Grade 7 Science – Key Concepts and Outcomes for the Year
FINAL EXAM REVIEW

You should also review all key terms found on with the concept maps that were provided at the beginning of each unit.

Interactions and Ecosystem

Key Concepts

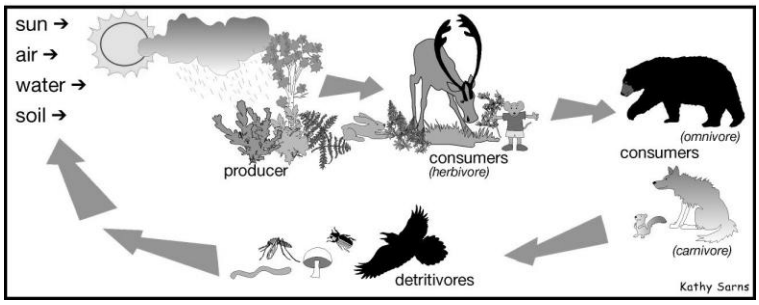
- ☐ Interactions and Interdependencies
- ☐ Environmental Monitoring
- ☐ Environmental Impacts
- ☐ Producers, Consumers, Decomposers
- ☐ Nutrient Cycles and Energy Flow
- ☐ Species Distribution
- ☐ Succession
- ☐ Endangered Species
- ☐ Extinction
- ☐ Environmental Management

Outcomes

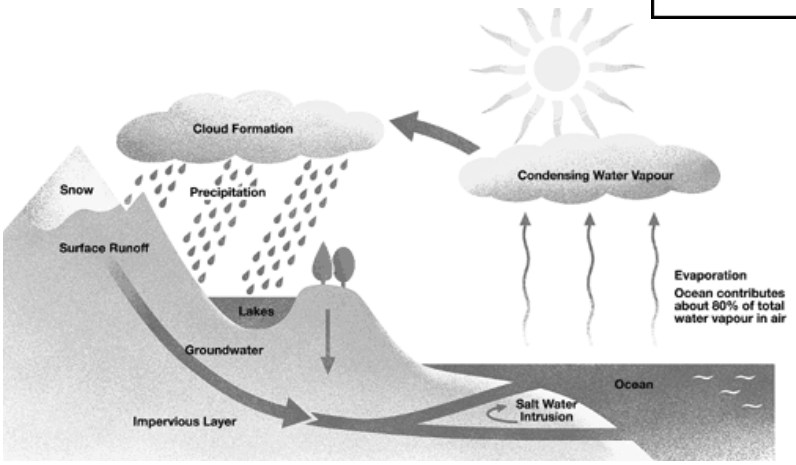
- ☐ I am able to investigate and describe the relationship between humans and their environments
- ☐ I am able to trace the flow of energy and materials within an ecosystem
- ☐ I am able to monitor a local environment and assess the impacts environmental factors have on the growth, health, and reproduction of organisms in that environment
- ☐ I understand that human knowledge, decisions, and actions will determine the sustainability life-supporting environments

Review Guide

- ☐ Be able to describe the 3 symbiotic relationships (mutualism, commensalism, parasitism)
- ☐ What is an ecological footprint? Be able to describe ways to reduce your ecological footprint.
- ☐ What does sustainability mean?
- ☐ Be able to describe food chains and food webs.
- ☐ What are the roles of producers, consumers, scavengers & decomposers in an ecosystem



- ☐ How do substances move through an ecosystem, what is bioaccumulation?
- ☐ Review the water cycle



- ☐ Be able to distinguish between primary and secondary succession
- ☐ What are introduced species and how can they become invasive species? What are their impacts on the environment?
- ☐ Describe the reasons animal's go extinct and what endangered and extinct animals are
- ☐ Be able to describe the various forms of ecosystem monitoring (physical, environmental, chemical, biological)

Planet Earth

Key Concepts

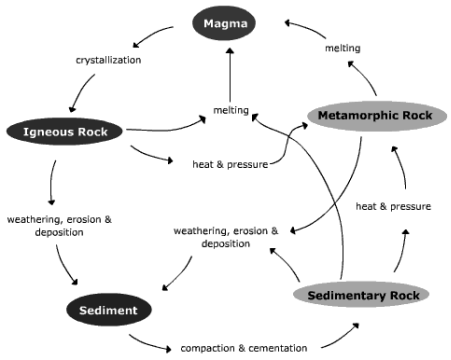
- ☐ Strata
- ☐ Rocks and Minerals
- ☐ The Rock Cycle
- ☐ How Igneous, Sedimentary and Metamorphic Rocks Form
- ☐Mountain Formation – Folding and Faulting
- ☐Plate Tectonics
- ☐Geological Time Scale
- ☐ Fossil Formation
- ☐Weather and Erosion
- ☐Sudden and Gradual Changes
- ☐Development of Models Based on Observation and Evidence

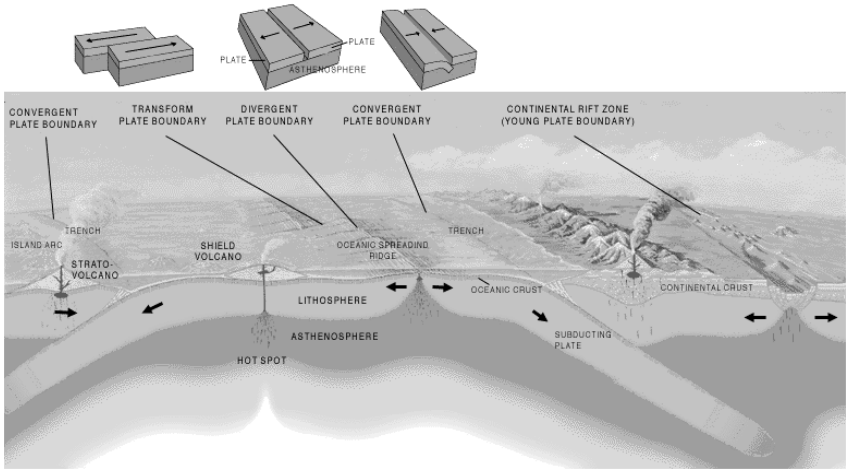
Outcomes

- ☐ I can explain the different methods that are used to study, observe, and interpret the Earth and what it is made of
- ☐ I can identify evidence for the rock cycle and can use the rock cycle to identify and explain the appearance of various rock samples
- ☐ I can identify evidence of major changes in landforms and the rock layers that underlie them
- ☐ I can describe, interpret and evaluate evidence from the fossil record

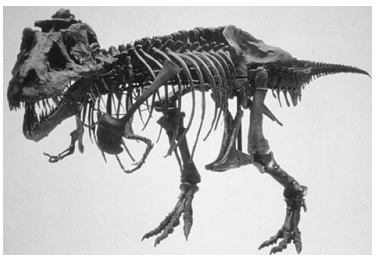
Review Guide

- ☐ What are rocks and minerals?
- ☐ Be able to describe the 3 rock families: their characteristics and how they are formed. Be able to explain the rock cycle
- ☐ What are physical (mechanical) weathering, chemical weathering, biological weathering and erosion?
- ☐ How is the Earth shaped? Be able to provide and recognize examples of gradual and sudden changes to the Earth's surface
- ☐ What happens when the Earth's crust moves? How does the Earth's crust move?
- ☐ Describe the different plate boundaries.





- ☐ Be able to describe how fossils form; the conditions required for fossil formation and the various types of fossils
- ☐ Be able to identify key events from each of the 4 eras (Precambrian, Paleozoic, Mesozoic, Cenozoic)



Structures and Forces

Key Concepts

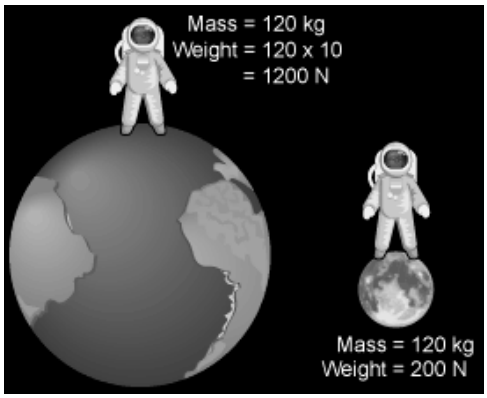
- ☐ Structural Forms
- ☐ Material Strength and Stiffness
- ☐ Joints
- ☐ Forces On and Within Structures (load and stresses)
- ☐ Direction of Forces
- ☐ Deformation
- ☐ Structural Stability
- ☐ Modes of Failure
- ☐ Performance Requirements
- ☐ Margin of Safety

Outcomes

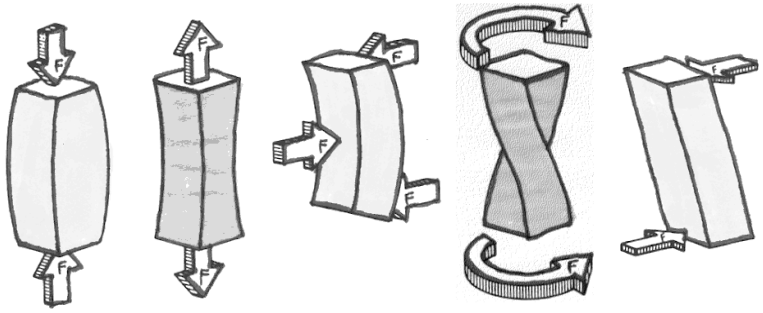
- ☐ I can describe the different types of structures encountered in everyday objects, buildings, plants, and animals and the materials they are made of
- ☐ I understand the forces that act within a structure and the forces that are applied to a structure
- ☐ I understand the properties of materials used in structures
- ☐ I can demonstrate and describe processes used in developing, evaluating and improving structures that safely meet human needs

Review Guide

- ☐ What are the 3 types of structures? What are the key characteristics of each?
- ☐ Be able to describe various types of materials and their advantages – composites, laminates, different textiles
- ☐ What are joints? What are frictional forces?
- ☐ What is the difference between mass and weight?



- ☐ What is the difference between an external and internal force?
- ☐ Be able to describe the 2 types of external forces.
- ☐ Be able to describe the 4 types of internal forces. (tension, compression, shear and torsion



- ☐ How are structures designed to withstand external and internal forces?
- ☐ What are the keys to stability?

Heat and Temperature

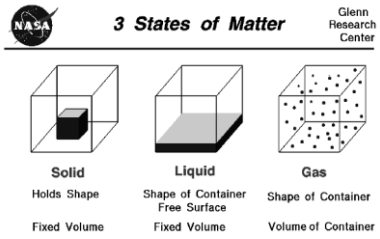
Key Concepts

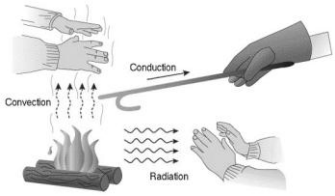
- ☐ Heat energy needs and technologies
- ☐ Thermal Energy (*heat*)
- ☐ The Particle Model of Matter
- ☐ Temperature
- ☐ Thermal Expansion
- ☐ Changes of State
- ☐ Heat Transfer
- ☐ Insulation and Thermal Conductivity
- ☐ Thermal Energy Sources
- ☐ Energy Conservation

Outcomes

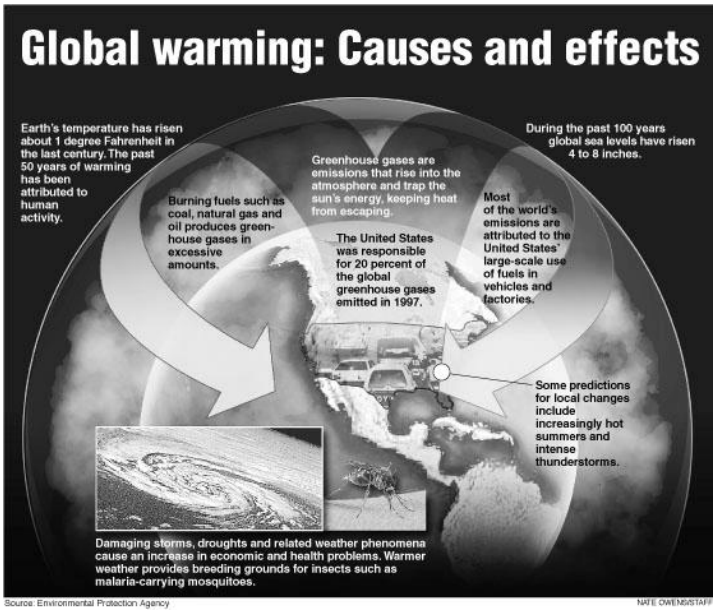
- ☐ I can explain how human needs have led to technologies for obtaining and controlling heat and the increased use of energy resources as a result
- ☐ I can describe the nature of thermal energy (heat) and if effects on different forms of matter through observations, experiments, and models
- ☐ I can use my knowledge of heat and temperature to interpret natural phenomena and technological devices
- ☐ I understand the issues related to the use of thermal technologies regarding sustainability of our resources

Review Guide





- ☐ Be able define temperature and thermal energy according to the particle model of matter
- ☐ Be able to describe the particle model of matter and the three states of matter according the particle model of matter
- ☐ How do particles behave when energy is added or removed?
- ☐ Be able to explain expansion and contraction based on the particle model of matter
- ☐ What is evaporative cooling and what is happening to the particles during this process?
- ☐ What are the changes of state, what happens during a change of state
- ☐ Be able to describe the 3 ways that heat energy can be transferred (radiation, conduction, convection)
- ☐ Be able to describe various forms of energy (thermoelectricity, hydroelectricity, chemical energy – fossil fuels, mechanical energy, solar, geothermal)
- ☐ What is the Greenhouse Effect and Global Warming – what are the major contributors to these two problems?
- ☐ Be able to describe and recognize ways to conserve energy



Plants for Food and Fibre

Key Concepts

- ☐ Needs and Uses of Plants
- ☐ Plant Propagation and Reproduction
- ☐ Life Processes and Structure of Plants
- ☐ Fertilizers and Soil Nutrients
- ☐ Chemical and Biological Controls
- ☐ Plant Varieties
- ☐ Selective Breeding
- ☐ Monocultures
- ☐ Resource Management
- ☐ Sustainability

Outcomes

- ☐ I understand the many ways plants can be used.
- ☐ I understand the life processes and structures of plants and understand the characteristics and needs of plants in different environments
- ☐ I can describe the impacts of various factors on plant environments
- ☐ I can identify and interpret the relationships between human needs, technologies, environments, and the culture and use of living things as a source of food and fibre

Review Guide

- ☐ What are the various uses of plants?
- ☐ Be able to describe various plant adaptations (roots, stem and leaves) and their role in the movement of substances through a plant.
- ☐ How do substances move through plants? What are diffusion, osmosis, transpiration, respiration?
- ☐ What are the processes of selective breeding and genetic modification and why are they used?
- ☐ Be able to explain the process of asexual reproduction in plants including examples of asexual reproduction as well as advantages and disadvantages of it
- ☐ Be able to describe the structures responsible the sexual reproduction of plants and the advantages and disadvantages of the sexual reproduction.
- ☐ Be able to describe the processes involved in the sexual reproduction of plants (pollination, fertilization, seed development, seed dispersal and germination)
- ☐ What does sustainability mean?
- ☐ Be able to describe various farming practices (irrigation, cultivation, monoculture, prevention of soil erosion practices, fertilization)
- ☐ Be able to describe the process of soil formation and what nutrients are essential for plant growth
- ☐ Be able to describe the types of pest species and the ways that they can be controlled