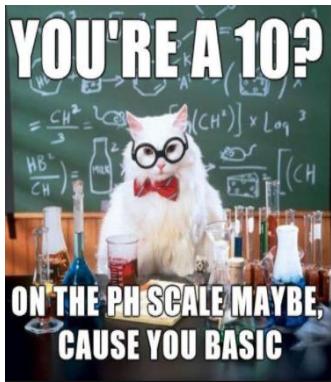


Name: _____
Due Date: Tuesday, April 7th 2020

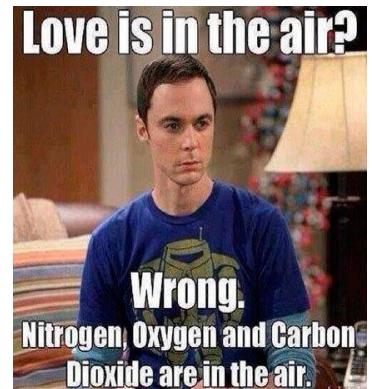
Pride of 2024
Spring Break Packet

Science Break Packet



While on break, let's keep our science skills sharp so that we can be the best 8th grade science Pride in the history of the school, but more importantly, the history of the state.

This homework is due: Tuesday, April 7th 2020 (when we come back from break). You must complete all the problems, but you may work at your own speed! With so much time to complete, there are NO excuses!



Work Habits Score:

✓ ++ ✓ + ✓ ✓ - ✓ --
100 95 85 75 65

Total Score: _____ / 25

Score conversions: 100 - 90% = 4 89 - 80% = 3 79 – 70% = 2 Below 70% = 1

GradeCam ID:

0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
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7	7	7	7
8	8	8	8
9	9	9	9

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| 1. A B C D | 8. A B C D | 15. A B C D |
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| 5. A B C D | 12. A B C D | 19. A B C D |
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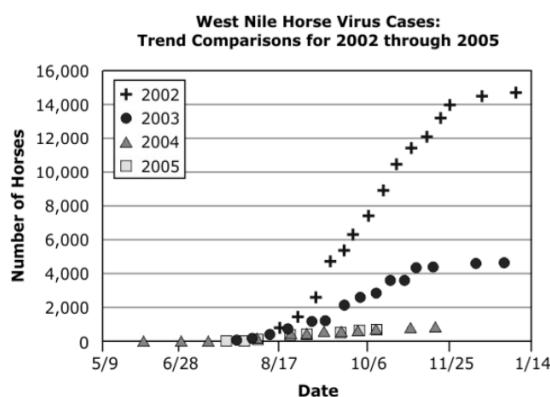
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Parent Signature: _____

Spiraled Skills (Units 1 - 5):

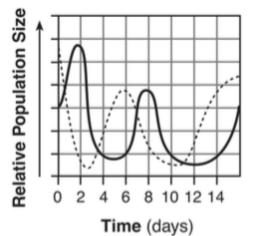
1. Which describes a way scientists use biotechnology in the field of agriculture?
 - a) Bacteria is used to clean up oil spills
 - b) Criminals are linked to cases by their DNA
 - c) Vaccines for infectious diseases are created
 - d) Food crops are manipulated to be more nutritious
2. Which area of biotechnology would **most likely** create ethical issues within human society?
 - a) Insulin production by bacteria
 - b) Organ cloning for use in transplants
 - c) Genetic engineering to improve agricultural yields
 - d) DNA and forensic testing of crime scene evidence
3. Which career field is **most closely** related to biotechnology?
 - a) Medicine
 - b) Journalism
 - c) Meteorology
 - d) Political science
4. Which is true regarding bacterial and viral infections?
 - a) Bacterial infections are treated with antibiotics, while viral infections can be prevented through use of vaccines
 - b) Viral infections are treated with vaccines, while bacterial infections are prevented through use of antibiotics
 - c) Viral infections are treated with antibiotics, while bacterial infections are treated with vaccines
 - d) Both viral infections and bacterial infections are treated with vaccines
5. Which best contrasts a bacterium and a virus?
 - a) A bacterium can reproduce, whereas a virus will not reproduce
 - b) A bacterium does not live in living things, whereas a virus does
 - c) A bacterium is a one-celled living organism, whereas a virus is a nonliving organism
 - d) A bacterium is treated with vaccines, and a virus is treated with antibiotics
6. Which leads to the conclusion that strep throat is a bacterial infection?
 - a) Strep throat is treated with vaccines
 - b) Strep throat is treated with antibiotics
 - c) A strep infection will go away without being treated
 - d) A person who has strep throat can never have it again
7. West Nile Horse Virus Disease is a mosquito-borne viral disease. The graph shows cases in horses since 2002.



Which statement is true about the above diagram?

- a) They have decreased significantly due to increased antibiotics
- b) They have decreased significantly due to increased vaccinations
- c) The amount of cases of West Nile Horse Virus has stayed about the same since 2002.
- d) The amount of West Nile Horse Virus has gone up due to increased vectors

8. The graph below represents a predator-prey relationship.



Key
— Paramecium (predator)
- - - - - Yeast (prey)

What is the most probable reason for the increasing predator population from day 5 to day 7?

- a) An increasing food supply from day 5 to day 6
- b) A predator population equal in size to the prey population from day 5 to day 6
- c) The decreasing prey population from day 1 to day 2
- d) The extinction of the yeast on day 3

9. In New York State, bluebirds and sparrows inhabit nearly the same ecological niche. In many areas, bluebirds are being replaced by the sparrows as a result of

- a) Symbiosis
- b) Competition
- c) Mutualism
- d) Parasitism

10. Which of the following is an alternative energy resource that does not lead to pollution?

- a) Coal
- b) Natural gas
- c) Solar
- d) Petroleum

11. The development of a nuclear power plant at an ocean site is expected to produce an enormous amount of electric power for a large population. Ocean water will be used to cool the plant and then returned to the ocean. What unintended consequence should be analyzed before starting construction?

- a) Number of kilowatts produced per home
- b) The effect of warmed water on aquatic life
- c) The impact of other energy-producing resources
- d) Energy use per person

12. Which is the **most abundant** freshwater resource in North Carolina?

- a) Estuaries
- b) Icebergs
- c) Oceans
- d) Rivers

13. How might fertilizer runoff from a soybean field affect the quality of water in the farm pond?

- a) It increases the pH level
- b) It decreases the overall water temperature
- c) It promotes healthy and normal algae growth, which lowers the oxygen level in the pond
- d) It decreases the turbidity, which lowers the amount of particles in the pond

14. Look at the below table:

Description	Cycle Name
1. Plants convert sunlight in their leaves to produce glucose	W
2. Bacteria turn unusable nitrogen in the atmosphere into nitrates that plants use as nutrients in the ground?	X
3. Fossil fuels getting burned puts excessive amounts of CO ₂ and SO ₂ into the atmosphere	Y
4. Water from leaves on plants evaporates and helps bring back to the atmosphere	Z

Which cycle goes with Cycle W?

- a) Cellular respiration
- b) Photosynthesis
- c) Nitrogen fixation
- d) Transpiration

15. Which of the following could occur as the result of runoff of high nitrogen fertilizers from farmlands near a lake?

- a) an increase in algae growth resulting in low oxygen levels in the lake
- b) a decrease in mineral storage reducing carbon levels of the lake
- c) a decrease in pollution resulting in lower ozone levels in the lake area
- d) an increase in deforestation reducing animal populations in the lake area

16 The table below shows groundwater supplies located in aquifers in Vance County during 4 different months

Month	Amount of Dissolved Oxygen
October	330 ppm
January	528 ppm
April	413 ppm
August	206 ppm

In the space provided below, list the months from highest water temperature to lowest water temperature...

Highest Temp → Lowest Temp

_____ , _____ , _____ , _____

17. Which statement accurately captures what occurs during photosynthesis?

- a) Plants capture sunlight in their leaves to produce glucose, which is then only used by animals
- b) Plants capture sunlight in their roots to produce glucose, which is then used by both plants and animals
- c) Plants capture sunlight in their leaves to produce glucose, which is then used by both animals and plants
- d) Plants capture sunlight in their roots to produce glucose, which is then used by only animals

18. Why are diseases transmitted through the bites of infected animals not considered contagious diseases?

- a) The infected animals do not show symptoms.
- b) The person in direct contact is the only one infected.
- c) Humans do not become sick from animal diseases.
- d) The diseases are treatable with antibiotics.

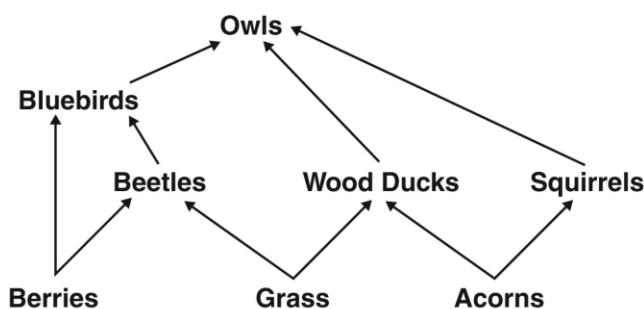
19. What is the best way to conserve small groundwater supplies during a drought?

- a) Prohibit the use of water during certain times of the day
- b) Take water from the ocean and put it into aquifers
- c) Continue to live lives normally
- d) Arrest anyone who uses water

20. Which statement about the carbon cycle is true?

- a) Plants produce carbon dioxide through photosynthesis
- b) Animals produce carbon dioxide through cellular respiration
- c) Plants produce glucose through cellular respiration
- d) Animals produce water through photosynthesis

21. Bluebirds, beetles, wood ducks, squirrels, and owls all will nest in holes in hollow trees. A food web that includes these animals is shown.

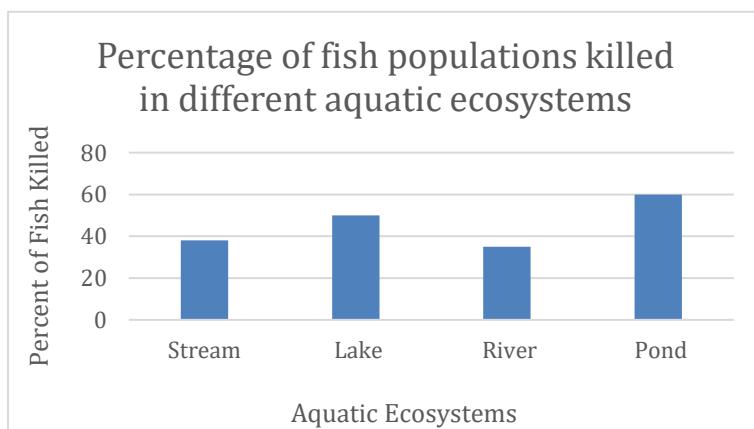


Which of the statements below best describes the impact of removing grass from the food web?

- a) There would be an immediate decrease in the owl population
- b) There would be immediate competition between bluebirds and owls
- c) There would be a decrease in the beetle population
- d) There would be a decrease in competition between wood ducks and squirrels

Open-Ended Questions

22. Agriculture is one of the largest industries in many different countries around the world. In the United States, it is common for cattle farms to produce large amounts of nitrogen rich fertilizer due to the excessive amount of animal waste that is produced. During heavy rain, this nitrogen rich fertilizer is washed into nearby aquatic ecosystems. This event is referred to as “nitrogen pollution”. A cattle farm in Hershey, Pennsylvania is located near several different aquatic ecosystems. Over the years, there has been a noticeable decrease in the fish populations located in these different ecosystems. The graph below shows the percentage of fish that have been killed within the past 2 years. Which of the following aquatic ecosystems is located the closest to the cattle farm? Explain your answer.



23. Look at the table below:

Disease	Casualties	Location of Disease
Coronary Heart Disease	7.4 million	All across the world
Lung Cancer	1.6 million	All across the world
Influenza (flu) in 1918-1919	100 million people	South America, North America
Rabies	55,000	Africa and India

Charmez stated that the above table only contains diseases that are pandemics. Assess Charmez's statement. Be sure to use strong scientific vocabulary in your explanation.

24. Annotate the periodic table shown below with the following terms...

Alkali Metals

Noble Gases

Metalloids

Groups

Alkali Earth Metals

Metals

Reactive =)

Periods

Halogens

Non-Metals

Non-Reactive = (

1 IA	18 VIIA
1 H Hydrogen 1.008	2 He Helium 4.003
3 Li Lithium 6.941	4 Be Beryllium 9.012
11 Na Sodium 22.99	12 Mg Magnesium 24.31
19 K Potassium 39.10	20 Ca Calcium 40.08
37 Rb Rubidium 85.47	38 Sr Strontium 87.62
55 Cs Cesium 132.91	56 Ba Barium 137.33
87 Fr Francium (223)	88 Ra Radium (226)
21 Sc Scandium 44.96	22 Ti Titanium 47.88
23 V Vanadium 50.94	24 Cr Chromium 51.99
40 Y Yttrium 88.91	41 Zr Zirconium 91.22
57 La Lanthanum 138.91	72 Hf Hafnium 178.49
89 Ac Actinium (227)	104 Rf Rutherfordium (261)
2 IIA	3 IIIB
4 IVB	5 VB
6 VIB	7 VIIB
8 VIIIB	9 VIIIB
10 VIIIB	11 IB
12 IIB	13 IIIA
14 IVA	15 VA
16 VIA	17 VIIA
18 Ar Argon 39.95	1 IA
5 B Boron 10.81	6 C Carbon 12.01
13 Al Aluminum 26.98	14 Si Silicon 28.09
15 P Phosphorus 30.97	16 S Sulfur 32.07
17 Cl Chlorine 35.45	18 Ar Argon 39.95
18 Ar Argon 39.95	1 IA
31 Zn Zinc 69.72	32 Ge Germanium 72.61
33 As Arsenic 74.92	34 Se Selenium 78.96
35 Br Bromine 79.90	36 Kr Krypton 83.80
36 Kr Krypton 83.80	37 Rb Rubidium 85.47
38 Sr Strontium 87.62	39 Y Yttrium 88.91
41 Nb Niobium 92.91	42 Mo Molybdenum 95.94
43 Tc Technetium (98)	44 Ru Ruthenium 101.07
45 Rh Rhodium 102.91	46 Pd Palladium 106.42
47 Ag Silver 107.87	48 Cd Cadmium 112.41
49 In Indium 114.82	50 Sn Tin 118.71
51 Sb Antimony 121.76	52 Te Tellurium 127.60
53 I Iodine 126.90	54 Xe Xenon 131.29
55 Cs Cesium 132.91	56 Ba Barium 137.33
57 La Lanthanum 138.91	72 Hf Hafnium 178.49
73 Ta Tantalum 180.95	74 W Tungsten 183.84
75 Re Rhenium 186.21	76 Os Osmium 190.23
77 Ir Iridium 192.22	78 Pt Platinum 195.08
79 Au Gold 196.97	80 Hg Mercury 200.59
81 Tl Thallium 204.38	82 Pb Lead 207.2
83 Bi Bismuth 208.98	84 Po Polonium (209)
85 At Astatine (210)	86 Rn Radon (222)

25. Rainbow Trout are a common fish species that can be found in all parts throughout the state of North Carolina. These fish require a high amount of dissolved oxygen in order to be able to survive. The data table below shows information collected from the Neuse River during September of 2019.

Organism	Population	pH Level	Dissolved O ₂
Rainbow Trout	0	7 . 2	???
Blackfly Larvae	200		
Frog	5		

By analyzing the data in the table above, explain what you would expect the level of dissolved oxygen to be in the Neuse River. **Be sure to explain your answer by referencing the data in the table.**

Above and Beyond!

These problems are above and beyond questions to sharpen your skills when we return on April 7th. **If we were to be out of school longer than through April 7th for any reason, these questions are no longer considered Above and Beyond and should be completed by all students.**

1. Which of these best provides the BEST evidence that an environmental change has occurred?
 - a) A freshwater lake in the mountains
 - b) Marine fossils in a freshwater lake
 - c) Saltwater clams in the ocean
 - d) A sandy beach next to the ocean

2. Paleontologists have found hundreds of fossils of tropical plants in cool, dry areas of North America. Which is MOST likely indicated by fossil discoveries like these?
 - a) Glacial movement carried fossils to different places
 - b) Some tropical plants can grow in moderate climates
 - c) The climate in different areas on Earth has changed over time
 - d) Ancient people carried plants with them as they traveled to new locations

3. Trilobites are extinct animals that lived in the oceans. Fossils of these animals can be found in dry areas such as Cincinnati. What does this indicate?
 - a) Trilobites now live underground
 - b) Trilobites are the ancestors of jellyfish
 - c) Cincinnati was once covered by the ocean where trilobites lived
 - d) The environment changed, creating small saltwater lakes in Cincinnati

4. How are plant cells and human cells different?
- a) Human cells need food, but plant cells do not
 - b) Human cells need energy, but plant cells do not
 - c) Plant cells make their own food, but human cells do not
 - d) Plant cells make their own energy, but human cells do not
5. Which statement BEST describes why a calcium-fortified juice would advertise that it is good for growing children?
- a) Calcium helps the growth of bones
 - b) Calcium provides energy for growth
 - c) Children need to drink a lot of fluids
 - d) Children need calcium to prevent allergies
6. The symptoms of strep throat infection are a red and swollen throat. What is the MOST likely cause of strep throat?
- a) Eating raw vegetables
 - b) Drinking lemonade
 - c) Invading bacteria
 - d) Running in cold weather
7. Infectious diseases can be passed from organism to organism by all of the following EXCEPT
- a) Insect bites
 - b) Contaminated food
 - c) Genetically from parents
 - d) Pathogens in the air
8. Which of these is an environmental benefit of converting to solar energy?
- a) A decrease in air pollution
 - b) An increase in the cost of energy
 - c) An increase in the use of fossil fuels
 - d) A decrease in electrical energy production
9. An unnamed organism is forced to deal with changing tides, exposure to constant changes in salinity, and periods where it is completely out of the water. What ocean zone does this organism most likely live in?
- a) Neritic
 - b) Intertidal
 - c) Bathyal
 - d) Photic
10. Which answer choice below shows an organism that uses oxygen for respiration?
- a) Algae
 - b) Phytoplankton
 - c) Fish
 - d) Bacteria
11. Which answer choice shows that a scientist used radiometric analysis?
- a) Layer B is deeper than layer A, so layer B is older than layer A
 - b) The index fossil of the trilobite fossil was used to prove that it was older than a horse fossil
 - c) The fossil was determined to be 500,000,000 years old
 - d) The igneous intrusion is younger than the layers it just cut through
12. Some plants rely on hummingbirds for pollination. If a deadly disease infected the hummingbird population, what would most likely happen to the plants?
- a) They would die within hours
 - b) They would become endangered
 - c) They would need to migrate
 - d) They would grow at a slower rate

13. Water (H_2O) is best classified as a
- a) Element
 - b) Compound
 - c) Atom
 - d) Mixture
14. How do scientists determine changes that have occurred in a species over time?
- a) Looking at the ecosystem they currently live in
 - b) Talking about variations in the organism
 - c) Looking at the fossils of organisms
 - d) Seeing how much reproduction they are able to do
15. Which of these reduces the need for people to use nonrenewable resources?
- a) recycling paper products
 - b) watering the lawn once a week
 - c) designing cars that are fuel efficient
 - d) using coal to generate electricity
16. Explain the following statement:

*"Vaccines are used as **preventative** measures against different diseases, while antibiotics **cure** different diseases."*

17. Why do we NOT consider viruses to be living organisms?
-
-

18. What is the difference between a pandemic and an epidemic?
-
-

19. Why are diseases such as cancer and diabetes not considered to be pandemics?
-
-

20. Draw and simply label a prokaryote and eukaryote.

Prokaryote	Eukaryote

Have a great spring break! =)

Science EOG Study Guide

Unit 1: Renewable and Nonrenewable Resources

Renewable Resources	Nonrenewable Resources
Wind	Coal
Solar/Photovoltaic Cells	Oil/Petroleum
Hydroelectric	Natural Gas
Biomass	Nuclear
Geothermal	

- Wind
 - Does not pollute the atmosphere
 - Uses blades to turn and create energy
- Solar/Photovoltaic cells
 - Does not pollute atmosphere
 - Location specific
- Hydroelectric
 - Does not pollute atmosphere
 - Causes sediment buildup in rivers
 - Disrupts migration of fish
- Biomass
 - Releases methane into atmosphere
 - Uses plants and waste material to make fuel
 - Reduces amount of crops/food for people
- Geothermal
 - Releases methane into atmosphere
 - Location specific
 - Uses heat from magma under ground

-
- Coal
 - Pollutes the atmosphere
 - Fossil Fuel
 - Plant and animal remains from millions of years ago
 - Oil/Petroleum
 - Pollutes the atmosphere
 - Fossil Fuel
 - Animal and algae remains from millions of years ago
 - Natural Gas
 - Pollutes the atmosphere
 - Fossil Fuel
 - Animal and plant remains from millions of years ago
 - Nuclear
 - Does NOT pollute the atmosphere
 - Releases water vapor when used
 - Produces radioactive waste

Unit 1 Practice Questions:

1. Geothermal, wind, and solar are some of the energy resources in which Nevada has an abundant supply. What would be a benefit of their usage compared to other energy sources?
 - a. They are relatively cheap to establish.
 - b. They are constantly being replenished.
 - c. They produce large amounts of carbon dioxide.
 - d. They cover relatively small amounts of land.

2.

Type of energy	How it works	Advantages	Disadvantages
A	Burn plant remains from millions of years ago. The heat produced is used for energy in factories, houses, and other locations	Cost-effective	Pollutants are released into atmosphere
B	Cold water is heated using magma in the earth. The resulting steam drives turbines	Renewable, no harmful gases	Very few suitable sites

Which type of resource matches with row A?

- a) Oil
- b) Nuclear power
- c) Coal
- d) Geothermal

Which type of resource matches with row B?

- a) Nuclear
- b) Coal
- c) Oil
- d) Geothermal

3.

Type of energy	How it works	Advantages	Disadvantages
A	Energy harnessed from the sun hits panels and dishes. The energy captured is then transformed into electrical and heat energy	Endless supply of energy. No pollutants released	Extremely expensive, and it is dependent on the time of day
B	Organic materials such as plants, crops, and waste materials are burned for heat which help in electrical energy production	Renewable, no harmful gases	Prices remain high

Which statement about the two resources is true?

- a) Resource A is used for energy a lot in the United States, but resource B is not used much
- b) Resource A is a renewable resource, while resource B is a nonrenewable resource
- c) Resource A is a nonrenewable resource, while resource B is a renewable resource
- d) Both resources are beneficial to the environment, but are not used as much as other resources

Unit 2: Chemistry

Law of Conservation of Mass: Matter can never be created or destroyed

- In a balanced chemical equation, the *reactants* always equal the *products*

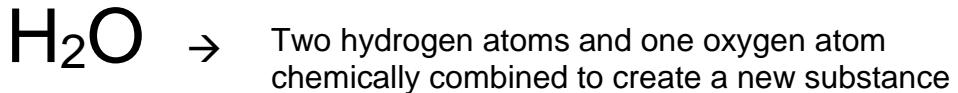


***In the example above, there is one Zn atom on the left side of the equation. There is also one Zn atom on the right side of the equation. There are two H atoms and two Cl atoms on the left side of the equation. There are also two H atoms and two Cl atoms on the right side of the equation. **Since both sides of the equation have equal number of atoms, this equation is balanced.**

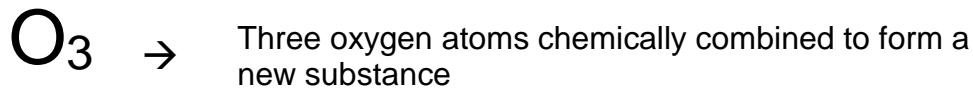
Mixtures and Pure Substances

Pure substances	Mixtures
Element	Heterogeneous
Atom	Homogenous
Compound	
Molecule	

- Elements
 - Cannot be broken down any further
- Atoms
 - Cannot be broken down any further
 - A single atom is an element
- Compounds
 - When two or more **different** elements *chemically* combine
 - Can be broken down chemically
 - EX:



- Molecules
 - When two or more of **the same** elements *chemically* combine
 - Can be broken down chemically
 - EX:



-
- Heterogeneous Mixtures
 - Come together physically
 - Can easily be pulled apart physically
 - Homogenous Mixture
 - Come together physically
 - Cannot easily be pulled apart physically

Examples of **Heterogeneous Mixtures**

Trail Mix



Salad



Lucky Charms



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Examples of **Homogenous Mixtures**

Kool-Aid



Coca-Cola



Chocolate Milk



Examples of **Compounds**

Salt (NaCl)



Water (H_2O)



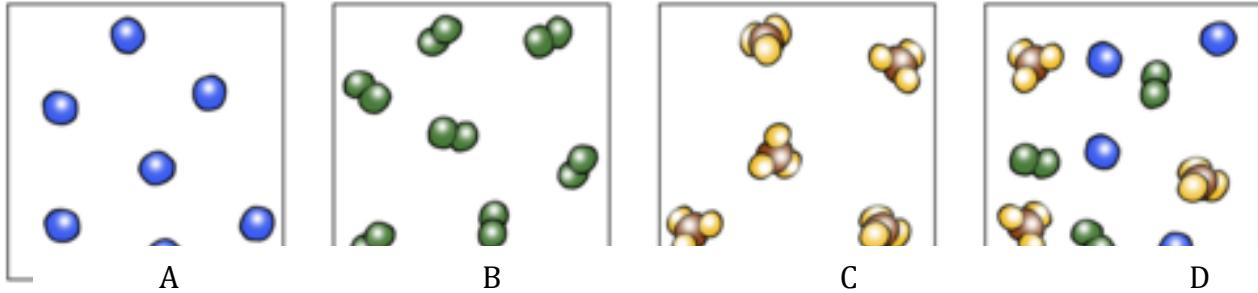
Unit 2 Practice Questions

Chemical	Description	Chemical Formula
1	Water	H ₂ O
2	Salt	NaCl
3	Oxygen	O
4	Glucose	C ₆ H ₁₂ O ₆

1. Which chemical cannot be further broken down into other chemicals using ordinary laboratory processes?
 - a) 1
 - b) 2
 - c) 3
 - d) 4

2. How does a balanced chemical equation satisfy the Law of Conservation of Mass?
 - a) During a chemical reaction, the total amount of atoms stays the same in reactants and products
 - b) During a chemical reaction, matter is destroyed.
 - c) During a chemical reaction, one or more new substances are formed.
 - d) During a chemical reaction, the total number of atoms increases in the products

3.



and a compound

Which of the above images represents a mixture?

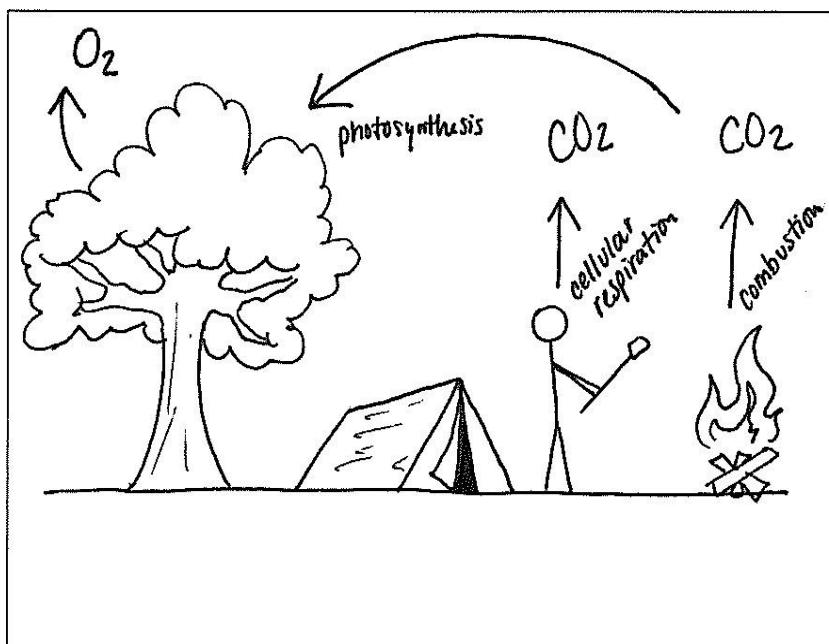
- a) Image B represents a mixture because multiple atoms are coming together chemically
- b) Image C represents a mixture because multiple compounds are coming together physically
- c) Image A represents a mixture because there is only one type of atom
- d) Image D represents a mixture because there are single atoms, compound/molecules, and molecules all coming together physically

Unit 3: Ecosystems

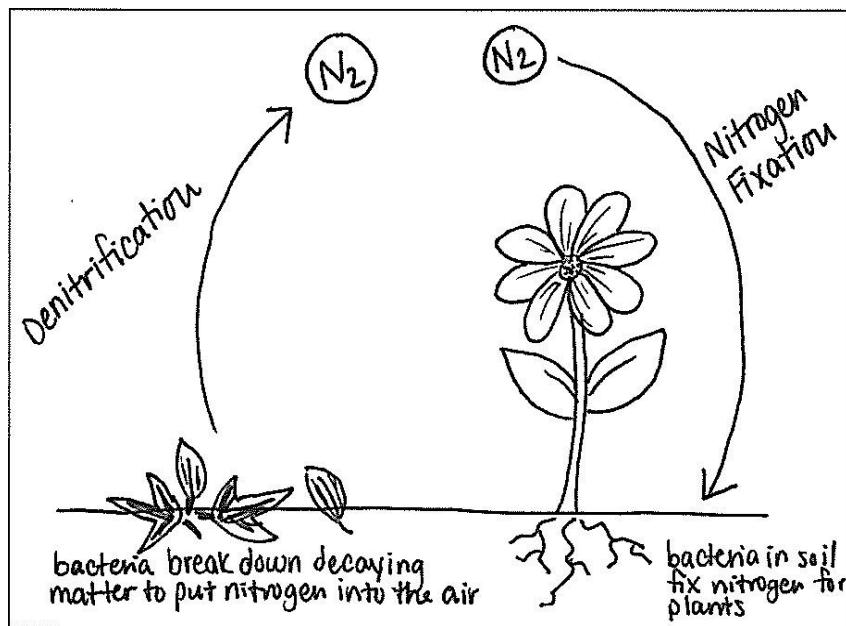
Symbiotic Relationships

Mutualism	Both organisms benefit	+ , +
Parasitism	One organism benefits, and the other is harmed	+ , -
Predation	One organisms benefits, and the other is killed	+ , -
Commensalism	One organism benefits, the other is unaffected	+ , 0
Coexistence	Neither organism is positively or negatively affected	0 , 0

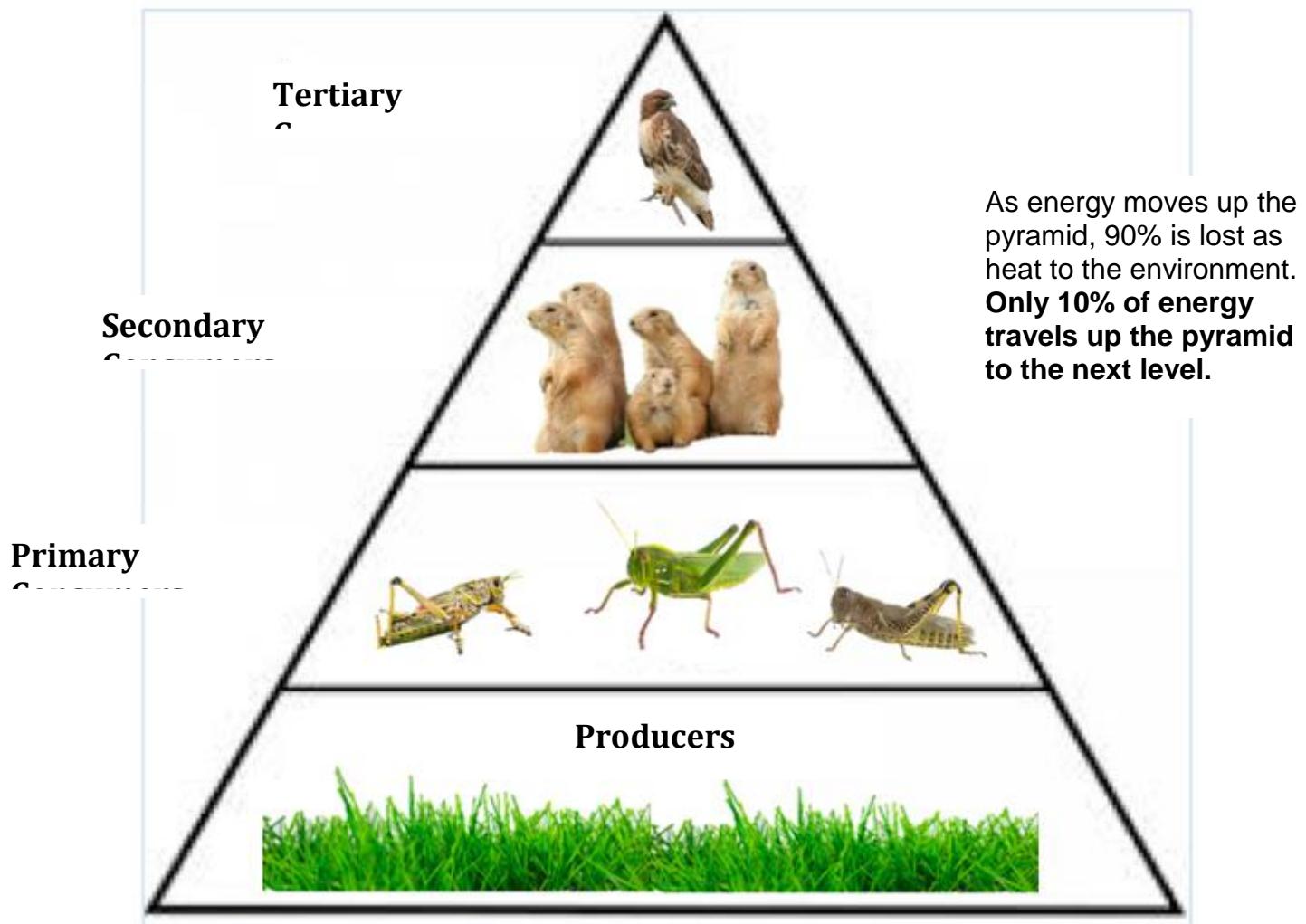
Carbon Cycle



Nitrogen Cycle



Energy Pyramid



Biotic vs. Abiotic Factors

Biotic Factors: Anything in the ecosystem that is **living**

Abiotic Factors: Anything in the ecosystem that is **non-living**

Example: List all of the biotic and abiotic factors in this image...

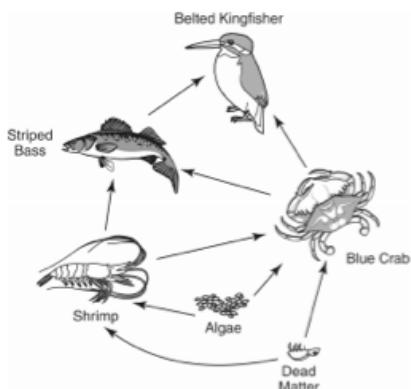


Biotic:

Abiotic:

Unit 3 Practice Questions:

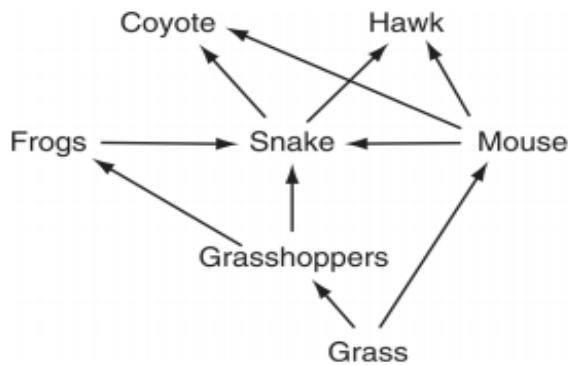
1. Students studied the relationship among organisms in a wetland environment.



Which type of interaction exists between shrimp and blue crabs in this food web?

- a) Shrimp prey on blue crabs
- b) Shrimp compete with blue crabs for food
- c) Shrimp help blue crabs filter polluted water
- d) Shrimp decompose matter for blue crabs

2. The diagram below shows a food web.



A reduction in which of these would lead to a decrease in *all* the other populations in the web?

- A. coyote
 - B. grass
 - C. grasshoppers
 - D. snake
3. Which example describes the symbiotic relationship of commensalism?
- a) Mites attach to wasps, flies, or bees for transportation to different locations
 - b) Ticks suck on the blood of different organisms, including humans
 - c) Vampire bats feed on the blood of animals
 - d) Some bacteria in humans feed on foods that humans have trouble digesting

Unit 4: Pathology

Pathogens/Agents of disease

viruses
bacteria
parasites
fungi

Viruses

- Cannot reproduce on their own
- Are NOT considered a living organism
- Need a host cell in order to reproduce
- EXTREMELY small
- Cause disease

Bacteria

- Can reproduce on their own
- Are considered a living organism
- Larger than viruses
- Cause disease

Parasites

- Take nutrients from a host in order to survive
- Cause disease

Fungi

- Cause disease

★ Vaccines prevent viruses

★ Antibiotics treat bacteria

Types of Cells

Eukaryotic

- Has a nucleus
- More complex (has more stuff in it)

Prokaryotic

- Does NOT have a nucleus
- Less complex (less stuff in it)

Epidemics vs. Pandemics

Epidemics

- A small area is affected by a disease

- Only happens with an infectious disease

Pandemics

- A worldwide area is affected by a disease
- Only happens with an infectious disease

Examples of infectious diseases...

Common Cold	Spread by a virus
Influenza (Flu)	Spread by a virus
Strep Throat	Spread by bacteria

Examples of inherited diseases...

Diabetes
Cancer
Alzheimer's

★ Inherited diseases CANNOT be considered epidemics or pandemics

Unit 4 Practice Questions:

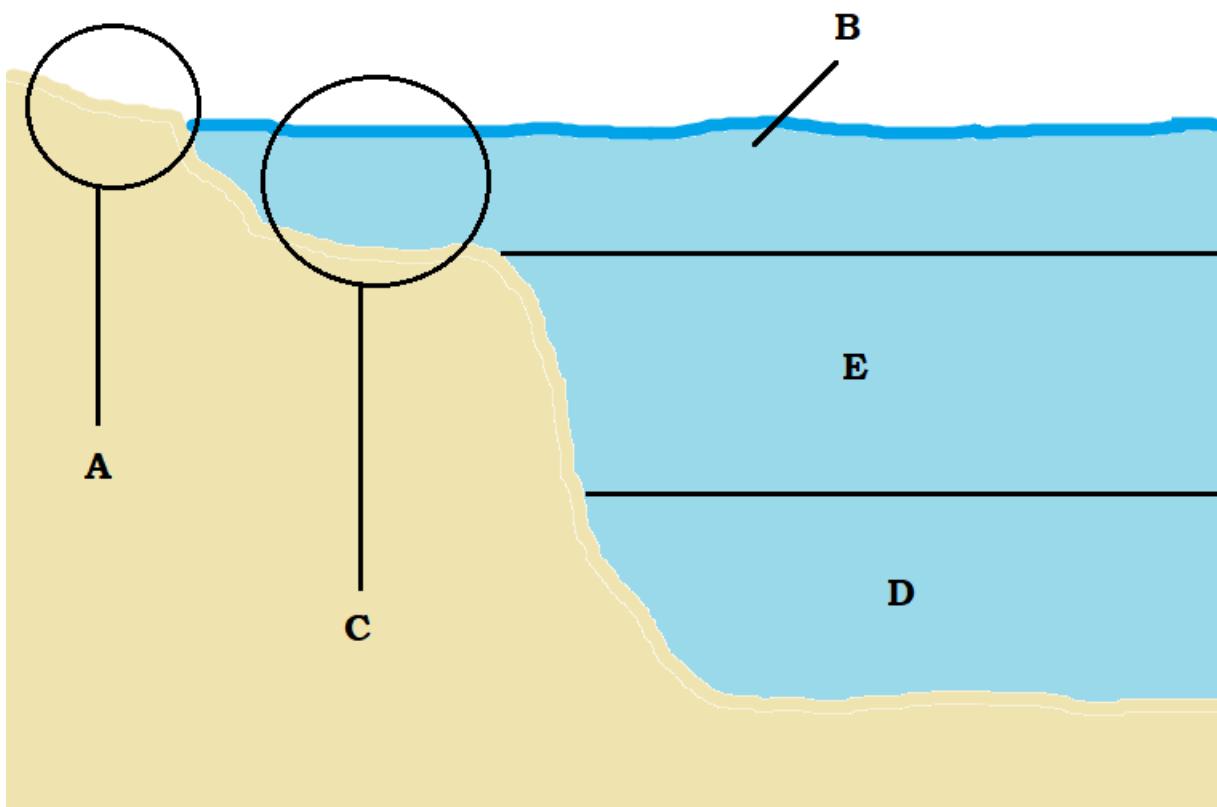
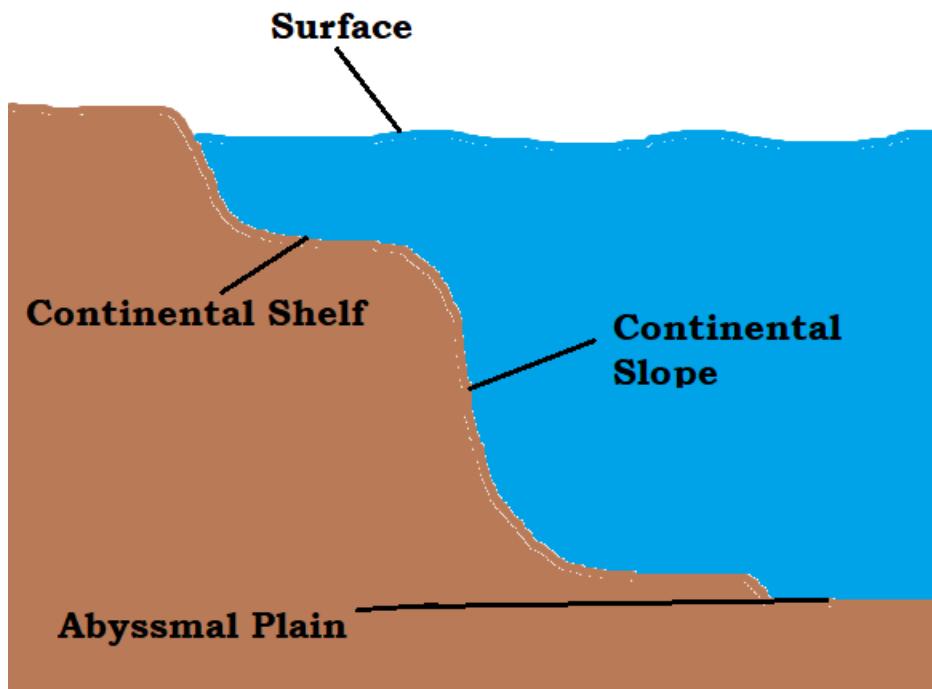
1. Epidemics of polio and measles used to be common in the United States. Now they are rare. What is the *best* explanation for this?
 - a) Careful use of antibiotics
 - b) Insecticides that kill transmitting pests
 - c) Widespread vaccination
 - d) Water monitoring and treatment
2. How is an epidemic different from a pandemic?
 - a) An epidemic involves a less serious disease
 - b) An epidemic involves a smaller geographic area
 - c) An epidemic refers to human diseases, and a pandemic refers to nonhuman diseases
 - d) An epidemic last for a longer time than a pandemic
3. A student sorted a list of diseases and conditions into two groups.

Group 1	Group 2
tuberculosis	diabetes
influenza	arthritis
diphtheria	asthma
meningitis	cancer

The diseases and conditions in Group 1 are

- a) inherited conditions.
- b) infectious diseases.
- c) caused by environmental conditions.
- d) not treatable with medications.

Unit 5: Hydrosphere



A → Intertidal Zone (organisms live on land and in water)

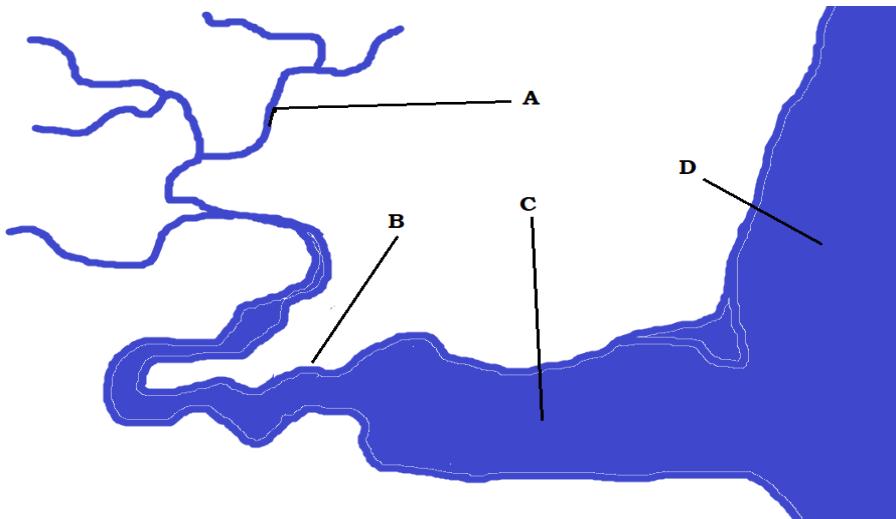
B → Photic Zone (contains a ton of algae, most photosynthesis happens here)

C → Neritic Zone (contains kelp forests and coral reefs, most underwater life is here)

D → Abyssal Zone (no sunlight, little to no life is here)

E → Bathyal Zone (some sunlight, some life lives here but not the most)

Estuaries: bodies of water that connect the ocean to inland rivers, composed of saltwater and freshwater



A → Tributary (small stream that leads into river)

B → River basin (opening of river that leads into estuary)

C → Estuary (body of water that has salt water and freshwater)

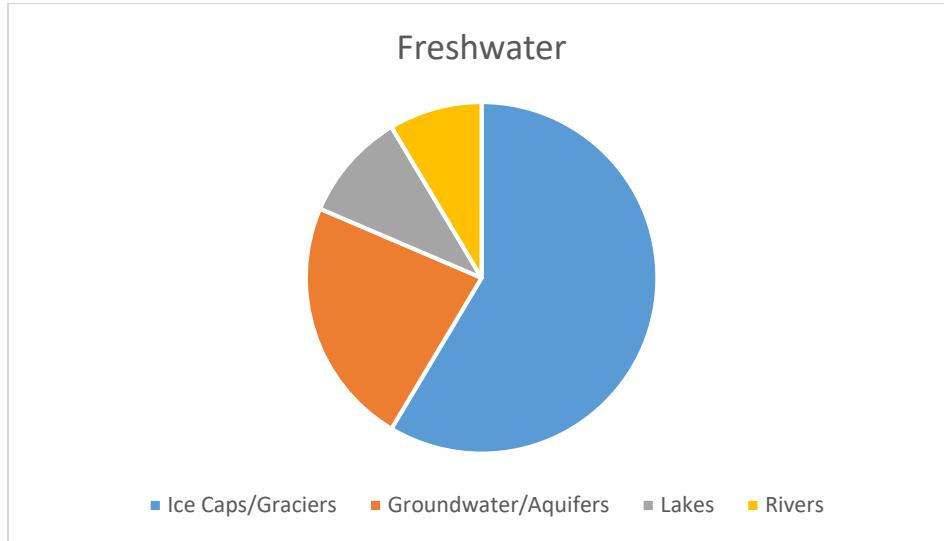
D → ocean (all salt water)

Distribution of Water

- Most water on Earth is found in the **ocean**
 - 70% of the Earth is covered in water
 - 97% is salt water
 - 3% is freshwater

Freshwater

- Most freshwater is found in **ice caps and glaciers**



- Most drinking water is found in **groundwater/aquifers**
 - Rivers and lakes are also a large supply of drinking water because they are easily accessible
 - Groundwater is recharged/replenished by **precipitation**

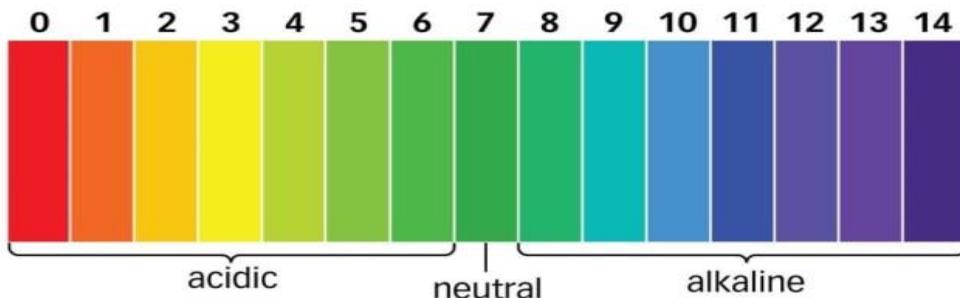
Health of Water

Turbidity: how clear/dirty the water is

- Low turbidity = clear
- High turbidity = dirty

pH : measures how acidic or basic the water is

- Low pH = acidic
- High pH = alkaline/basic
- Neutral pH = healthy



Temperature & Dissolved Oxygen

- Healthy water has a *low* temperature
- Healthy water has a *high* amount of dissolved oxygen

Temperature low = Dissolved Oxygen high

Temperature high = Dissolved Oxygen low

Unit 5 Practice Questions:

- Angelfish are a type of fish commonly found in the Great Barrier Reef in Australia. They are known for their distinctive shape and often strikingly colorful markings. Where would you most likely find Angelfish in the ocean?
 - Bathyal zone
 - Neritic zone
 - Photic zone
 - Intertidal zone
- Hydrologists often use the following instrument to assess water quality. The disc is tied to a rope and lowered into the water. The scientist records whether or not it is visible at a particular depth. What information would this test provide?



- nitrate level
- pH level
- dissolved oxygen level
- turbidity level

3. Which of the following are indicators of a healthy water system?
- a) High nitrates, high chlorophyll *a*, and low temperature
 - b) Low temperature, high dissolved oxygen and a neutral pH
 - c) Low pH, high nitrates, and low dissolved oxygen
 - d) Low turbidity, high chlorophyll *a*, and high nitrates
4. How does upwelling impact an oceanic ecosystem?
- a) Upwelling creates drastic changing conditions that disturb species and can cause some species to die.
 - b) Upwelling can only impact lakes. It cannot affect the oceans.
 - c) Upwelling brings nutrients to the surface from deeper, colder water, which help keep plants and organisms healthy
 - d) Upwelling causes large tides that make the intertidal zone a more challenging place for species to survive
5. A biology student is planning a survey of fish species in a local estuary. Which statement represents the **best** hypothesis for the experiment?
- a) The diversity of species in the estuary include both freshwater-tolerant and saltwater-tolerant species.
 - b) The diversity in the estuary will be much lower than the diversity in the adjacent rivers.
 - c) Only freshwater species will be found in the estuary.
 - d) Only saltwater-tolerant species will be found in the estuary.
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Answer Key

Unit 1

1. B
2. C
- D
3. D

Unit 2

1. C
2. A
3. D

Unit 3

1. B
2. B
3. A

Unit 4

1. C
2. B
3. B

Unit 5

1. B
2. D
3. B
4. C
5. A