8th Grade Science
2nd Semester Study Guide

Waves and Information Transfer

What does a wave transfer?
Draw a transverse waves and label the parts.
Draw a longitudinal wave and label the parts.
What two factors affect the energy of a wave?
What type of frequency does a long wavelength have?
What type of frequency does a short wavelength have?
How does the amplitude of a wave relate to the energy of a wave?
Explain how a wave is reflected and give an example.
Explain how a wave is absorbed and give an example.
Explain how a wave is refracted and give an example.
When a light wave hits a bumpy surface, how does the reflection look?
When a wave hits a smooth surface, how does the reflection look?
Can a sound wave travel in space? Why or why not?
Why can a light wave travel in space?
What type of waves are in the electromagnetic spectrum?
How are the waves of the electromagnetic spectrum arranged?
How do digital signals transfer information?
Explain why digital signals are more reliable than analog signals.
How does interference affect how signals are sent and received?
Explain why digital signals are faster than analog.

Heredity

Where are genes located?
What information do genes provide?
What do genes code for?
Why is the structure of a protein important?
What is a mutation?
Explain why mutations can be harmful, beneficial, or neutral.
What kind of genetic information does asexual reproduction produce?
How many parents contribute genetic information in asexual reproduction?
What kind of genetic information does sexual reproduction produce?
How many parents contribute genetic information in sexual reproduction?
How can humans change the genetic makeup of organisms?
Why does changing the genetic makeup of organisms through artificial selection impact society?
What do we use to represent a genotype?
How is a dominant trait represented?
If you cross Bb x bb what will the possible genotypes and phenotypes be?
What needs to happen for a recessive trait to show as the phenotype?

Natural Selection and Adaptation

Where are fossils commonly found?
Do the natural laws (e.g., erosion, rock deposition, radioactive decay, etc.) operate today as they did in the past? Why or why not?
How do scientists date and age fossils and rock types?
How does looking at anatomical structures in organisms show change has happened over time?
Why do mass extinctions occur and what is the cause?
Explain how the diversity and complexity of organisms on Earth has increased.
Why would animals or organisms with similar anatomical structures have a common ancestor?
Why do organisms within a given species have the same pattern of embryological development?
Why do organisms that show similar patterns of embryological development have closer evolutionary histories?
How does genetic variation occur in a population?
What causes variety of traits in a population?
What happens when organisms produce more offspring than the environment can support?
How do genetic variations affect the survival rates of organisms in a particular environment.
Why do individuals with genetic variations, well-suited to an environment, produce more offspring than individuals with variations less-suited to the environment?
How does a changing environment cause different traits to have an advantage, disadvantage or have no impact on an organism's survival and reproduction?
Thinking about natural selection, which traits will be more common in a population?
List four areas that show evidence of evolution and explain why.