Mrs. Loudin 7th & 8th Grade Science

Final Assignments Checklist

Wednesday, May 6 _____

Plate Tectonics

Wednesday, May 13 _____

Phases of Matter

Wednesday, May 20 _____

Climate Change

Wednesday, May 27 _____

Ecosystems

ASSIGNMENT IN PLACE OF FINAL, May 29 @ 3:00

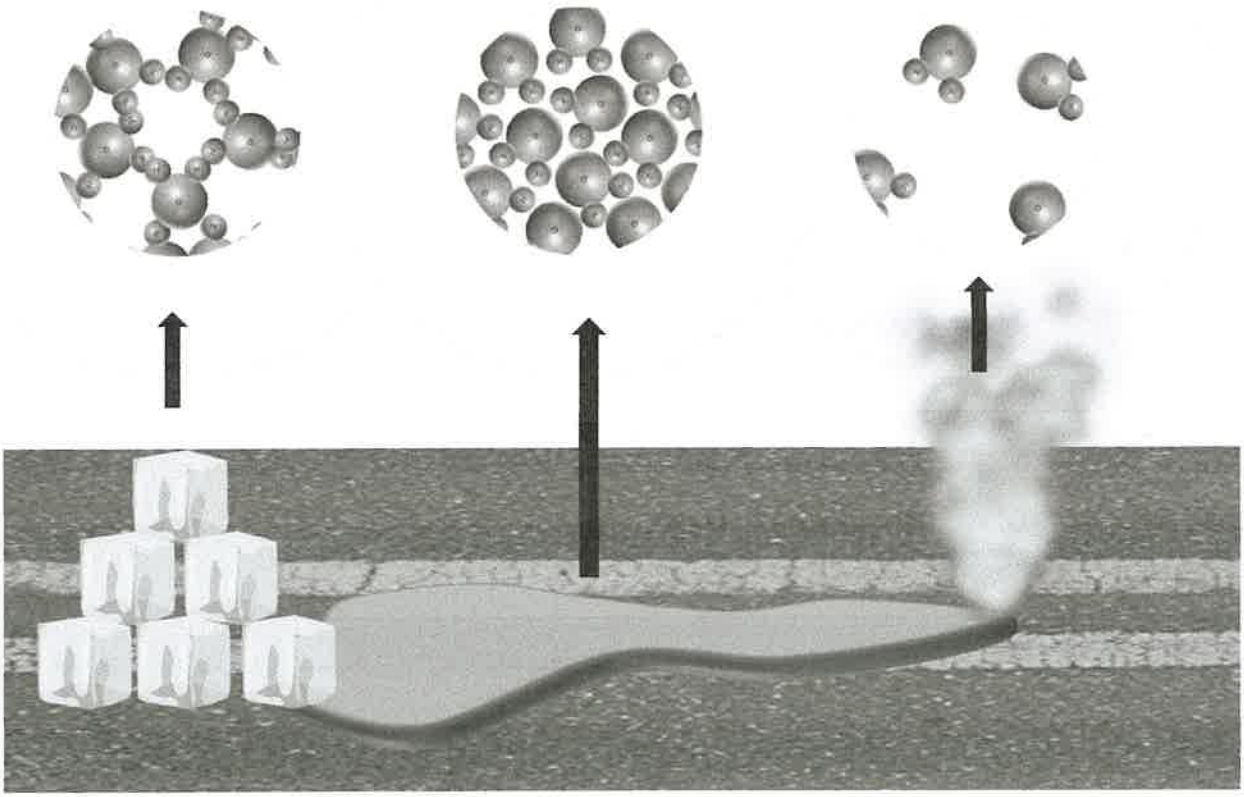
Adaptations

May 13, 2020

Matter can be commonly classified into three different states: solids, liquids, and gases. These states are determined by the amount of kinetic energy in the particles. Kinetic energy is energy due to motion. As heat is added to a substance the kinetic energy increases and thus the particles vibrate and move around more. Review the following table and graphs to answer the questions regarding the states of matter.

Table 1

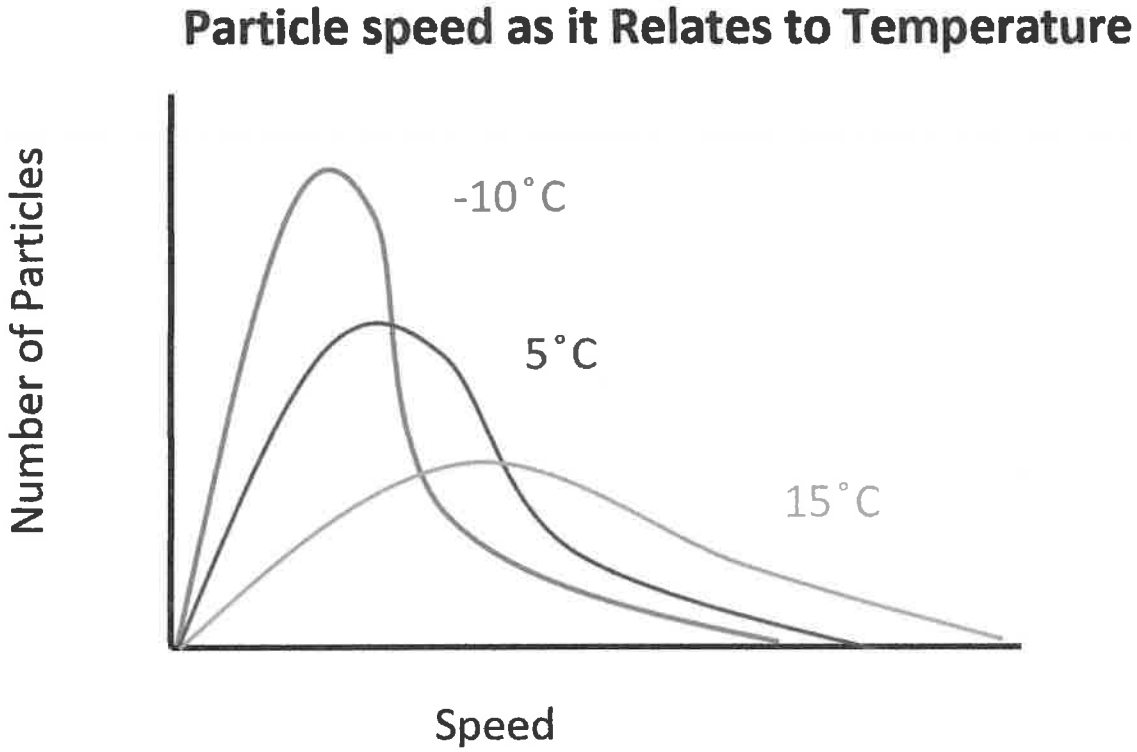
The H_2O particles are packed closely together and vibrate back and forth in a rigid structure	The H_2O particles move around and slide past each other	The particles collide and move about at very high speeds



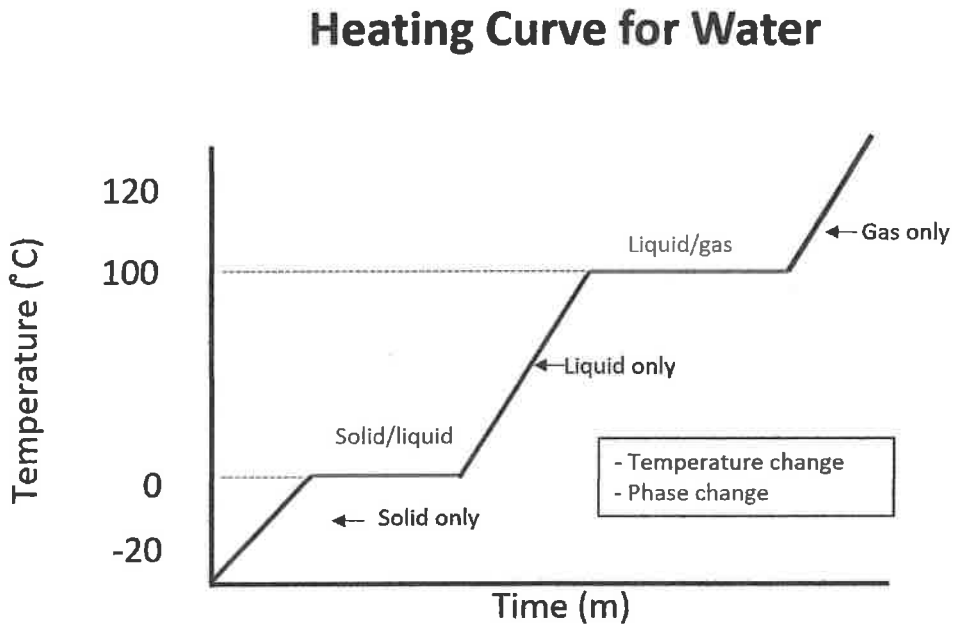
May 13, 2020

Graph 1

*Graph 1 is known as the Maxwell-Boltzmann distribution of speed. This graph shows the speed of particles in a container at a given temperature. The area under the curve is the amount of particles in the container. The total amount of particles do not change between temperatures. What changes is the distribution of high speed and low speed particles.



Graph 2



Name_____

May 13, 2020

1. What is kinetic energy?

2. According to Table 1, which state of matter has the highest kinetic energy?

3. The first law of thermodynamics states, "energy cannot be created nor destroyed, it can only change forms." Understanding this scientific law, what causes the kinetic energy to increase as ice turns to water?

4. According to Graph 1, what temperature has the greatest distribution of low speed particles?

5. According to Graph 1, what is the relationship between speed of particles and the temperature?

6. According to Graph 2, at what temperature does water freeze and become a solid?

7. According to Graph 2, at what temperature does water become a gas?

8. Dry ice is a substance that goes from a solid to a gas, it does not become a liquid. Illustrate what the heating curve would look like for Dry ice? (the heating curve for water is on Graph 2)

Name_____

May 13, 2020

9. Students were doing an experiment in which they took recordings of the temperature every 5 minutes as a cup of ice melted. The results were as follows:

0 min	5min	10 min	15 min	20 min	25 min
-10°C	-5°C	0°C	0°C	0°C	5°C

Describe what is going on with the water particles between 10 min and 20 min?

10. Fill out the following flow chart. (the state of matter goes in the boxes and increase/decrease goes on the lines)

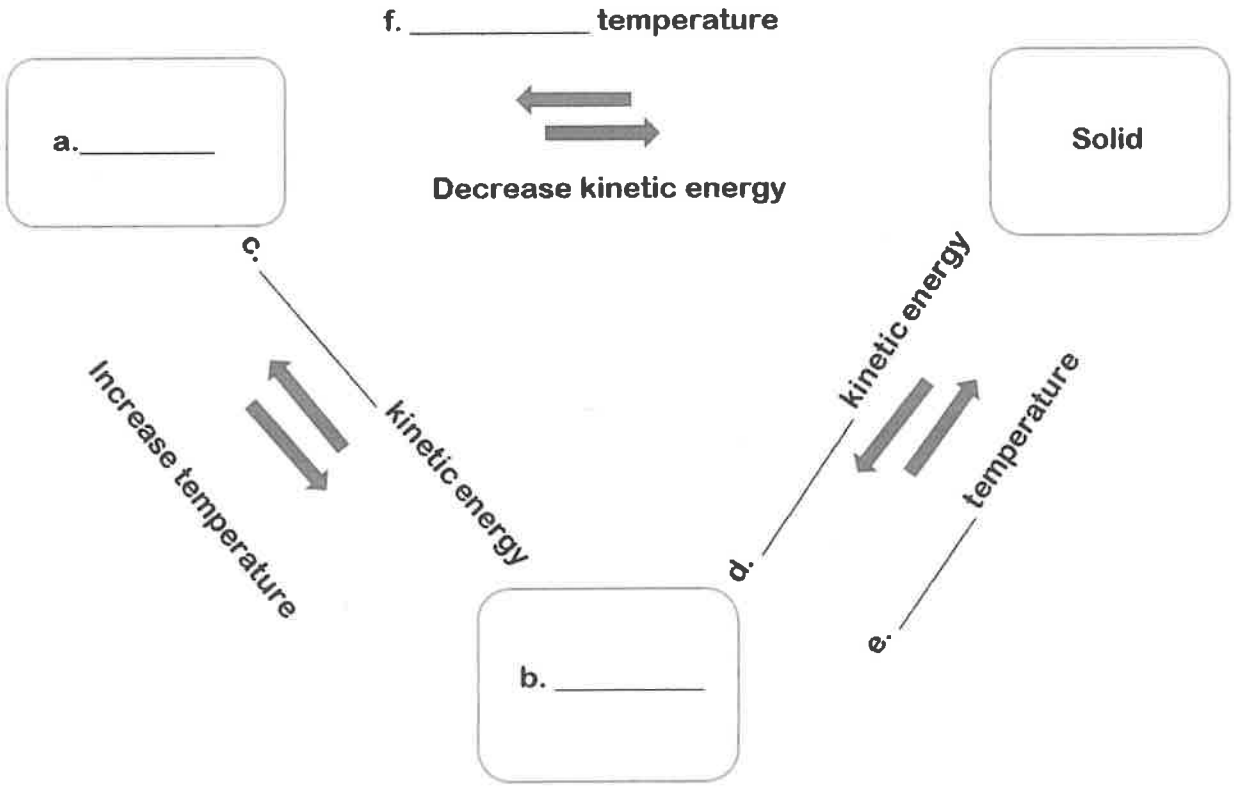


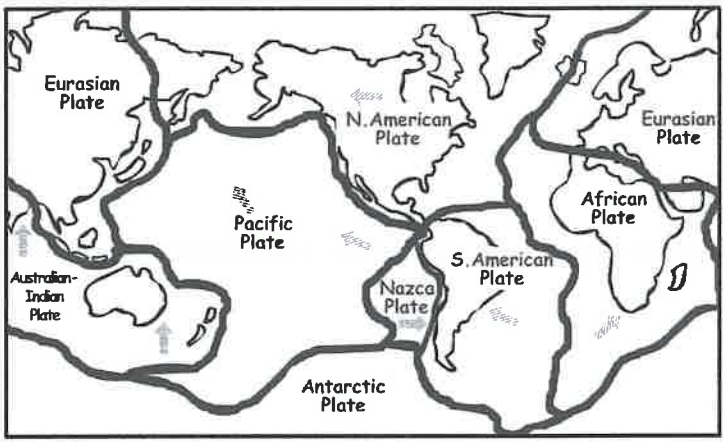
Plate Tectonics: Introduction

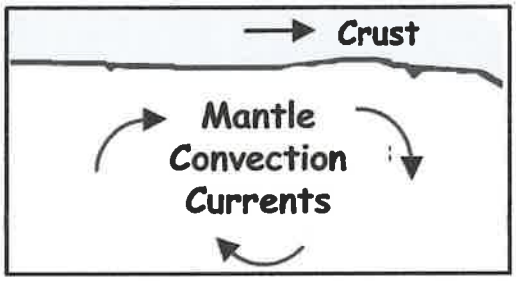
Name _____

Instructions: Read through the introduction information about Plate Tectonics. Then complete the "Fill In" questions below.

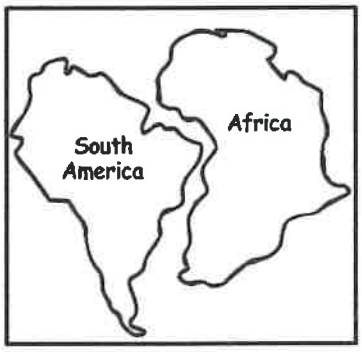
May 6, 2020

The Earth's crust is broken into over a dozen large pieces. The crustal pieces called "Plates" move in different directions and at different speeds. Geologists have determined these moving plates are responsible for many of the Earth's geologic features. The first scientist to write about the possibility of the continents moving was Alfred Wegener, a German meteorologist and geophysicist. In 1915 he proposed the idea of "Continental Drift", which is the slow movement of continents through the ocean.





As scientists gathered data throughout the 1900's, more evidence suggested that the crust was broken into large pieces and those pieces were being push by forces inside the Earth's mantle. As the mantle circulates molten rock called magma, the plates are slowly pushed and pulled along. This slow movement of the plates is referred to as the "Plate Tectonic Theory".



Evidence that led scientists to this theory involved several different aspects of our current continental arrangement. First, the "Puzzle Piece" arrangement of South America and Africa appear to fit together as if part of a puzzle. Scientists have also found fossil and rock evidence that link together other continents such as North America and Europe. Another feature of plate tectonics is the discovery of large mid-oceanic ridges. These ridges under the sea are large mountain ranges of new crust being push out of the mantle at plate boundaries. Even today the plates are slowly moving. Scientists estimate that many plates are moving between 5 and 10 centimeters per year. In another million years, the continents will look much different from today's arrangement.

Complete the "Fill In" questions using information from the sections above.

1- _____ was the first scientist to propose continental movement.

2- The Earth's crust is broken into large pieces called _____ that slowly move.

3- The _____ theory refers to the slow movement of pieces of the Earth's crust.

4- South America and Africa seem to fit together as if part of a _____.

5- _____ are large underwater mountain ranges formed by new crust.

6- The Earth's plates move about _____ centimeters ever year.

7- Circulating _____ pushes and pulls on the Earth's crustal plates.

8- In _____ Alfred Wegener proposed the idea of "Continental Drift".

May 6, 2020

Plate Tectonics: Investigation

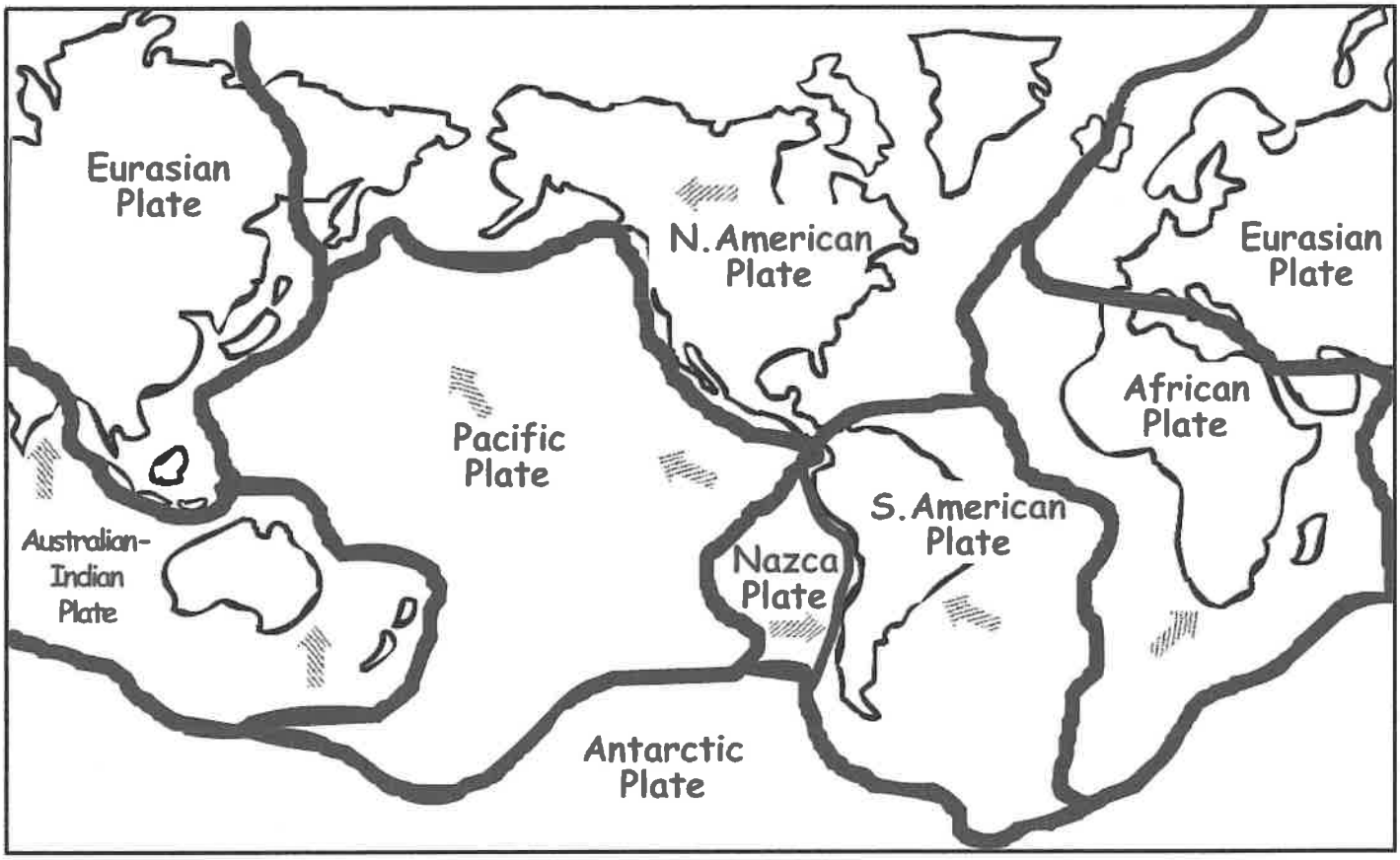
Name _____

Instructions: Read the brief plate map description. Then use the map below and color code the different plates using the color key below the map.

In the Plate Tectonic Theory there are 7 major plates that are recognized; North American, South American, Pacific, African, Eurasian, Australian-Indian, and the Antarctic. There are also several smaller plates, most notably the Nazca Plate. Each plate is moving in a different direction and at different speeds. This combined plate movement creates the geologic features and continental shapes we see on the Earth today.

Plate Tectonic Facts:

- Plates can be over 60 miles thick.
- Plates do not follow country or continental boundaries.
- Plates can be *Oceanic* or *Continental*.
- The Pacific Plate covers 100 million square miles.
- Scientists estimate the Australian-Indian Plate moves as fast 20 cm/year



– Plate Tectonics Map –

Color code the map above using the color code key below:

North American - Green
South American – Red
Pacific – Blue
African – Tan
Eurasian – Orange
Australian-Indian – Yellow
Antarctic – Gray
Nazca - Brown

May 20, 2020

Warming's role in extreme weather

Climate change ups chances of hot temperatures and heavy precipitation

BETH MOLE: MAY 6, 2015 — 7:00 AM EST

https://www.sciencenewsforstudents.org/article/warming%E2%80%99s-role-extreme-weather

Devastatingly hot weather. Torrential downpours. Scientists have long suspected that global warming can cause extreme weather events. Now experts have numbers to support that idea.

Climate change is to blame for about 3 out of every 4 major spikes in daily temperature. The same goes for nearly 1 in 5 exceptionally heavy rainfalls and other bouts of extreme precipitation. That's the finding of a new study. Researchers offered details of how they came to these conclusions April 27 in *Nature Climate Change*.

The burning of fossil fuels has been leading to a buildup of carbon dioxide in Earth's atmosphere. This CO_2 is a *greenhouse gas*. That means it can trap heat in the air. As a result, our planet's temperature has been rising. And this global warming will account for a growing share of ever more frequent extreme weather events, the new study finds.

Many governments hope to limit global warming to 2 degrees Celsius (3.6 degrees Fahrenheit) above temperatures that were typical before the *Industrial Revolution*. It will be hard for nations to achieve that. But even if they do, global warming still will be responsible for nearly all heat extremes, the new study finds. Global warming also will be to blame for about 2 out of every 5 extreme rains and snowfalls.

"This is a considerable fraction" of major weather events, says climate scientist Peter Stott. He works for the United Kingdom's national weather service at the Met Office Hadley Centre in Exeter, England. Stott was not involved with the new study.

So far, Earth has warmed about 0.85 degree C (1.53 degree F) since 1750. That's about when the Industrial Revolution got its start. That's also when fossil fuel use took off, spewing lots of CO_2 into the air. Overall, the new study shows that "relatively small rises in global temperature translate into large increases in the likelihood of extremes," Stott says.

What the new climate analysis did

Erich Fischer and Reto Knutti work at the Swiss Federal Institute of Technology in Zurich. These climate scientists analyzed 25 different *computer models* of global climate. These analyses looked at different climate periods, from preindustrial times to the present. The analyses also projected what weather events were likely to be like in the future. This period was projected to be warmer by 2 and 3 degrees C (3.6 and 5.4 degrees F).

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The computer looked at when extreme heat and precipitation occurred during each climate period. It focused on instances of unusual heat or heavy precipitation. Before the Industrial Revolution, such extremes typically would have occurred only once in every 1,000 days.

But since the globe has been warming, such extremes are no longer nearly as rare, Fischer and Knutti find. And their mathematical analyses show that changes in the atmosphere due to human activities have been largely behind this warming.

These new findings provide "a global statement," Fischer says. They show that across the planet there will be more extremes of heat, rain or snow due to global warming. However, he warns, effects may differ a lot from place to place. Indeed, some regions actually may see fewer extreme weather events.

The findings can't pin any specific weather event on climate change, says Sebastian Sippel. This climate scientist likens it to lung cancer: A doctor can never say which cigarette caused it.

"You can still get the biggest heat that you have ever seen without any human changes," says Sippel, who works at the Max Planck Institute for Biogeochemistry in Jena, Germany. Still, he notes, the new study does show that warming is having an effect.

Original Journal Source: E. Fischer and R. Knutti. "Anthropogenic contribution to global occurrence of heavy-precipitation and high-temperature extremes." *Nature Climate Change*. Published online April 27, 2015. doi: 10.1038/NCLIMATE2617

May 20, 2020

Power Words

cancer Any of more than 100 different diseases, each characterized by the rapid, uncontrolled growth of abnormal cells. The development and growth of cancers, also known as malignancies, can lead to tumors, pain and death.

carbon dioxide A colorless, odorless gas produced by all animals when the oxygen they inhale reacts with the carbon-rich foods that they've eaten. Carbon dioxide also is released when organic matter (including fossil fuels like oil or gas) is burned. Carbon dioxide acts as a greenhouse gas, trapping heat in Earth's atmosphere. Plants convert carbon dioxide into oxygen during photosynthesis, the process they use to make their own food.

climate The weather conditions prevailing in an area in general or over a long period.

climate change Long-term, significant change in the climate of Earth. It can happen naturally or in response to human activities, including the burning of fossil fuels and clearing of forests.

computer model A program that runs on a computer that creates a model, or simulation, of a real-world feature, phenomenon or event.

fossil fuels Any fuel — such as coal, petroleum (crude oil) or natural gas — that has developed in the Earth over millions of years from the decayed remains of bacteria, plant or animals.

global warming The gradual increase in the overall temperature of Earth's atmosphere due to the greenhouse effect. This effect is caused by increased levels of carbon dioxide, chlorofluorocarbons and other gases in the air, many of them released by human activity.

greenhouse gas A gas that contributes to the greenhouse effect by absorbing heat. Carbon dioxide is one example of a greenhouse gas.

greenhouse effect The warming of Earth's atmosphere due to the buildup of heat-trapping gases, such as carbon dioxide and methane. Scientists refer to these pollutants asgreenhouse gases. The greenhouse effect also can occur in smaller environments. For instance, when cars are left in the sun, the incoming sunlight turns to heat, becomes trapped inside and quickly can make the indoor temperature a health risk.

Industrial Revolution A period of time beginning around 1750 marked by new manufacturing processes and a switch from wood to coal and other fossil fuels as a main source of energy.

simulate To deceive in some way by imitating the form or function of something. A simulated dietary fat, for instance, may deceive the mouth that it has tasted a real fat because it has the same feel on the tongue — without having any calories. A simulated sense of touch may fool the brain into thinking a finger has touched something even though a hand may no longer exists and has been replaced by a synthetic limb. (in computing) To try and imitate the conditions, functions or appearance of something. Computer programs that do this are referred to as **simulations**.

weather Conditions in the atmosphere at a localized place and a particular time. It is usually described in terms of particular features, such as air pressure, humidity, moisture, any precipitation (rain, snow or ice), temperature and wind speed. Weather constitutes the actual conditions that occur at any time and place. It's different from climate, which is a description of the conditions that tend to occur in some general region during a particular month or season.

CLAIM EVIDENCE REASONING

May 10, 2020

CLAIM: What's the claim of the article?

Climate change ups chances of hot temperatures and heavy precipitation

EVIDENCE: What's the evidence that supports the claim?

-Based on computer models Climate change is to blame for about 3 out of every 4 major spikes in daily temperature and nearly 1 in 5 exceptionally heavy rainfalls and other bouts of extreme precipitation.

-Relatively small rises in global temperature translate into large increases in the likelihood of extremes.

-Before the Industrial Revolution, such extremes typically would have occurred only once in every 1,000 days.

-Mathematical analyses show that changes in the atmosphere due to human activities have been largely behind this warming.

KEY

ANSWERS WILL VARY IN THIS BOX

VISUAL EVIDENCE:

Draw a picture that supports or summarizes the article.

REASONING:

A justification that connects the evidence to the the claim using sufficient scien-

-The author uses the data from computer models of rising global temperature averages due to man made emissions of CO2 since the industrial revolution, to claim that climate change has and will continue to cause extreme weather events more extreme and more common.

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CLAIM EVIDENCE REASONING

May 20, 2020

CLAIM: **What's the claim of the article?**

EVIDENCE: **What's the evidence that supports the claim?**

CONNECTION: **How does this article connect with what you have learned?**

VISUAL EVIDENCE:

Draw a picture that supports or summarizes the article.

REASONING:

A justification that connects the evidence to the claim using sufficient scientific principles.

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May 27, 2020

ECOSYSTEMS: Interactions

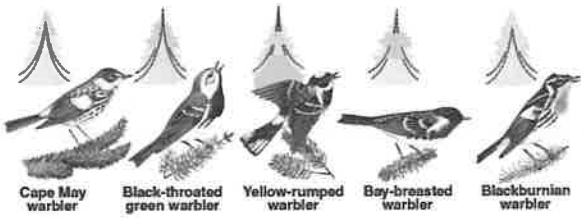
An organism's role within an ecosystem is called its niche. Its niche it the environment that it lives in, what it eats, and how it interacts with the living and nonliving factors within its habitat. There are three major types of interactions among them: ***Competition, predation***, and ***symbiosis.***

Competition

Competition is the fight between organisms to survive as they attempt to use the same resources. When resources are plentiful, organisms can coexist but when they are limited, organisms may be forced to compete. Two species that occupy the same niche cannot survive in the same habitat because they have identical needs. In the African savanna, cheetahs and lions occupy the same space and fight for similar prey. They are negatively impacted by the presence of the other. Eventually, one species could cause extinction in the other.

Competition can be avoided if a species can occupy different areas or a habitat, eat at different times of day, etc. An example is the Spruce forest community. Within it are several varieties of warbler birds that all eat insects. Can they coexist? Each of them have developed specialized adaptations that help them survive in their environment without competing for resources. The warblers each forage for food in different ways because of the shape of their beaks. Because of this, they all live in different layers of the tree, none of them effect the survival of the other.

Niche partitioning among five species of coexisting warblers



Predation

An interaction in which one organism kills and eats another to gain nutrients for survival is called predation. The organisms that kill are called predators and the organisms that are eaten is called prey. The predators have specialized skills to capture their food just as the prey have developed unique skills to avoid being captured. An example is an owl consuming mice. Owls hunt at night and have a highly advanced auditory system that allows them to locate prey based on the sound of their movement through leaves and other foliage. Mice also have excellent hearing that allow them to listen for possible danger. They are also able to camouflage into their environment and avoid being seen.

Owl preying on a mouse

May 27, 2020

Symbiosis

A close, long-term interaction between two different species in which at least one of them benefit is called symbiosis. There are 3 main types of ecological symbiosis: mutualism, commensalism, and parasitism. These relationships can dramatically affect an ecological population.

Mutualism

Mutualism is a relationship between organisms in which both species benefit; both species survive better in the company of the other. Oxpeckers eat ticks living on a rhinoceros's skin. In this case, the birds get to eat and the rhino's skin is freed of the parasitic ticks. In some cases, two species become so independent on one another that one could not survive without the other.

Oxpecker removing ticks from rhino

Commensalism

The relationship in which one organism benefits while the other is neither helped nor harmed is called commensalism.. For example, barnacles grow on surface of whales and other marine life. A whale is unaffected by the attachment of the barnacle but the barnacles benefit because they are carried through the water, increasing their opportunity to eat, and escape their predators.

Barnacles living on whale

Parasitism

Parasitism is a relationship in which one organism benefits at the expense of the other. The organism that benefits is called the parasite and the organism that suffers is called the host. A parasite depends on its host for nutrients and shelter and usually lives inside of it or on its surface for extended periods of time. Examples of parasites that live on the surface of their host are fleas, ticks, and mosquitos. Fortunately, they don't usually cause internal illness to the organism but can cause discomfort and infections. A parasite can also live inside the host like a tapeworm or virus. These can cause considerable harm to their host and in some cases it can result in death. If the host dies, the parasite loses its source of energy and may also die.

Mosquito living on human skin

May 27, 2020

#1

Give a new example of commensalism.

#2

Describe the interaction: a bird's nest rests on the branch of a tree.

#3

Give 2 examples of why 2 of the SAME species might compete for resources.

#4

Give 2 examples of why 2 DIFFERENT species might compete for resources.

#5

Give a new example of mutualism.

#6

Using the following scenario, describe the relationship. A tiger shark lurks in the water with ducks floating on the water's surface.

May 27, 2020

#7

How could a parasite cause harm to its host? Give a specific example.

#8

Deer and squirrels both eat acorns but their food is found in different locations. Do they compete? Explain.

#9

What happens to the population of predators when their prey decreases? Explain why.

#10

What is symbiosis? Use your own words to explain its meaning.

#11

What is the relationship between commensalism, mutualism, and parasitism?

#12

What might happen to a parasite if its host became ill or died?

Name: _____ {Final} Due by: May 29@ 3:00 pm

Adaptations Task Cards

Directions:

Record your answers for each task card in the spaces below.

1. Organisms that are better suited for their environment are more likely to survive and reproduce (Survival of the Fittest)	17. Predator
2. Galapagos Islands	18. Prey
3. The beaks of the finches were different shapes and sizes to suit the diet of the birds on the different islands.	19. Green color to blend in with its environment
4. Adaptations	20. Increase the odds of offspring surviving to adulthood.
5. Instinct (ex. newly hatched sea turtles walking toward sea immediately)	21. D
6. Learned behavior	22. A
7. Instinct	23. The organism will eventually have trouble surviving and reproducing.
8. Learned	24. Answers will vary (ex. Polar Bear- white fur to blend in, sharp teeth, sharp claws, thick fur, black skin to absorb heat, etc.)
9. Hibernation	25. Physical features of an organism that help it survive (ex. bird's beak)
10. Migration	26. The way an organism acts in order to help it survive- can be instinctive or learned (ex. migration)
11. Difficult to find food during cold months	27. Allows an organism to perform special functions within the body (ex. metamorphosis)
12. Mating, follow food source, warmer climates	28. Behavioral
13. Camouflage	29. Structural
14. Allows an organism to blend in with its environment in order to hunt or avoid being hunted.	30. Physiological
15. Mimicry	31. Structural
16. Birds might think it is a Monarch and not eat it.	32. Behavioral

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Adaptations 1

Describe Charles Darwin's Theory of Natural Selection.

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Adaptations 2

Charles Darwin studied many new species and their adaptations. On which group of islands did he complete most of his research?



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Adaptations 3

On the Galapagos Islands, Darwin observed that finches had different shaped beaks depending on which island they lived on. What did Darwin conclude about the beaks of the finches?

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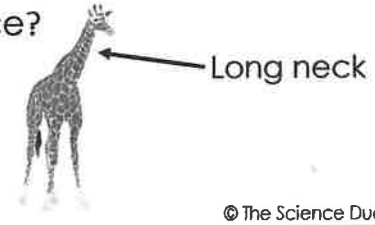
Adaptations 4

What is the term used to describe a characteristic that helps an organism survive in its environment and reproduce?



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Adaptations 5

What is the term used to describe a behavioral pattern that an animal is born with? List one example.

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Adaptations 6

Teaching a dog to roll over for a treat is an example of which type of behavioral pattern?

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Adaptations 7

Instinct or Learned Behavior?

A bird building a nest.

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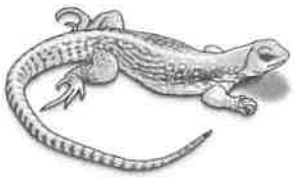
Adaptations 8

Instinct or Learned Behavior?

A lizard becoming ill after eating a poisonous insect.



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Adaptations 9

What is the term used to describe a behavioral pattern that occurs when an animal greatly reduces their activity during the winter?

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Adaptations 10

Many types of birds will fly south for the winter. What term describes this journey?

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Adaptations 11

Why do animals such as a hedgehog hibernate during the cold winter months?

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Adaptations 12

Why do many different species migrate each year?

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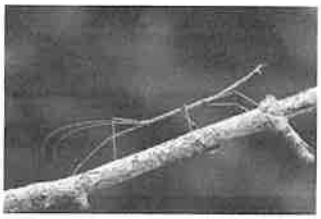
Adaptations 13

A walking stick insect blends in with its environment. What term describes this adaptation?



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Adaptations 14

How does camouflage benefit an organism?

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Adaptations 15

What is the term used to describe when one organism tries to look like or resemble another organism?

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Adaptations 16

The Monarch butterfly is foul tasting and poisonous to many birds if eaten. Why do you think the Viceroy butterfly mimics the Monarch's color pattern?

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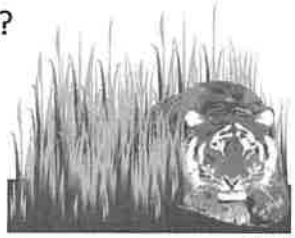
Adaptations 17

An organism that naturally hunts another organism for food is called a _____?



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Adaptations 18

An organism that is hunted and killed by another organism for food is called _____?

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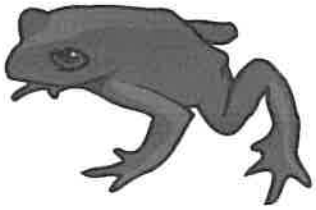
Adaptations 19

What adaptation would help a frog both catch its prey and avoid its predators?



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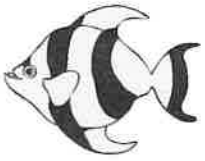
Adaptations 20

Why do some organisms like fish and amphibians produce many more offspring than other organisms?



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Adaptations 21

The disappearance of all members of a species is called _____.

A. migration
B. hibernation
C. niche
D. extinction

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Adaptations 22

Raccoons living in cities have learned to open lids of garbage cans. This is an example of an animal _____.

A. behavioral adaptation
B. structural adaptation
C. physiological adaptation
D. selectively breeding

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Adaptations 23

Describe what might happen if an organism's one main food source disappears.

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Adaptations 24

List one organism and describe all of its adaptations.

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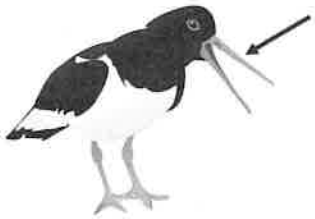
Adaptations 25

What is a structural adaptation? List or describe an example.



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Adaptations 26

What is a behavioral adaptation? List or describe an example.

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Adaptations 27

What is a physiological adaptation? List or describe an example.

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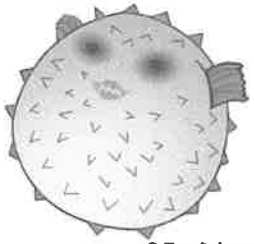
Adaptations 28

Identify the picture below as a structural, behavioral, or physiological adaptation.

Puffing up when threatened



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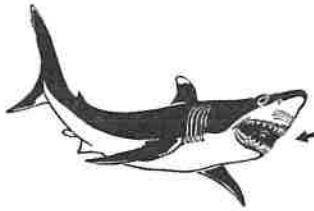
Adaptations 29

Identify the picture below as a structural, behavioral, or physiological adaptation.



Sharp teeth

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Adaptations 30

Identify the picture below as a structural, behavioral, or physiological adaptation.

Produces poison to secrete from skin

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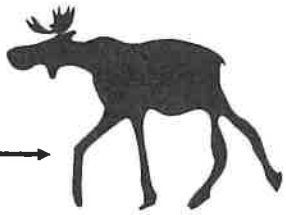
Adaptations 31

Identify the picture below as a structural, behavioral, or physiological adaptation.

Long legs



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Adaptations 32

Identify the picture below as a structural, behavioral, or physiological adaptation.

Dances to attract a mate

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