**Integrated Science 1 Honors Mid-Term Review – Unit 3 Classes of Matter**

***SC.8.P.8.9: Distinguish among mixtures (including solutions) and pure substances.***

1. Distinguish between pure substances, mixtures, and solutions.

**Key Vocabulary:** pure substance, element, compound, mixture

* *What are the differences between pure substances, elements, compounds and mixtures?*
* *How do particles combine to form the following: elements, compounds and mixtures?*
* *How is salt water a mixture?*
* *What is a pure substance?*
* *What is a solution?*

**References:**

Video Clips: <http://www.youtube.com/watch?v=HgLrMKEN4Iw>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 3 Classes of Matter**

***SC.8.P.8.8: Identify basic examples of and compare and classify the properties of compounds, including acids, bases, and salts.***

1. Identify common examples of acids, bases, and salts.
2. Classify the properties of compounds, including acids, bases, and salts.
3. Compare and contrast the properties of compounds, including acids, bases, and salts.

**Key Vocabulary:** acid, base, salt, properties

* *What are some examples of an acid, base and salts?*
* *How are properties of compounds classified?*

**References:**

Video Clips: <http://www.youtube.com/watch?v=qSixX3YWpUs>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 3 Classes of Matter**

***SC.8.P.8.6: Recognize that elements are grouped in the periodic table according to similarities of their properties.***

1. Explain how an element's electron configuration determines its placement on the periodic table.
2. Describe the chemical and physical properties of an element based on its valence electrons.
3. Explain how elements are grouped together on the periodic table.

**Key Vocabulary:** elements, periodic table, groups, periods, valence electrons

* *How are elements grouped on the periodic table?*
* *What are the three main types of elements in the periodic table?*
* *How can you determine the physical and chemical properties of an element?*

**References:**

Video Clips: <http://www.youtube.com/watch?v=7mLPC74GHMo>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 3 Classes of Matter**

***SC.8.P.8.5: Recognize that there are a finite number of elements and that their atoms combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.***

1. Describe how elements combine in many ways to produce compounds that make up all living and nonliving things.

**Key Vocabulary:** atoms, elements, compounds, living, nonliving

* *How can matter be classified?*
* *What is matter made of?*

**References:**

Video Clips: <http://www.youtube.com/watch?v=FE7RWdaGOus>

Interactive Notebooks:

Textbook: Unit 6 Pg. 350 – 353 & 366

Benchmark Review: Pg.391 - 396, Questions: ---

**Integrated Science 1 Honors Mid-Term Review – Unit 3 Classes of Matter**

***SC.912.P.8.7: Interpret formula representations of molecules and compounds in terms of composition and structure.***

1. Write chemical formulas for simple covalent and molecular compounds.
2. Predict the formulas of ionic compounds based on the number of valence electrons and the charges on the ions.

**Key Vocabulary:** electrons, covalent, molecular compounds, ionic compounds, valence electrons, ions

* *How does the number of valence electrons and the charges on ions help to predict the formulas of ionic and covalent compounds?*
* *How do you identify a covalent compound?*
* *How do you identify a molecular compound?*
* *How do you identify a ionic compound?*

**References:**

Video Clips: <http://phet.colorado.edu/en/simulation/molecule-shapes>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 4 The Universe**

***SC.912.E.5.1: Cite evidence used to develop and verify the scientific theory of the Big Bang (also known as the Big Bang Theory) of the origin of the universe.***

1. Cite evidence that supports the theory of the Big Bang (e.g. - ratio of gases, cosmic background radiation, and red shifts from distant galaxies).

**Key Vocabulary:** Big bang, universe, celestial sphere, galaxy

* *What is the Big Bang Theory?*
* *How do gas ratios prove the theory?*
* *How does cosmic background radiation support the theory?*
* *How do red shifts from distant galaxies prove the theory?*

**References:**

Video Clips: <http://www.youtube.com/watch?v=EUe_Vfi5IL0>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 4 The Universe**

***SC.8.E.5.1: Recognize that there are enormous distances between objects in space and apply our knowledge of light and space travel to understand this distance.***

1. Explain why distance is a factor in space travel.
2. Explain why space travel requires detailed calculations.
3. Explain the concept of a light year.
4. Recognize that nothing travels faster than the speed of light in a vacuum, such as space.
5. Recognize that time, length, and energy depends on the frame of reference in relation space travel and exploration.

**Key Vocabulary:** light year

* *Why is distance a factor in space travel?*
* *Why does space travel require detailed calculations?*
* *What is the concept of a light year?*
* *How are time, length and energy dependent on the frame of reference in the relation space travel and exploration?*

**References:**

Video Clips: <http://www.youtube.com/watch?v=ri4OUqB5fAo>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 4 The Universe**

***SC.8.E.5.3: Distinguish the hierarchical relationships between planets and other astronomical bodies relative to solar system, galaxy, and universe, including distance, size, and composition.***

1. Identify patterns in the development of the hierarchy of the universe (such as solar systems, galaxies, galaxy clusters).
2. Compare and contrast the distance, size, and general makeup of planets, stars, moons, asteroids, galaxies, nebulae, dwarf planets, and comets in the universe.

**Key Vocabulary:** solar system, elliptical galaxy, regular galaxy

* *What galaxy do we live in?*
* *How many classifications of galaxies are there?*
* *What are the 2 characteristics of Elliptical galaxies?*
* *What do all types of galaxies have in common?*
* How does color indicates the temperature of a star?
* What type of star is the sun?
* *What is the difference between a terrestrial and gas planet?*
* *How do astronomers locate other planets outside our solar system??*

**References:**

Video Clips: <http://www.youtube.com/watch?v=RdoGQPTFO_U>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 4 The Universe**

***SC.8.E.5.2: Recognize that the universe contains many billions of galaxies and that each galaxy contains many billions of stars.***

1. Explain the vastness of our universe and the galaxies within it.

**Key Vocabulary:** universe, galaxy

* *How would you describe the size of the universe?*
* *How would you describe the size of the galaxies within the universe?*

**References:**

Video Clips: <http://www.youtube.com/watch?v=kSSP7KaH3PI>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 5 Stars and the Sun**

***SC.8.E.5.5: Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness).***

1. Describe and classify stars based on their apparent magnitude (brightness) and temperature (color).
2. Describe and classify stars based on their size and luminosity (absolute brightness).

**Key Vocabulary:** apparent magnitude, luminosity, absolute brightness

* *How does the brightness and color of a star impact its classification?*
* *Why does size and luminosity impact the classification of stars?*

**References:**

Video Clips: <http://www.youtube.com/watch?v=PM9CQDlQI0A&list=PLAuJGYL6VYK_s10gDp6ItNJemymaDjySn>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 5 Stars and the Sun**

***SC.912.P.10.19: Explain that all objects emit and absorb electromagnetic radiation and distinguish between objects that are blackbody radiators and those that are not.***

1. Explain that all objects emit and absorb electromagnetic radiation.
2. Distinguish between objects that are blackbody radiators and those that are not.

**Key Vocabulary:** black body, electromagnetic spectrum, radiation

* *How do objects emit & absorb electromagnetic radiation?*
* *What make an object a blackbody radiator?*

**References:**

Video Clips: <http://phet.colorado.edu/en/simulation/blackbody-spectrum>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 5 Stars and the Sun**

***SC.912.E.5.8: Connect the concepts of radiation and the electromagnetic spectrum to the use of historical and newly-developed observational tools.***

1. Describe how frequency is related to the characteristics of electromagnetic radiation.
2. Recognize how spectroscopy is used to detect and interpret information from electromagnetic radiation sources.

**Key Vocabulary:** radiation, electromagnetic spectrum

* *How is frequency related to the characteristics of electromagnetic radiation?*
* *What is spectroscopy?*

**References:**

Video Clips: <http://www.screencast.com/users/lhsscience/folders/Modern%20Analytical%20Chemistry/media/afcd292e-6a47-429c-a257-093c57669b47>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 6 Our Solar System**

***SC.8.E.5.4: Explore the Law of Universal Gravitation by explaining the role that gravity plays in the formation of planets, stars, and solar systems and in determining their motions.***

1. Explain how gravity is important in the formation of planets, stars, and the solar system.
2. Explain how gravity is important in the motion of planets, stars, and the solar system.

**Key Vocabulary:** planets, gravitational force, astronomical unit

* *What is gravity?*
* *What is the law of universal gravitation?*
* *How does gravity affect planetary motion?*
* *How did the solar system form?*

**References:**

Video Clips: <http://www.youtube.com/watch?v=Jk5E-CrE1zg>

<http://www.youtube.com/watch?v=jOBjV4dFcb8>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 6 Our Solar System**

***SC.8.E.5.7: Compare and contrast the properties of objects in the Solar System including the Sun, planets, and moons to those of Earth, such as gravitational force, distance from the Sun, speed, movement, temperature, and atmospheric conditions.***

1. Compare the properties of gravitational force, distance from the Sun, and speed of other astronomical bodies to those of the Earth.
2. Compare the properties of movement, temperature, and atmospheric conditions of other astronomical bodies to those of the Earth.

**Key Vocabulary:** gravitational force, temperature, atmospheric conditions

* *Why are the temperatures on each of the terrestrial planets more extreme than the temperatures on Earth?*
* *How does the composition of Earth’s atmosphere differ from the composition of the atmospheres of the gas giant planets?*
* *How do the periods of rotation and revolution for the gas giant planets differ from those of Earth?*
* *Why do you think the wind speeds on the gas giant planets are so much greater than the wind speeds on Earth?*
* *Why do you think the speeds of comets increase as they near the Sun?*

**References:**

Video Clips: <http://www.youtube.com/playlist?list=PLAuJGYL6VYK-1AZ97_WaHPgMGlb25mpX9>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 6 Our Solar System**

***SC.8.E.5.8: Compare various historical models of the Solar System, including geocentric and heliocentric.***

1. Compare the different historical models of the Solar System.

**Key Vocabulary:** solar system, heliocentric, geocentric

* *What was Aristotle’s version of the solar system?*
* *What was Aristarchus’s version of the solar system?*
* *What was Ptolemy’s model of the solar system?*
* *Compare how Copernicus’s model of the solar system differ from Ptolemy’s model of the solar system?*
* *How did Kepler’s first law support the idea of a heliocentric solar system?*
* *What was Galileo’s contribution to ideas of the solar system?*

**References:**

Video Clips: <http://www.youtube.com/watch?v=UtOEnTiAZlU>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 6 Our Solar System**

***SC.912.E.6.1: Describe and differentiate the layers of Earth and the interactions among them.***

1. Explain how seismic waves can be used to determine the internal structure, density variations, and dynamic processes between Earth's layers.

**Key Vocabulary:** seismic waves, density, core, mantle crust, lithosphere, asthenosphere, processes

* *Name the layers of the Earth?*
* *What is the composition of each layer?*
* *Explain the interactions that take place between the different layers of the Earth (core and mantle, mantle, crust, lithosphere and asthenosphere)?*
* *What is the energy source that drives the movement of the Earth’s plates?*
* *What type of technology is used to identify the different layers of the Earth?*

**References:**

Video Clips: <http://www.youtube.com/watch?v=aY6SG7GPAlo>

<http://www.youtube.com/watch?v=ryrXAGY1dmE>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 6 Our Solar System**

***SC.8.P.8.2: Differentiate between weight and mass recognizing that weight is the amount of gravitational pull on an object and is distinct from, though proportional to, mass.***

1. Explain the difference between mass and weight.

**Key Vocabulary:** mass, weight

* What is the difference between weight and mass?
* If I could travel from planet to planet, what would happen to my weight? What would happen to my Mass?
* How are mass and weight related? Which is dependent on the other and why?

**References:**

Video Clips: <http://www.youtube.com/watch?v=sJaXfcXarWY>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 1 Atoms & States of Matter**

***SC.8.P.8.7: Explore the scientific theory of atoms (also known as atomic theory) by recognizing that atoms are the smallest unit of an element and are composed of sub-atomic particles (electrons surrounding a nucleus containing protons and neutrons).***

1. Describe changes in the various models of the atom, including the Dalton, Thomson, Rutherford, and Bohr models.
2. Differentiate between protons, neutrons, and electrons in terms of their mass, electrical charges, and locations within the atom.

**Key Vocabulary:** Atom, Nucleus, Proton, Neutron, Electron, Electron Cloud

* *What is the atomic theory?*
* *What are the parts of an atom?*
* *Where are all the parts of an atom located and what charge do they hold?*

**References**

Textbook: Unit 6 Pg. 364 - 373

Benchmark Review: Pg. 391 - 396, Questions: ---

Video Clips: <http://www.youtube.com/watch?v=UDIprICe9kg>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 1 Atoms & States of Matter**

***SC.8.P.8.1: Explore the scientific theory of atoms (also known as atomic theory) by using models to explain the motion of particles in solids, liquids, and gases.***

1. Describe the motion of particles in solids.
2. Describe the motion of particles in liquids.
3. Describe the motion of particles in gases.
4. Differentiate between solids, liquids, gases, and plasma.

**Key Vocabulary:** solid, liquid, gas, plasma, matter, phase change

* *What are the differences between a solid, liquid, gas and plasma?*
* *Draw a diagram of each of the states of matter in particle form.*
* *How does the motion of the particles change and the phase changes occur?*

**References:**

Video Clips: <http://education-portal.com/academy/lesson/states-of-matter-solids-liquids-gases-plasma.html>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 2 Physical & Chemical Properties & Changes**

***SC.8.P.8.4: Classify and compare substances on the basis of characteristic physical properties that can be demonstrated or measured; for example, density, thermal or electrical conductivity, solubility, magnetic properties, melting and boiling points, and know that these properties are independent of the amount of the sample.***

1. Identify physical properties of matter, such as density, volume, thermal or electrical conductivity, solubility, magnetic properties, and melting and boiling points.

**Key Vocabulary:** matter, density, physical property, solubility, thermal and electrical conductivity, malleability, luster, melting and boiling point

* *What are physical properties of matter?*
* *What are chemical properties of matter?*
* *What are the difference between physical and chemical properties?*
* *How can physical and chemical properties identify a substance?*

**References**

Textbook: Unit 6 Pg. 312 - 325

Benchmark Review: Pg. 391 - 396, Questions: 9, 13, 17, 18

Video Clips: <http://www.youtube.com/watch?v=XZnVzNJfM-A>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Unit 2 Physical & Chemical Properties & Changes**

***SC.8.P.9.1: Explore the Law of Conservation of Mass by demonstrating and concluding that mass is conserved when substances undergo physical and chemical changes.***

1. Explain the Law of Conservation of Mass.
2. Demonstrate and explain how mass is conserved when substances undergo physical and chemical changes, according to the Law of Conservation of Mass.

**Key Vocabulary:** Law of Conservation of Mass

* *What is the Law of Conservation of Mass?*
* *Law of Conservation of Mass in Physical Change?*
* *Law of Conservation of Mass in Chemical Change?*

**References**

Textbook: Unit 6 Pg. 336 - 339

Benchmark Review: Pg. 391 - 396, Questions: 17

Video Clips: <http://www.youtube.com/watch?v=H_oub1RZf_Y>

Interactive Notebooks:

**Integrated Science 1 Honors Mid-Term Review – Nature of Science**

**SC.912.N.1.3 *Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented.***

1. Explain the strength of a scientific claim as it is evaluated through scientific argumentation.
2. Recognize how the usefulness of a claim is related to the data presented.

**SC.912.N. 1.1 *Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following: Pose questions about the natural world. Conduct systematic observations. Examine books and other sources of information to see what is already known. Review what is known in light of empirical evidence. Plan investigations. Use tools to gather, analyze, and interpret data. Properly use instruments, equipment, and materials. Pose answers, explanations, or descriptions of events. Generate explanations that explicate or describe natural phenomena. Use appropriate evidence and reasoning to justify these explanations to others. Communicate results of scientific investigations. Evaluate the merits of the explanations produced by others.***

**Key Vocabulary:** claim, data, qualitative, quantitative, replication, trials, observation, hypothesis, experiment, collect data, analyze, charts, graphs, tables, conclusion, retest, control group, variable, independent variable, dependent variable, valid experiment, predict, peer review

**Marie is doing an experiment where she is testing the effect of salt on the boiling point of water. She has three beakers on burners. Here is a chart that represents her results.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Beaker A – No Salt | Beaker B – 1 Tabl. of Salt | Beaker C – 2 Tabl. of Salt |
| Boiling point | 100 F˚ | 103 F˚ | 106 F˚ |

* **What are the independent and dependent variable in Marie’s experiment?**
* **Why did Marie include the beaker without any Salt?**
* **What are some things that Marie will need to keep the same in order to get accurate results?**
* **What effect did adding salt have on the boiling point of the water? How does Marie’s evidence support that claim?**
* **Marie’s brother Mark thinks that Marie made a mistake in her experiment. What should he do to validate the results? Why is this an important part of the scientific community?**
* **Make a prediction based on her results what would you expect the boiling point of water to be when there is 5 Tabl. of Salt in her beaker?**

**References:**

Video Clips: <http://education-portal.com/academy/lesson/research-designs-quasi-experimental-case-studies-correlational.html>, <http://education-portal.com/academy/lesson/the-scientific-method-steps-terms-examples.html>,

<http://www.youtube.com/watch?v=N-yTxJVs4js>