2017-2018 Advanced Physical Science Final Examination Study Guide

Know the goal of science

Know the two words that should not be used in a scientific setting

Be able to explain two reasons why science cannot use supernatural reasons to explain natural events

Know the three necessary features of a hypothesis

Know what science is limited to studying

Know what all scientific knowledge is based on

Be able to identify correct and incorrect descriptions of a scientific theory

Know what an independent variable is and how to identify it in an experiment

Know what a dependent variable is and how to identify it in an experiment

Know what controls are and how to identify them in an experiment

Be able to explain (not just define) Newton's First Law of Motion

Be able to explain (not just define) Newton's Second Law of Motion

Be able to explain (not just define) Newton's Third Law of Motion

Be able to explain the relationship between gravitational potential energy and kinetic energy

Be able to classify the three subatomic particles according to mass, charge, and location in an atom

Know how many electrons atoms "want" in their outer energy level

Be able to state the 16 general facts about an element using the PTOE **and** the specific answers to those facts (e.g., Name: Sodium) (Columns 1, 2, 16, 17, and 18)

1. Name:
2. Symbol:
3. Atomic number:
4. Atomic mass:
5. Number of protons:
6. Number of electrons (assuming neutral):
7. Number of neutrons:
8. Group:
9. Valence electrons:
10. Charge:
11. Reactivity:
12. Actual electrons:
13. Period:
14. Number of energy levels:
15. Classification:
16. State of matter:

2017-2018 Advanced Physical Science Final Examination Study Guide

Know what the law of conservation of mass/matter says

Know what isotopes are

Know how acids are defined

Know how bases are defined

Know what products are formed from a neutralization reaction

Be able to explain the law of reflection

Know the relationship between the actual distance of an object from a mirror and the image's apparent distance behind the mirror

Know what happens to the number of reflections you can see as you open and close a hinged mirror

Know what is necessary to be able to see yourself in a mirror

Know what happens to reflections in a concave mirror

Know what happens to reflections in a convex mirror

Be able to explain what happens to an image once light rays pass the point of convergence

Know what refraction is

Know what happens when you look and light shines through a double concave lens

Know what happens when you look and light shines through a double convex lens

Know what happens when you look and light shines through a plano-convex lens

Know the relationship between wavelength, frequency, and energy (in general, and specifically for visible light)

Be able to solve the following problems while showing all of your work:
A force of 25 N acts on a 10 kg object. What would the resulting acceleration be?

A car travels 200 km in 5 hr. What is the average speed?

An object has a mass of 45 g and occupies a volume of 9 cm^3. What is the density of the object?

What is the largest angle at which we could see 6 reflections in a hinged mirror?

____ Ag_2O —> ____ Ag + ____O_2