between an observation and an inference.**
- **08-LS4-2 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.**
- **08-LS4-3 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.**
- **08-LS4-4 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.**

Earth and the Universe

- **08-LS4-2 Analyze and interpret data 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 naturals laws operate today as in the past.**

- **I can list and describe the common techniques (radioactive dating, observing rock sequences, index fossils) used to estimate geologic time. (2.3.1)**

May					
X	X	X	X	1	165
4	5	6	7	8	166-170
11	12	13	14	15	171-175
18	19	20	21	22	176-177
25	26	27	28	29	

Energy Transformations
(8 Weeks: Days 63-97)

- Transfer of energy
- Conservation of energy
- Energy and climate
- Energy transfer by waves
- Energy flow in an ecosystem

- **I can explain the appropriate uses and limitations of each of the common geologic dating techniques. (2.3.1)**
- **I can explain how calculating the rate of radioactive decay of isotopes contained in rocks can be used to estimate their age. (2.3.1)**
- **I can explain how the arrangement of rock layers can be used to determine their relative ages. (2.3.1)**
- **I can explain how index fossils (organisms that lived for only a short period of time) can be used for relative dating of rocks. (2.3.1)**
- *I can describe how some processes, like earthquakes and volcanoes, can be observed on a human time scale, but others, such as plate movements and mountain building, take place over hundreds of millions of years. (2.3.2)*
- **I can explain how the movement of crustal plates is caused by the flow of molten rock below the crust. (2.3.3)**
- **I can describe the role of convection currents in the movement of molten rock. (2.3.3)**
- **I can describe and model the flow of heat within the earth which results in crustal movement. (2.3.3)**
- **I can predict how heat flow within the earth might influence conditions or features on the crust. (2.3.3)**
- *I can explain how the Sun, Earth and the rest of the solar system formed approximately 4.6 billion years ago. (2.3.4)*

<u>Energy Transformations</u>

- **I can list a number of important sources of energy. (4.6.2)**
- **I can identify common important energy transformations that occur in daily life. (4.6.2)**
- **I can explain the difference between transfer and transformation of energy into different forms. (4.6.2)**

						NGSS **Structure and Transformation of Matter** (7 Weeks: Days 124-154) • Classification of elements • Structure of the periodic table • Basic atomic structure • Models of atomic structure • Biogeochemical cycles **NGSS**	• **I can compare the benefits and costs/problems of common energy sources. (4.6.2)** • **I can identify and describe a variety of waves (water, electromagnetic, sound, seismic, etc.). (4.6.4)** • **08-LS1-8 Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.** • **08-PS3-1Construct 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.** • **I can explain why the sun's energy is the most important factor in global climate. (4.6.1)** • **I can predict the effect of the sun's energy on climate patterns. (4.6.1)** • **I can use climate and weather data to predict and explain global climate issues (4.6.1)** **<u>Structure and Transformation of Matter</u>** • *I can describe atoms as 'stuff' all matter is made of. (1.1.2)* • **I can classify common elements by their observable physical and chemical properties. (1.1.1)** • **I can explain the 'periodic' nature of the periodic table. (1.1.1)** • **I can classify common elements by their position on the periodic table. (1.1.1)** • **I can explain how and why certain elements are grouped together on the periodic table. (1.1.1)** • *I can model and describe the basic structure of the atom, including the charge and relative mass of the subatomic particles. (1.1.3)* • **I can trace the path of atoms through common biogeochemical cycles such as the carbon cycle, nitrogen cycle, etc. (1.1.4)**

							• **08-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.** • **08-LS2-5 Evaluate competing design solutions for maintaining biodiversity and ecosystem services.**