

Name: _____

EOG Study Guide 2015

8TH GRADE SCIENCE

8.P.1 - Matter: Properties and Change

LOOSELY	ATOMS	CONSERVATION	ELEMENT	PRODUCTS	PERIODIC TABLE	GOOD
COLOR	CANNOT	REACTANTS	TIGHTLY	NOT PACKED	COMPOUND	
PROPERTIES	HETEROGENEOUS	MALLEABLE	EVAPORATION	GROUPS	DUCTILE	
MIXTURE	REACTIVE	LUSTER	PHYSICAL	ELEMENTS	POOR	
FASTER	MASS	PERIODS	SIFTING	FILTRATION	ATOMIC NUMBER	VIBRATE
PROPERTIES	APART	VERY	GAS/BUBBLES	LAW	HOMOGENEOUS	
NEGATIVELY	NUCLEUS	METALLOIDS	STABLE	RIGHT	CHEMICAL	

1. **ATOMS** are the building blocks of matter.
2. An **ELEMENT** is a pure substance that **CANNOT** be broken down into a simpler substance. Hint: You can find them on the Periodic Table.
3. A **COMPOUND** is also a pure substance that is made of two or more **ELEMENTS** that combine chemically.
4. A **MIXTURE** is two or more substances that have been physically combined. Each substance in a mixture keeps its original **PROPERTIES**
5. You can separate a mixture by **FILTRATION**, **SIFTING**, or **EVAPORATION**.
6. A **HETEROGENEOUS** mixture is **NOT** uniform throughout and the components can be visibly distinguished.
7. A **HOMOGENEOUS** mixture is uniform throughout and you cannot see what it is made of.
8. Protons and neutrons are found in the **NUCLEUS** of an atom.
9. Electrons are **NEGATIVELY** charged and found in the electron cloud.
9. The particles in a solid are **TIGHTLY** packed. The particles in a gas are **NOT PACKED**. The particles in a liquid are **LOOSELY** packed.
10. The particles in a solid do not move a lot, but **VIBRATE** in place. The particles in a gas are moving **VERY** quickly and freely around.
11. As you move from a solid, to a liquid, to a gas, the particles move **FASTER** and spread farther **APART**.
12. The **PERIODIC TABLE** arranges elements according to increasing **ATOMIC NUMBER**.
13. Elements in a group (family) share similar **PROPERTIES**.
14. **PERIODS** are the horizontal rows on the periodic table. **GROUPS** are the vertical columns on the periodic table.
15. Non-metals are **POOR** conductors of electricity and are mostly found on the **RIGHT** side of the Periodic Table.
16. Four properties of metals are: **GOOD** conductors of electricity, **DUCTILE** (can be made into wire), **MALLEABLE** (can be flattened and shaped), and have **LUSTER** (shiny).
17. The elements along the staircase are called **METALLOIDS** and have properties of metals and non-metals.
18. Groups 1, 2, and 17 are the most **REACTIVE**, group 18 (noble gases) is the most **STABLE**.
19. A **PHYSICAL** change can be undone and nothing new is formed. For example: cutting paper, boiling water, and melting ice cream.
20. A **CHEMICAL** change cannot be undone and something new is created. For example: rust, burning, and rotting.
21. Evidence of a chemical change includes **COLOR** change, formation of a precipitate, **GAS/BUBBLES**, and increase in temperature (heat given off).
22. The **LAW** of **CONSERVATION** of **MASS** states the mass and number of atoms in the reactants is equal to the mass and number of atoms in the products. Matter **CANNOT** be created or destroyed.
23. The **REACTANTS** are on the left side of a chemical equation, **PRODUCTS** are on the right side.

8.E.2 – Earth History

OLDEST **SUPERPOSITION** **PANGAEA**
CONTINENTAL DRIFT **INDEX** **CENEZOIC**
ICE CORES **RADIOACTIVE DATING**
FOSSILS **WEATHERING** **YOUNGEST**
ROCKS **FOSSIL** **ABSOLUTE**
ICE CORES **PRECAMBRIAN** **EROSION**
RELATIVE **DEPOSITION**

1. The Theory of **CONTINENTAL DRIFT** states that the Earth's plates were once connected.
2. The supercontinent that existed millions of years ago was called **PANGAEA**.
3. The Law of **SUPERPOSITION** states that in any undisturbed sedimentary of rocks, the **YOUNGEST** layer is on top and the **OLDEST** is on the bottom.
4. **INDEX** fossils existed during a specific geologic age and can be used to predict the **RELATIVE** age of a rock (an approximation).
5. **ABSOLUTE** age provides you the exact age of a rock or fossil and is determined by using **RADIOACTIVE DATING**.
6. A **FOSSIL** is the preserved remains or traces of an organism that lived in the past and can give scientists a lot of information about Earth's past.
7. **ICE CORES** are used to study how atmospheric conditions have changed throughout Earth's history.
8. Most of Earth's history took place in the first era, known as the **PRECAMBRIAN** Era during which there was little to no life on Earth. The era we are currently living in is known as the **CENEZOIC** Era.
9. We use evidence from **ROCKS, FOSSILS,** and **ICE CORES** to show that the Earth is constantly changing.
10. **WEATHERING** is the breaking down of rock, **EROSION** is the movement of broken sediments, and **DEPOSITION** is the building up of new rock layers.

8.L.3 – Ecosystems

COMMENSALISM **PREDATION** **SUN**
SYMBIOTIC **HERBIVORES** **HETEROTROPH**
DEPENDENT **PARASITISM**
PRODUCERS **MUTUALISM** **AUTOTROPH**
INDEPENDENT **LOST**
CONSUMERS **10%** **PRODUCERS**

1. A density **DEPENDENT** factor affects large populations and are often caused by overcrowding. For example: competition for food, water, shelter, space, and the quick spread of disease through a population.
2. A density **INDEPENDENT** factor affect all populations regardless of their size. For example: natural disasters and human activities (pollution).
3. **PREDATION** is an interaction between species in which one species eats the other.
4. A **SYMBIOTIC** relationship exists between organisms of two different species that live together in direct contact.
5. **PARASITISM** is a symbiotic relationships in which one organisms benefits at the expense of the other organism. For example: a flea and a dog.
6. **MUTUALISM** is a symbiotic relationship in which both organisms benefits. For example: an oxpecker and an ox.
7. **COMMENSALISM** is a symbiotic relationship in which one species benefits and the either is neither harmed nor benefits. For example: a whale and a barnacle.
8. The **SUN** is the ultimate source of the energy in an ecosystem.
9. The first trophic level includes **PRODUCERS** which make their own food via photosynthesis.
10. Another name for a producer is an **AUTOTROPH**.
11. The second trophic level includes **HERBIVORES**, which only eat plants.
12. Another name for a consumer is a **HETEROTROPH**.
13. As you move up an energy pyramid, energy is **LOST**; only **10%** of energy is transferred so the most energy is found with the producers.
14. In an ecosystem there are often more **PRODUCERS** than **CONSUMERS**.

8.L.2 – Biotechnology

PRODUCTS **HEALTHCARE** **BIOTECHNOLOGY** **LIVING** **AGRICULTURE** **RISKS**
BENEFITS **ENVIRONMENT** **PROBLEMS** **ECONOMICALLY** **JOBS**

1. Biotechnology is the use of **LIVING** organisms to solve **PROBLEMS** and make useful **PRODUCTS** For example: creating pest resistant crops and producing new medicines.
2. The three main areas where you see biotechnology used are **AGRICULTURE, ENVIRONMENT,** and **HEALTHCARE**.
3. Some the **RISKS** of biotechnology are: moral concerns, safety concerns, and unknown side effects.
4. Some the **BENEFITS** of biotechnology are: finding cures to diseases, reducing the use of pesticides on crops, increasing crop yields, and discovering new medicines.
5. North Carolina is considered a **BIOTECHNOLOGY** state because the state has benefitted **ECONOMICALLY** from the use of biotechnology in agriculture, which has created a lot of **JOBS**.

8.L.4 - Evolution and Genetics

CHARLES DARWIN	EVOLUTION	SURVIVAL	ADAPTATION	BIOLOGICAL CLASSIFICATION
FINCHES	EXTINCT	ANALAGOUS	FITTEST	HOMOLOGOUS
	VARIATION	NATURAL SELECTION		ENVIRONMENT
				ADAPT

1. The Theory of **EVOLUTION** states that species change gradually over time in response to changes in their **ENVIRONMENT**.
2. When an organism's environment changes they must **ADAPT** or they will become **EXTINCT**.
3. Genetic **VARIATION** increases a species chance for survival.
4. The ability of organisms to pass on favorable traits to their offspring is called **SURVIVAL** of the **FITTEST**.
5. A **HOMOLOGOUS** structure is used to show that organisms share a common ancestor; it is when they have the same structure, but a different function. Ex: bird wing, whale fin, human arm.
6. The wings of a moth, a bird, and a bat are examples of **ANALOGOUS** structures and are NOT evidence of a common ancestor; they have different structures, but the same function.
7. A favorable characteristic passed on from parents to their offspring is called an **ADAPTATION**. An example is long necks on giraffes.
8. Beneficial mutations that result in the survival of a species and result in an entirely different organisms over time is known as **NATURAL SELECTION**.
9. **BIOLOGICAL CLASSIFICATION** is a system used to organize and show relationships between all organisms on Earth.
10. **CHARLES DARWIN** is known as the father of evolution and he studied the beaks of **FINCHES**.

8.L.1 - Structures and Functions of Living Things

PANDEMIC	ANTIBIOTIC	FUNGUS	
DIRECT	VACCINATIONS	VIRUS	PARASITE
EPIDEMIC	PATHOGEN	BACTERIA	
FUNGI	INDIRECT	BACTERIA	VIRUS
	VECTOR	PARASITE	

1. A **PATHOGEN** causes a disease; aka a germ.
2. The four types of pathogens are **BACTERIA, VIRUS, FUNGI,** and **PARASITE**.
3. A **VIRUS** is non-living and needs a host cell to survive. Examples are the flu and HIV/AIDS.
4. A **FUNGUS** can reproduce both sexually and asexually. An example is athlete's foot.
5. A **BACTERIA** can be treated by antibiotics.
6. A **PARASITE** lives on or in its host. An example is a tick or flea.
7. An **ANTIBIOTIC** is used to treat bacterial infections.
8. A **VACCINE** is used to prevent viral infections.
9. An **EPIDEMIC** is an outbreak of a disease that occurs in one country or region.
10. A **PANDEMIC** is an outbreak of a disease that affects a much larger region, usually global.
11. The best way to prevent epidemics and pandemics is by everyone receiving **VACCINATIONS**.
12. Pathogens can be transmitted by **DIRECT** contact such as contact with an infected person.
13. Pathogens can be transmitted by **INDIRECT** contact such as a touching a doorknob or eating contaminated food.
14. A **VECTOR** is a living organism that carries a pathogen from place to place. An example is a mosquito carrying malaria.

8.L.5 - Molecular Biology

SUNLIGHT	PHOTOSYNTHESIS	WATER
LIPIDS	METABOLISM	ENERGY/ATP
OXYGEN	GLUCOSE	THEY WILL GAIN WEIGHT
CALORIES	CELLULAR RESPIRATION	
CARBON DIOXIDE	SUNLIGHT	
CARBOHYDRATES	GLUCOSE	PROTEINS
	BASAL METABOLIC RATE	

1. Plants use the energy from **SUNLIGHT** to make food in the form of **GLUCOSE** (sugar) through a process called **PHOTOSYNTHESIS**
2. The reactants of photosynthesis are **WATER, SUNLIGHT,** and **CARBON DIOXIDE**.
3. The products of photosynthesis are **GLUCOSE** and **OXYGEN**.
4. **CELLULAR RESPIRATION** breaks down the glucose produced during photosynthesis to release a usable form of **ENERGY/ATP**.
5. The three molecules that serve as food for the cell are **LIPIDS, CARBOHYDRATES,** and **PROTEINS**.
6. Food energy is measured in **CALORIES**.
7. If one consumes more calories than the body uses, then **THEY WILL GAIN WEIGHT**.
8. A person who burns calories at a fast rate is said to have a high **METABOLISM**.
9. **BASAL METABOLIC RATE** is the minimum number of calories that a person needs to maintain bodily functions while at rest.

8.P.2 - Energy: Conservation and Transfer

BIOMASS	NONRENEWABLE	RECYCLE	WIND	GLOBAL WARMING	NUCLEAR
OIL	FOSSIL FUELS	GEOTHERMAL	REDUCE	GREENHOUSE GASES	COAL
	NATURAL GAS	SOLAR	HYDROELECTRIC	RENEWABLE	REUSE

1. Energy resources that can be replaced or reused are called **RENEWABLE** energy resources.
2. Examples of renewable energy resources are: **WIND** (energy from moving air), **SOLAR** (energy from the sun), **HYDROELECTRIC** (energy from moving water), **BIOMASS** (energy from plant and animal material), and **GEOTHERMAL** (energy from earth's heat).
3. Energy resources that cannot be replaced or are used at a faster rate than which they are formed at are called **NONRENEWABLE** energy resources.
4. Examples of nonrenewable energy resources are: **FOSSIL FUELS** and **NUCLEAR** energy.
5. The three types of fossil fuels are: **COAL**, **OIL**, and **NATURAL GAS**.
6. Burning fossil fuels releases **GREENHOUSE GASES** into the atmosphere, which can lead to **GLOBAL WARMING**.
7. **REDUCE**, **REUSE** and **RECYCLE** are three ways that humans can conserve natural resources.

8.E.1 - Earth Systems, Structures, and Processes

SUNLIGHT	NEUTRAL	VARIETY	FROZEN	RIVER BASIN	DEPTH	3%
UPWELLING	BIOINDICATORS	HIGH	POINT	TEMPERATURE	TURBIDITY	
OXYGEN	POTABLE	AQUIFERS	NONPOINT	TREATED	COLD	PH
NITRATES	PRESSURE	ESTUARY	97%	GLACIERS	TEMPERATURE	

1. The Earth is **97%** saltwater and **3%** freshwater.
2. Most of the freshwater on Earth is **FROZEN** in polar ice caps and **GLACIERS**
3. A **RIVER BASIN** is the land drained by a river and its tributaries.
4. **UPWELLING** occurs in an area where nutrients are drawn to the surface of the ocean by the movement of cold water from the bottom of the ocean to the top. Hint: there would be a lot of fish here!
5. Life in the ocean is determined by 3 factors: **SUNLIGHT**, **TEMPERATURE**, and **DEPTH**.
6. As you move from the open ocean to the deep ocean the amount of sunlight decrease, the **TEMPERATURE** decrease, and the **PRESSURE** increases.
7. An **ESTUARY** is where fresh and saltwater mix. These areas have a wide variety of life and are more protected than the open ocean.
8. Dissolved **OXYGEN** is a measure of the amount of oxygen in water that is available for aquatic organisms. There is more dissolved oxygen in **COLD** water.
9. **PH** is a measure of how acidic or basic water is. When this measure of water quality is 7, the water is **NEUTRAL**.
10. **NITRATES** are nutrients for plants that most often get into our water from agricultural runoff.
11. **TURBIDITY** is a measure of how clear water is.
12. **HIGH** turbidity can lead to lack of sunlight and is an indication of unhealthy water.
13. **BIOINDICATORS** are living organisms in a body of water that are sensitive to pollution. A wide **VARIETY** of these organisms indicates healthy water.
14. Water that is safe to drink is called **POTABLE** water.
15. **AQUIFERS** are large deposits of groundwater in rock layers that can be extracted and used.
16. **POINT** source pollution comes from a single known source. For example: a factory is dumping nuclear waste into a river.
17. **NONPOINT** source pollution comes multiple unknown sources. For example: agricultural runoff.
18. To help protect our limited water supply, water must be **TREATED** to remove contaminants like bacteria and chemicals.

GOOD LUCK!

YOU HAVE WORKED HARD...TIME TO SHINE!

Big Goal: ALL students earn a 4 or 5 on the 8th grade science EOG!