8th Science I cans 17-18

Engineering – NGSS

A. I can define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution.

B. I can take into account scientific principles and possible impacts on people and the nature environment that may limit possible solutions.

C. I can evaluate competing design solutions to determine how well they meet the criteria and constraints of the problem.

D. I can analyze data from tests identify the best characteristics that can be combined into a new solution to better meet the criteria for success.

E. I can develop a model to generate data for repetitive testing and modification of a technology such that an optimal design can be achieved.

Nature of Science

A. I can use maps, satellite images or other data sets to describe patterns and make predictions about natural systems. 7.1.3.4.1

B. I can evaluation the reasoning in arguments in which fact and opinion are intermingled or when conclusions do not follow logically from the evidence given. 8.1.1.1.1

C. I can use logical reasoning and imagination to develop descriptions, explanations and predictions on models based on evidence. 8.1.1.2.1

D. I can describe examples of important contributions to the advancement of science made by individuals representing different groups and cultures at different times in history. 8.1.3.3.1

E. I can explain how scientific laws and engineering principles, as well as economic, political, social, and ethical expectations must be taken into account in designing and engineering solution or conducting a scientific investigation. 8.1.3.3.1

F. I can understand that scientific knowledge is always changing as net technologies and information enhance observation and analysis of data. 8.1.3.3.2

G. I can provide examples of how advances in technology have impacted how people live, work and interact. 8.1.3.3.3

H. I can use maps, satellite images, or other data sets to describe patterns and make predictions about local and global systems. 8.1.3.4.1

I. I can use safe procedures, tools, measurements, graphs, and mathematical analyses to describe and investigate natural and designed systems 8.1.3.4.2

J. I can generate and refine a variety of scientific questions and match them with appropriate methods of investigation such as field studies, controlled experiments, review of existing work, and development of models. 7.1.1.2.1

K. I can plan and conduct a controlled experiment to test a hypothesis about a relationship between two variables. 7.1.1.2.2

L. I can generate a scientific conclusion from an investigation, distinguishing between results/evidence and conclusions/explanation. 7.1.1.2.3

Ecology and the Environment

Population and Communities 7.4.2.1.1 7.4.2.1.2 7.4.2.1.3

A. I can explain what organisms get from the environment.
B. I can explain the different parts of the organism's habitat.
C. I can explain how an ecosystem is organized.
D. I can explain how populations change in size.
E. I can describe factors that limit population growth.
F. I can show how adaptations help an organism to survive.
G. I can explain what competition and predation are.
H. I can describe the different types of symbiosis.
I. I can describe how primary and secondary succession differ.

Ecosystem and Biomes 7.4.2.2.1 7.4.2.2.2 7.4.2.2.3 7.4.3.2.3

A. I can explain the energy roles in an ecosystem.
B. I can show how energy moves through the ecosystem.
C. I can describe the water cycle.
D. I can explain how the carbon and oxygen cycles are related.
E. I can explain how nitrogen travels through the ecosystem.
F. I can explain characteristics of the six major land biomes.
G. I can describe the two aquatic biomes.
H. I can describe factors that affect species dispersal.

Resources and Living Things 7.4.4.1.1 7.4.4.1.2

A. I can describe the types of environmental issues.
B. I can describe how environmental decisions are made.
C. I can describe a natural resource.
D. I can explain why natural resources are important.
E. I can explain how the human population has grown over time.
F. I can explain factors that affect the human population growth.
G. I can explain how forests can be managed as renewable resources.
H. I can describe how fisheries can be managed for a sustainable yield.

I. I can explain why biodiversity is valuable.
J. I can describe factors that affect biodiversity.
K. I can show how humans can affect biodiversity.

Land, Air, and Water Resources 8.3.4.1.2

A. I can explain how people use land.
B. I can explain why soil management is important.
C. I can explain how solid waste is disposed of.
D. I can explain how recycling works.
E. I can explain how hazardous wastes are disposed of.
F. I can explain what causes outdoor and indoor air pollution.
G. I can explain what causes damage to the ozone layer.
H. I can explain how air pollution can be reduced.
I. I can explain why fresh water is a limited resource.
J. I can explain different sources of water pollution.
K. I can explain how water pollution can be reduced.
L. I can describe resources that come from the ocean.
M. I can explain different sources of ocean pollution.

Energy Resources 8.3.4.1.1

A. I can explain what fossil fuels are.
B. I can explain why fossil fuels are nonrenewable resources.
C. I can describe forms of renewable energy.
D. I can describe how a nuclear power plant produces electricity.
E. I can explain how energy use has changed over time.
F. I can describe how we can ensure we will have enough energy resources for the future.

Introduction to Chemistry

Introduction to Matter 8.2.1.1.1 6.2.1.1.1

A. I can describe the properties of matter.
B. I can explain what matter is made of.
C. I can describe the two types of mixtures.
D. I can calculate density.
E. I can explain the difference between physical and chemical change.
F. I can explain how changes in energy and matter are related.

Solids, Liquids, Gases 6.2.1.2.1 6.2.1.2.2 6.2.1.2.3

A. I can describe solids, liquids and gasses.
B. I can describe what happens to matter as it, melts, freezes, vaporizes and sublimes.
C. I can explain how pressure, volume and temperature of gas are related.

Elements and the Periodic Table 8.2.1.1.2 7.2.1.1.1

A. I can describe how atomic theory developed.
B. I can utilize different models of atoms.
C. I can describe how the periodic table was created.
D. I can explain what is found on the periodic table.
E. I can show how the periodic table is useful.
F. I can describe the properties of metals.
G. I can explain how metals are classified.
H. I can describe the properties of nonmetals.
I. I can describe the families containing nonmetals.
J. I can explain what happens to an atom during radioactive decay.
K. I can explain what radioactive decay produces.
L. I can explain why radioactive isotopes are useful.

Atoms and Bonding 7.2.1.1.2

A. I can explain what determines and element's chemistry.
B. I can explain how ions form.
C. I can explain how formulas and names of ionic compounds are written.
D. I can explain the properties of ionic compounds.
E. I can explain how atoms are held together in a covalent bond.
F. I can explain the properties of molecular compounds.
G. I can explain how bonded atoms become charged.

Chemical Reactions 8.2.1.2.1 8.2.1.2.2 8.2.1.2.3 7.2.1.1.3 6.1.3.1.1

A. I can describe changes in matter.
B. I can identify a chemical reaction.
C. I can explain what kind of information a chemical equation contains.
D. I can explain how mass in conserved during a chemical reaction.
E. I can describe different types of chemical reactions.
F. I can explain how chemical reactions begin.
G. I can explain what affects the rate of a chemical reaction.

Acids, Bases and Solutions 8.2.1.2.4

A. I can explain how mixtures are classified.
B. I can explain how a solution forms.
C. I can explain how concentration changes.
D. I can explain what factors affect solubility.
E. I can describe properties of acids.
F. I can describe properties of bases.
G. I can explain what happens in a neutralization reaction.

Earth's Surface

Mapping Earth's Surface 8.1.3.4.1 5.1.3.4.2

A. I can describe what topography includes.
B. I can describe the main types of landforms.
C. I can explain how maps and globes represent Earth.
D. I can explain how distance is measured in degrees.
E. I can explain what latitude and longitude are.
F. I can explain how maps are made.
G. I can describe what GPS and GIS are.
H. I can explain how maps show topography.

Weathering and Soil 8.3.1.2.1

A. I can explain how rocks break down.
B. I can explain what causes weathering and how fast it occurs.
C. I can explain what soil is and how living things affect it.
D. I can explain how soil can lose it's value and how to protect it.

Erosion and Deposition 8.3.1.2.2

A. I can explain what processes wear down and build up Earth's surface.
B. I can explain what the different types of mass movement are.
C. I can explain how moving water causes erosion.
D. I can describe land features that are formed by water erosion and deposition.
E. I can explain how glaciers form and move.
F. I can explain how glaciers cause erosion and deposition.
G. I can explain how waves cause erosion and deposition.
H. I can explain how wind causes erosion and deposition.

A Trip through Geologic Time 8.3.1.3.1 7.4.3.2.1 7.4.3.2.4

A. I can explain what fossils are.
B. I can describe the different types of fossils.
C. I can explain what fossils tell us.
D. I can explain how old rock layers are.
E. I can explain how rock layers can change.
F. I can explain how radioactive decay works.
G. I can explain what radioactive dating is.
H. I can describe the geologic time scale.
I. I can explain how the Earth formed.
J. I can describe the Earth during the Paleozoic Era.
K. I can describe the Earth during the Mesozoic Era.
L. I can describe the Earth during the Cenozoic Era.

Earth's Structure

Introducing the Earth and Plate Tectonics 8.3.1.1.1 8.3.1.1.2

A. I can explain the main parts of the Earth's system.
B. I can explain how constructive and destructive forces change the Earth.
C. I can explain how geologists learn about the Earth's interior.
D. I can explain the features of the Earth's crust, mantle and core.
E. I can explain how heat is transferred.
F. I can explain how convections occurs in the Earth's mantle.
G. I can explain Wegner's Hypothesis about the continents.
H. I can explain what the mid-ocean ridge is.
I. I can explain how sea-floor spreading happens.
J. I can explain what happens at deep ocean trenches.
K. I can explain the theory of plate tectonics.

Minerals and Rocks 8.3.1.3.2 8.3.1.3.3

A. I can explain what minerals are.
B. I can explain how minerals are identified.
C. I can explain how minerals form.
D. I can explain how geologists classify rock.
E. I can explain how geologists classify igneous rock.
F. I can explain how igneous rocks are used.
G. I can explain how sedimentary rocks form.
H. I can describe the three types of sedimentary rock.
I. I can explain how sedimentary rock is used.
J. I can describe metamorphic rocks.
K. I can explain the rock cycle.

Earthquakes 8.2.3.1.1

A. I can explain how stress changes the Earth's crust.
B. I can explain how faults form.
C. I can explain how plate movement creates new landforms.
D. I can explain what seismic waves are.
E. I can explain how earthquakes are measured.
F. I can describe how an epicenter is located.
G. I can explain how seismographs work.
H. I can describe patterns seismographs reveal.

Volcanoes 8.3.1.1.3

A. I can describe where volcanoes are found on Earth.
B. I can explain what happens when a volcano erupts.
C. I can describe the stages of volcanic activity.
D. I can describe landforms created by lava and ash.
E. I can describe landforms created by magma.