Christina School District Assignment Board

Student's First & Last Name_____ Student ID/Lunch # _____ School _____ Grade_____

Grade Level: 9th

Week of June 1st, 2020

	Day 1	CSD PD	Day 2	Day 3	Day 4
ELA	This week you will read blogs in order to become a blog writer --- What do you already know about blogs? Have you ever read a blog? Think of a blog you've read and explain what it was about. Why did you choose to read it? Read **"What is A Blog Anyway?"** As you read, annotate important details. Summarize your understanding in 12 words exactly.		Read the blog sample 1. **How to Make an Omelet As** you read and make notes. Underline things you find interesting. Complete the graphic organizer for the blog	Read the blog sample 2. **"Help Your Child …** **"**As you read, make notes. Underline things you find interesting. How is this blog different/ similar to blog 1? Complete the graphic organizer for the blog	Read the blog samples 2. **"The Main Event**". As you read, make notes. Underline things you find interesting. How is this blog different/ similar to blogs 1 and 2. Complete the graphic organizer for the blog. **Challenge:** Create your own Blog
Math (IM1/ Algebra 1)	*Exponential Growth and Decay/Compound Interest* *Answer "Which One Doesn't Belong?" and justify your choice. (attached) Read Concept Summary:*		*Complete Exponential Growth and Decay Worksheet 2 #1-9. (attached) Refer to Concept Summary if needed.*	*Complete Exponential Growth and Decay Worksheet 3 #1-5. (attached) Refer to Concept Summary if needed.*	*Complete Exponential Growth and Decay Worksheet 4 #1-4. (attached) Refer to Concept Summary if needed.*

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	Exponential Growth and Decay to complete Exponential Growth and Decay Worksheet 1 # 1-3. (attached)				
Science	**Drilling Deep for Knowledge About Fossil Fuels – Power and Pollution (part 1):** Read article. In YELLOW highlight or underline information regarding different kinds of fossil fuel energy sources. In GREEN, highlight or underline potential concerns about the global supply of these nonrenewable resources. In RED, highlight or underline potential environmental concerns associated with the use of fossil fuels.		**Drilling Deep for Knowledge About Fossil Fuels – Power and Pollution (part 1):** **Reread article and/or notations as necessary.** **Read the following claim: It is critical to diversify to alternate energy sources because other than being used up rapidly, fossil fuels are also causing long term changes to the global climate and weather patterns.** **Write your best answer(s): What details from the article justify this claim? Explain why the details justify the claim.**	**Drilling Down Into Petroleum's Impact on Life on Earth (part 1):** Read article. In YELLOW highlight or underline information regarding different kinds of fossil fuel energy sources. In GREEN, highlight or underline potential concerns about the global supply of these nonrenewable resources. In RED, highlight or underline potential environmental concerns associated with the use of fossil fuels.	**Drilling Down Into Petroleum's Impact on Life on Earth (part 2):** Reread article and/or notations as necessary. Write your best answers to the following: a) What are two products that can be made from petroleum? b) Peak oil is measured in RPRs (reserve-to-production ratios), which are recorded in years. Why does Iran have a higher RPR (80 years) than the United States (9 years)? c) Carbon is a natural element that regulates Earth's temperature and makes the planet livable. Which event has led to major shifts in the carbon cycle becoming? d) Which statement from the article provides evidence of the causes of global warming?
Social Studies	Complete Activity 1 and Activity 2 from the document titled, "The Unique Nature of Places-PART 3"		Complete Activity 3 from the document titled, "The Unique Nature of Places-PART 3"	Complete Activity 4, #1 from the document titled, "The Unique Nature of Places-PART 3"	Complete Activity 4, #2 from the document titled, "The Unique Nature of Places-PART 3"

Name _____ ID#/Lunch# _____ School _____ Grade _____

What Is A Blog Anyway?

You've seen the word, you've seen the websites and you may even have one. But have you ever wondered: What's the big deal about blogs?

To make sense of blogs, you have to think about the news and who makes it. We'll look at news in the 20th vs. the 21st century to make our point. In the 20th century, the news was produced professionally. When news happened, reporters wrote the stories and a tiny group of people decided what appeared in a newspaper or broadcast. Professional news was mainstream: general and limited.

The 21st century marked the point where news became both professional and personal. A new kind of web site called a weblog or blog came onto the scene that let anyone be a reporter and publisher - often for free. As blogs became popular, they created millions of news sources and gave everyone an audience for their own version of news. Of course, we're using the word "news" loosely. But really - isn't everything news to someone?

With a blog...A business owner can share news about his business. A mother can share news about her family. A sport's star can share news with fans. These people are all "bloggers".

How did this happen? Well, blogs made sharing news on the web easy. Anyone with an idea can start a new blog with the click of a button and share news minutes later. Here's how blogs work.

Blogs are websites that are organized by blog posts - these are individual news stories, like articles in the paper. Bloggers simply fill out a form and with the click of a button, the blog post appears at the top of the web page, just above yesterday's news. Over time, the blog becomes a collection of these posts, all archived for easy reference.

Also, each blog post can become a discussion through comments left by readers. Blogs make the news a two-way street. Additionally, Bloggers often work together. In addition to comments, you'll read each other's posts, quote each other and link your blogs together. This creates communities of bloggers that inspire and motivate each other.

Whether it's their ease of use or the opportunities they offer, blogs have been adopted in a very big way. Since 2003, there have been over 70 million blogs created, each with its own version of news. So, the big deal about blogs is that they gave people like you the power of the media and creates a personal kind of news that appeals to a high number of small audiences.

Common Blog Features

- A title that grabs the reader's attention
- An exploration of news ideas and content
- Text that is easy to read and formatted
- Text that is written in a "human" voice (avoid academic-ese)
- Blogs can use any layout and can cover many different topics, but they all have basic characteristics in common.
- Blog entries usually include the date and specific time that they were posted (a timestamp).
- The blogger's name is usually listed with the timestamp. By default, blogs usually end "Posted by [blogger's name]."
- Depending upon the blog site, you may also find other kinds of information with each blog entry.
- Blogs often contain pictures or links to other products
- Readers and the blogger can usually comment on (or reply to) a blog entry. The comments can turn into a dialogue, with the readers and blogger talking together.

Name _____ ID#/Lunch# _____ School _____ Grade _____

BY SALLY VARGAS **Updated May 4, 2020**

How to Make an Omelette

Never fear! Making an omelette at home is not difficult. With a few basic steps and a flip of the wrist you can pull this off in minutes. Fill it with whatever you have on hand—it's a great way to use up leftovers!

Not only is an omelette quick and easy to make, it is a paragon of economy. Odds and ends (a.k.a. leftovers) rise to a new level when placed inside an omelette.

Leftover, cooked vegetables paired with a little cheese and folded into eggs present a much more cheerful meal than a bowl of vegetables haphazardly reheated in the microwave!

FRENCH VERSES AMERICAN OMELETTES

It seems that the French invented omelettes, possibly stealing the idea from the Romans. Let's leave the argument there and just say that the *omelette* has a long history.

A French omelette starts out with beaten eggs in the pan (just like scrambled eggs). The pan is shaken constantly during cooking until the eggs just begin to set. When the eggs are cooked, the omelette is rolled and snugly folded to form an oval and finally turned out onto a plate with the seam side down.

It can be plain or filled, with or without cheese. (An *omelette with fines herbes* is a famous standard French dish. An assortment of chopped herbs is stirred into the eggs before cooking; no cheese.)

American omelettes (or "omelets" as they are sometimes spelled) start out in the same way, but as the eggs cook, the edges are lifted from the sides of the pan with a spatula so the runny eggs can flow underneath.

When the eggs are nearly set, the filling is added and the omelette is folded in half rather than rolled.

HOW TO MAKE AN OMELETTE

For our purposes here, we'll make an American-style omelette and you will see how easy it is to accomplish even if you have never tried to make an omelette before.

Here are the key steps to read before you start so you know where you are going:

1. **Beat the eggs:** Use two or three eggs per omelette, depending on how hungry you are. Beat the eggs lightly with a fork.
2. **Melt the butter:** Use an 8-inch nonstick skillet for a 2-egg omelette, a 9-inch skillet for 3 eggs. Melt the butter over medium-low heat, and keep the temperature low and slow when cooking the eggs so the bottom doesn't get too brown or overcooked.
3. **Add the eggs:** Let the eggs sit for a minute, then use a heatproof silicone spatula to gently lift the cooked eggs from the edges of the pan. Tilt the pan to allow the uncooked eggs to flow to the edge of the pan.
4. **Fill the omelette:** Add the filling—but don't overstuff the omelette—when the eggs begin to set. Cook for a few more seconds
5. **Fold and serve:** Fold the omelette in half. Slide it onto a plate with a silicone spatula.

DON'T OVERSTUFF YOUR OMELETTE!

Use your imagination and what appeals to you for the filling.Channel your inner elegant French cook and don't overstuff the omelette! You should have enough filling to make the omelette tasty, but not so much that it's bursting and spilling out of the eggs. With practice, you will be able to eyeball how much to put in the omelette.

So make an omelet and let me know how you fill it. Share below in the comments.

Name _____ ID#/Lunch# _____ School _____ Grade _____

Help Your Child Work Through Their Disappointment of NO Sports

By Janis Meredith | Posted 4/29/2020

Could disappointment in children really be healthy for them? As parents, you hate to see the disappointment your children are feeling now not being able to play the game they love. They may be sad or depressed and their pain is hard to watch. Your instinct is to do everything you can to relieve them of the disappointment, but that would be an unfortunate parenting error.

Disappointment never feels good, but it is not an emotion that should be avoided at any cost. It is actually a healthy and positive feeling that can be beneficial for a child's emotional, intellectual and social development.

Here's how you can help them work through their disappointment in this season:

Check your own attitude. Your attitude towards your child's disappointments influences how they will respond to life's problems. If you show disappointment, you put on them the burden of dealing with their own disappointment as well as yours.

Let them express their disappointment. Trying to talk them out of it, minimizing it, or simply ignoring it is not going to help them work through it. No need to sugarcoat things either. It's okay to admit with them, "this really sucks!"

Gather a village. Your child needs other people in their life besides Mom and Dad that they can turn to in hard times. Studies indicate that the most resilient kids have others to draw on for strength besides parents.

Support them without trying to reward them out of their disappointment. Trying to bribe them out of their sadness with a "consolation" prize is not facing the disappointment, it's medicating it. It's much better to acknowledge it with them, let them vent and then talk about their response and options to the situation.

If your child can acquire the tools to get over disappointment, they'll be able to use them throughout childhood and into adulthood. "When children learn at an early age that they have the tools to get over a disappointing situation, they'll be able to rely on that throughout childhood and even as adults," says Robert Brooks, PhD, coauthor of Raising Resilient Children. "If you bend over backwards to shield them from disappointment, you're keeping them from developing some important skills."

Janis Meredith is a family life coach who wants to help all parents raise champions. You can find out more at rcfamilies.com.

Name _____ ID#/Lunch# _____ School _____ Grade _____

The Main Event

Nick Allen April 10, 2020

Netflix's "The Main Event" is about a magical mask and wholesale storytelling device that gives superpowers to an 11-year-old wrestling super fan named Leo (Seth Carr). Because it makes him more confident (by making his voice deeper, and giving him super strength), Leo uses those powers to become a wrestling phenomenon, despite still having the scrawny frame of an 11-year-old. The script for "The Main Event" wants to make it about the heart that it takes to be a wrestler worthy of the WWE, but this movie is so blatantly not about that. This fantasy from director Jay Karas, as harmless as it may be, is all because of the mask and the over-the-top abilities it gives one lucky preteen. It's not about the hard work that's intrinsic with all of wrestling, so much as the WWE's open willingness to sacrifice its core values for lazy family-friendly amusement.

Leo stumbles upon this mask as kids always do in movies like this—by accident while escaping school bullies (who are also wrestling fans, but they seem to get a different message from it). Despite how it reeks like "old bus seats," the blue mask gives him Krypton-grade strength: he can kick down trees, do quadruple backflips, and hurl beer kegs through auditorium ceilings. When he does the latter during a tryout, in order to enter an amateur tournament for the corporation's NXT branch, a bunch of real-life wrestlers like The Miz stand in awe. No one questions how someone of Leo's size can do that, or that he does indeed look like a kid, which makes the people in the WWE and the movie's writers look equally dumb.

His invincible alter ego Kid Chaos has no equal when he puts on that mask, and such an overzealous plot component makes for tedious, repeatedly empty moments of watching Leo's physically impossible strength and speed against his adult opponents. Not even the sweaty wrestler who can fart for 25 seconds (Niko Bogojevic) has a chance against him, and that's all part of how the movie tries to make professional wrestling look like it's a PG-rated battle royale that sometimes plays out in slow-motion, all without the threat of an 11-year-old getting hurt. Later on in the story, because the script is so amorphous about the mask's powers, it even lets Leo do some crime-fighting while out with his friends. Kid Chaos becomes a wrestling superstar and also a web-less Spider-Man, while seeming like a cheap version of both.

There's a lot more on Leo's mind outside the ring, and as busy as the script may be with his family and friend drama, it struggles to ring emotionally true despite some spirited supporting work. Tichina Arnold gets in a few giggles as Leo's grandma who wants to be a social media influencer and lusts after the wrestler Kofi Kingston; Adam Pally plays Leo's sad and overworked dad, who keeps putting off an important conversation about how Leo's mom simply abandoned them. For good measure, the script even throws in a talent show that Leo agreed to perform in with his new friend and crush Erica (Momona Tamada), and bases a conflict on whether Leo can look past his time-consuming fame to honor that commitment.

For a movie made to further sell the WWE as a family-friendly fantasy factory, it's not very flattering. For one, you'd think that they'd check IDs when it comes to who enters their tournaments, and the detail that literally anyone could weasel into their competition is a clumsiness that's never really explained (even when one of Kid Chaos' fans speculates that he's Kevin Hart, method actor). And instead of Leo's progress feeling triumphant, it becomes hard to even root for Kid Chaos when his ascension to the climactic cage match is made possible by Leo essentially cheating, with the script's four writers giving up on how to legitimize him. By the time you get to Leo's final showdown with the towering, monosyllabic baddie Samson (Babatunde Aiyegbusi), "The Main Event" fully embraces the laziest shortcuts to glory.

I know, I know. Kids are merely intended to take in the elementary lessons in between the matches, and the adults aren't supposed to overthink something that features so much jaunty music and wide-eyed young actors. But "The Main Event" treats the prospect of making a kid's sports movie as a full excuse to throw together a chintzy product, and when movies are so transparently indifferent like this, it's hard to forgive them even if they depict a good kid living a dream. Even worse, it's a considerable step back from last year's WWE story "Fighting with My Family," a much better movie that was inspired in its filmmaking and story about rising the top. "The Main Event" pointlessly adds magic to the spectacle of wrestling, and makes for a bland, wearying movie that should be a lot more fun, and authentic.

Name _____ ID#/Lunch# _____ School _____ Grade _____

	Day 1- Blog 1	Day 2- Blog 2	Day 3- Blog 3
What do you notice about the blog?			
What do you like?			
What do you dislike?			
What is the blogger's purpose in writing?			
Who is the audience?			
What did you learn about blogs by viewing the sample?			

Challenge: Create your own blog

Think about the following questions. Choose 1 of the styles form the blog samples and 1 of the prompts below to create your own blog. Most blogs have pictures- cut out magazines or draw pictures to compliment your blog.

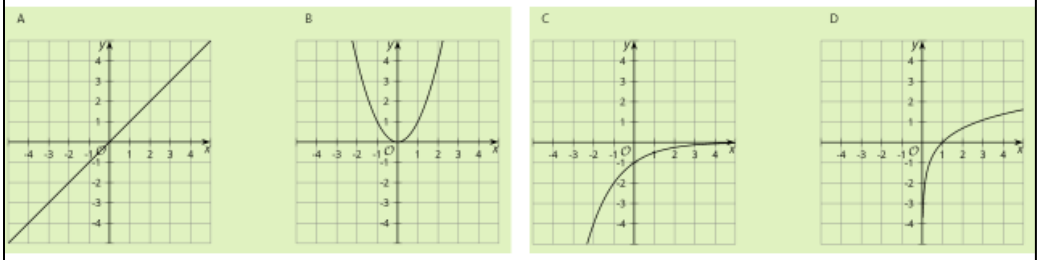
- What hobbies do you have?
- Share a picture of any collections you have or tell your readers how you got interested in a hobby.
- What's the best book you've read lately? What did you like about it?
- Look in your phone choose a picture you've taken recently and tell about it.
- Describe your favorite meal to have for dinner.
- List all the ways you can think of to earn money around the house.
- Review a movie you've watched.
- Tell about your time being restricted by the stay-at-home order.

  - ❖ Be sure to include blog features.
  - ❖ Have someone in your home read your blog, ask them to write a comment to your blog.

IM1/Algebra 1 – Week of June 1st

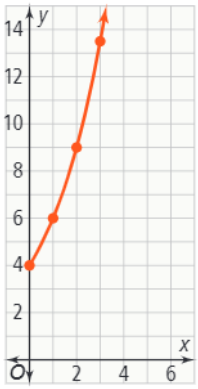
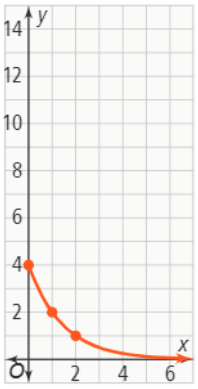
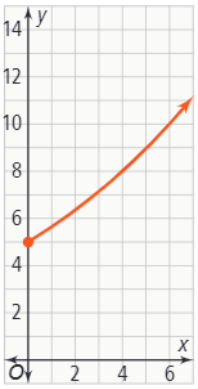
Exponential Growth and Decay/Compound Interest

Which One Doesn't Belong? Why?



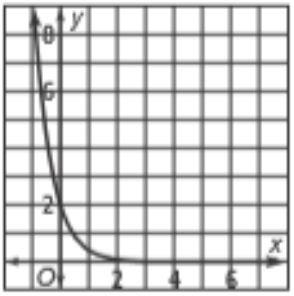
Concept Summary Assess

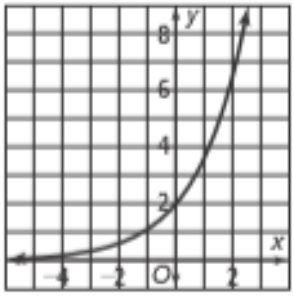
CONCEPT SUMMARY Exponential Growth and Decay

	Exponential Growth	Exponential Decay	Compound Interest
ALGEBRA	$f(x) = a \cdot b^x$ $f(x) = a(1 + r)^x$	$f(x) = a \cdot b^x$ $f(x) = a(1 - r)^x$	$f(x) = a \cdot b^x$ $A = P\left(1 + \frac{r}{n}\right)^{nt}$
NUMBERS	$f(x) = 4(1 + 0.5)^x$	$f(x) = 4(1 - 0.5)^x$	$A = 5\left(1 + \frac{0.12}{2}\right)^{2t}$
WORDS	initial value: 4 growth rate: 50% growth factor: 0.5	initial value: 4 decay rate: 50% decay factor: 0.5	principal: 5 annual interest rate: 12% periods per year: 2
GRAPHS			

Exponential Growth and Decay Worksheet 1

1. Label each graph by writing *exponential growth* or *exponential decay* in the blank.





_____ _____

$f(x) = a(1 + r)^x$, where $r > 0$ _____

$f(x) = a(1 - r)^x$, where $r > 0$ _____

2. Complete the steps for finding the value of a car after 5 years of depreciation.

Initial value of a car: \$15,000 Decay factor: 12% per year Time: 5 years

$f(x) = a(1 - r)^x$ Write the function to model exponential decay.

$f(x) =$ _____ $(1 -$ _____$)^{\text{—}}$ Substitute values for a, r, and x.

$f(x) =$ _____ Simplify.

The value of a \$15,000 car after 5 years would be around _____.

3. Hannah invested \$4,000 in a savings account that earned 2% interest compounded quarterly. She determined that if she does not withdraw or deposit any more money, the value of the account at the end of 3 years will be \$4,244.83. What error did Hannah make in her calculations? What will the account balance be after 3 years? Explain.

Exponential Growth and Decay Worksheet 2

Write an exponential growth model for each situation.

1. initial value: 2,000
   growth rate: 6%

2. initial value: 50
   growth rate: 75%

3. initial value: 40
   growth rate: 100%

Write an exponential decay model for each situation. The value of x for each value of $f(x)$ will lie between two consecutive whole numbers. List the whole numbers.

4. initial value: 1,000
   decay rate: 20%
   $f(x) = 500$

5. initial value: 1,800
   decay rate: 7%
   $f(x) = 400$

6. initial value: 1,200
   decay rate: 12.5%
   $f(x) = 450$

7. Suppose the function f has an initial value of 1,000 and a decay rate of 5%. Let the function g have an initial value of 400 and increase at a growth rate of 17%. Estimate a value of x, to the nearest tenth, for which $f(x) = g(x)$.

8. An exponential function has an initial value of 500 and a decay rate of 15%. Compare the average rate of change for the interval $0 < x < 4$ to the average rate for the interval $4 < x < 8$. What do you think will happen to the average rate of change for intervals beyond $x = 8$? Explain.

9. Harrison is comparing two certificates of deposit, one at a local financial institution and the other at an online financial institution. The local institution offers a rate of 6% compounded annually while the online institution offers a rate of 6% compounded quarterly. If Harrison has a principal amount of $5,000, which institution offers the better deal, assuming he makes no further deposits or withdrawals? Explain.

Exponential Growth and Decay Worksheet 3

1. A wildlife biologist determines that there are approximately 200 deer in a region of a national park. The population grows at a rate of 7% per year. What is an exponential function that models the expected population?

   Ⓐ $f(x) = 200(0.07)^x$ Ⓒ $f(x) = 1.07(200)^x$

   Ⓑ $f(x) = 200(1.07)^x$ Ⓓ $f(x) = 7(200)^x$

2. Compare Accounts A and B. Account _____ will be worth more after 10 years. It will have a value of $_____.

Account A	Account B
principal: $16,000 annual interest: 3% compounded quarterly number of years: 10	principal: $16,000 annual interest: 3% compounded monthly number of years: 10

3. A business purchases a computer system for $3,000. The value of the system decreases at a rate of 15% per year. Write an exponential function to model this situation. Then determine how much the computer will be worth after 4 years.

   function: $f(x) =$ _____ value after 4 years: _____

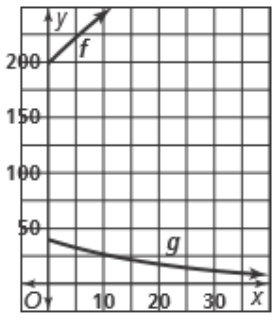
4. There are approximately 3,000 bass in a lake. The population grows at a rate of 2% per year. From Year 1 to Year 4, the average rate of change of the population was about _____ bass per year. From Year 5 to Year 8, the average rate of change of the population was about _____ bass per year. The rate of change increased by about _____ bass per year.

5. Which graph represents functions f and g?

   f: initial value of 200 decreasing at a rate of 4%

   g: initial value of 40 increasing at a rate of 8%

Ⓐ



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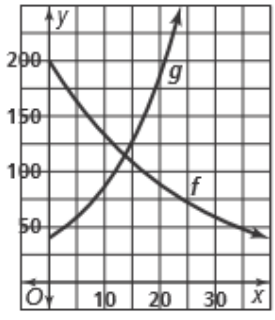

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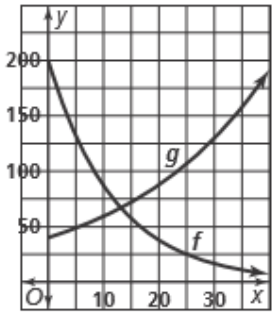

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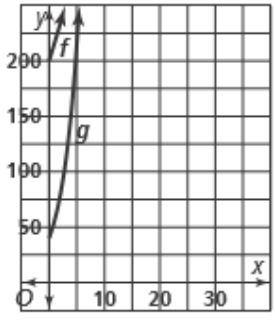


Exponential Growth and Decay Worksheet 4

When Tanya was born, her family put $2,500 into an account for her that earns 5.5% annually. Her family plans to use the money to purchase a trip for her when she graduates from high school.

Package A	Package B	Package C
• London • Paris $5,000	• London • Paris • Madrid $6,500	• London • Paris • Madrid • Rome $8,000

1. Write the formula to determine the amount of money in the account after *x* years.

2. She graduates from high school on her 18th birthday. How much money is in the account?

3. Which vacation package(s) can her family purchase with the money in the account?

4. Tanya decides to wait to purchase a vacation package until she graduates from college, at age 22. She hopes that she will be able to afford Package D, which includes trips to London, Paris, Madrid, Rome, and Athens. Package D costs $9,500. Will she have enough money? If not, how much more money will she need?

Drilling deep for knowledge about fossil fuels - power and pollution

By Encyclopaedia Britannica, adapted by Newsela staff on 07.06.17
Word Count **942**
Level **1030L**

Big Bend Power Station is a major coal-fired power plant near Apollo Beach, Florida.

A fossil fuel is a natural substance like oil or coal, formed from the buried remains of organisms. Fossil fuels are used as a source of energy.

It took millions of years for fossil fuels to form. Heat and pressure from layers of sediment changed the decayed organic remains into materials such as coal and petroleum.

The energy in fossil fuels is the energy from sunlight stored in the tissues of the buried organisms as a result of photosynthesis. Photosynthesis is the process that plants use to make their own food.

Fossil fuel usage has steadily increased since the Industrial Revolution, which started in the mid-1700s. This is when new manufacturing processes came about. Fossil fuels also enabled people to generate electricity on a large scale to light homes, offices and city streets. They powered new and faster types of transportation like steam boats and locomotives, and later automobiles and jet planes.

At the start of the 21st century, fossil fuels made up nearly 90 percent of the world's energy supplies. However, fossil fuels are nonrenewable resources, which means once we use them, they are gone forever.

Because it takes millions of years for fossil fuels to form, they cannot be replaced.

Fossil fuels may be solids, liquids or gases. All fossil fuels are hydrocarbons, a class of chemicals composed only of carbon and hydrogen atoms. Coal, petroleum and natural gas are the most commonly known fossil fuels.

Coal

Coal is the most widely used of the solid fossil fuels. Most coal formed from plants that grew in or near swamps in warm, humid regions of the Earth. This happened during the Carboniferous Period, which was about 359 to 299 million years ago.

Dead plant matter fell into the swamps and settled at the swamp bottom. Over millions of years, sediment covered and compressed the decaying plant matter, forming peat. The pressure and heat of more sediment layers changed the peat into lignite, which is soft coal. Continued heat and pressure on the lignite changed it into harder forms of coal.

Anthracite is the hardest coal and was the last to form. Hard coals are considered the best energy sources among the coals because they burn the hottest and do not release as many pollutants into the air as other types of coal.

Oil And Natural Gas

Petroleum, or oil, is the most common liquid fossil fuel and natural gas is the most gaseous fossil fuel. Petroleum is often called crude oil, or just oil.

Oil and natural gas formed through a similar process, often in the same swampy location. They were made from the buried remains of tiny water organisms. As these organisms died and sank to the muddy bottom, their buried remains changed into a substance called kerogen.

Over millions of years, increasing heat and pressure from more sediment layers changed the kerogen into petroleum. Depth and temperature determined whether the petroleum was liquid or gaseous. Natural gas formed at deeper, hotter locations.

The main liquid fossil fuels used today are made from oil. These include gasoline, fuel oils such as diesel and jet fuel, and oils for home heating.

Kerosene was used a long time ago to provide light, and is still used in many places for cooking. It also is the main fuel for modern jet engines.

Natural gas is used for heating and cooking in the home and for industrial heating. It is also used to generate electricity.

Other Fossil Fuels

Peat and coke are solid fossil fuels that are commonly used today. Peat is used as a heating fuel in areas where other fuels are not available. But, it burns slowly and produces a lot of smoke and very

little heat. Coke is a residue that remains after gases and tar are extracted from some types of coal. Coke is to make iron and in other processes.

As fossil fuel reserves are used, the search for other fuel sources has increased. Two such resources are oil shale and tar sands, which contain fuel sources. Extracting useful substances from them is difficult and costly. Until recent years, these resources were not good fuel options.

Where Fossil Fuels Are Found

Fossil fuels are not found equally around the world. For example, the United States, Russia, and China have the largest coal deposits. Australia, India and South Africa also have large amounts.

More than half of the world's known oil and natural gas reserves are located in the Middle East. This means that the Middle East contains more oil than the rest of the world combined.

Limited Supply, Pollution Problems

Two main disadvantages of fossil fuels are their limited supply and the environmental harm they cause. Burning petroleum and coal releases harmful gases into the air. These gases pollute the air and react with moisture in the atmosphere to create acid rain.

Burning fossil fuels also releases carbon dioxide into the atmosphere. Over many years, the percentage of carbon dioxide in the atmosphere has increased. Scientific evidence shows this buildup increases temperatures. This warming of Earth's atmosphere is called the greenhouse effect. It contributes to climate change, which is a serious environmental concern.

These problems have led scientists and engineers to develop new ways to generate power without using fossil fuels.

For example, some cars are now powered by electricity instead of gasoline. Homes can be heated using solar or geothermal energy. Some electric power plants run on nuclear energy, water power or wind power.

These alternative energy sources are forms of renewable resources because—unlike fossil fuels—they cannot be depleted. Also, renewable energy does not emit carbon dioxide. This can help limit climate change.

Drilling down into petroleum's impact on life on Earth

By National Geographic Society on 03.26.19
Word Count **2,404**
Level **MAX**

Image 1. Oil surrounds the feet of local resident Morgan Miller as he patrols the beach for oiled wildlife on May 19, 2015, north of Goleta, California. About 21,000 gallons spilled from an abandoned pipeline on the land near Refugio State Beach, spreading over about 4 miles of beach within hours. The largest oil spill ever in U.S. waters at the time occurred in the same section of the coast in 1969 where numerous offshore oil platforms can be seen, giving birth to the modern American environmental movement. Photo by David McNew/Getty Images

Petroleum (also known as crude oil or simply oil) is a fossil fuel that was formed from the remains of ancient marine organisms.

Millions of years ago, algae and plants lived in shallow seas. After dying and sinking to the seafloor, the organic material mixed with other sediments and was buried. Over millions of years under high pressure and high temperature, the remains of these organisms transformed into what we know today as fossil fuels. Coal, natural gas and petroleum are all fossil fuels that formed under similar conditions.

Today, petroleum is found in vast underground reservoirs where ancient seas were located. Petroleum reservoirs can be found beneath land or the ocean floor. Their crude oil is extracted

with giant drilling machines.

Crude oil is usually black or dark brown, but can also be yellowish, reddish, tan or even greenish. Variations in color indicate the distinct chemical compositions of different supplies of crude oil.

Petroleum is used to make gasoline, an important product in our everyday lives. It is also processed and part of thousands of different items, including tires, refrigerators, life jackets and anesthetics.

When petroleum products such as gasoline are burned for energy, they release toxic gases and high amounts of carbon dioxide, a greenhouse gas. Carbon helps regulate the Earth's atmospheric temperature, and adding to the natural balance by burning fossil fuels adversely affects our climate.

There are huge quantities of petroleum found under Earth's surface and in tar pits that bubble to the surface. However, petroleum, like coal and natural gas, is a non-renewable source of energy. It took millions of years for it to form, and when it is extracted and consumed, there is no way for us to replace it.

Oil supplies will run out. Eventually, the world will reach "peak oil," or its highest production level. Some experts predict peak oil could come as soon as 2050. Finding alternatives to petroleum is crucial to global energy use, and is the focus of many industries.

Formation Of Petroleum

The geological conditions that would eventually create petroleum formed millions of years ago, when plants, algae and plankton drifted in oceans and shallow seas. These organisms sank to the seafloor at the end of their life cycle. Over time, they were buried and crushed under millions of tons of sediment and even more layers of plant debris.

Eventually, ancient seas dried up and dry basins remained, called sedimentary basins. Deep under the basin floor, the organic material was compressed between Earth's mantle, with very high temperatures, and millions of tons of rock and sediment above. Oxygen was almost completely absent in these conditions, and the organic matter began to transform into a waxy substance called kerogen.

With more heat, time and pressure, the kerogen underwent a process called catagenesis, and transformed into hydrocarbons. Hydrocarbons are simply chemicals made up of hydrogen and carbon. Different combinations of heat and pressure can create different forms of hydrocarbons. Some other examples are coal, peat and natural gas.

Sedimentary basins, where ancient seabeds used to lie, are sometimes sources of petroleum. In Africa, the Niger Delta sedimentary basin covers land in Nigeria, Cameroon and Equatorial Guinea. More than 500 oil deposits have been discovered in the massive Niger Delta basin, and they comprise one of the most productive oil fields in Africa.

Chemistry And Classification Of Crude Oil

The gasoline we use to fuel our cars, the synthetic fabrics of our backpacks and shoes, and the thousands of different useful products made from petroleum come in forms that are consistent

and reliable. However, the crude oil from which these items are produced is neither consistent nor uniform.

Chemistry

Crude oil is composed of hydrocarbons, which are mainly hydrogen (about 13 percent by weight) and carbon (about 85 percent). Other elements such as nitrogen (about 0.5 percent), sulfur (0.5 percent), oxygen (1 percent), and metals such as iron, nickel and copper (less than 0.1 percent) can also be mixed in with the hydrocarbons in small amounts. The way molecules are organized in the hydrocarbon is a result of the original composition of the algae, plants or plankton from millions of years ago. The amount of heat and pressure the plants were exposed to also contributes to variations that are found in hydrocarbons and crude oil.

Due to this variation, crude oil that is pumped from the ground can consist of hundreds of different petroleum compounds. Light oils can contain up to 97 percent hydrocarbons, while heavier oils and bitumens might contain only 50 percent hydrocarbons and larger quantities of other elements. It is almost always necessary to refine crude oil in order to make useful products.

Classification

Oil is classified according to three main categories: the geographic location where it was drilled, its sulfur content and its API gravity (a measure of density).

Classification: Geography

Oil is drilled all over the world. However, there are three primary sources of crude oil that set reference points for ranking and pricing other oil supplies: Brent Crude, West Texas Intermediate and Dubai and Oman.

Brent Crude is a mixture that comes from 15 different oil fields between Scotland and Norway in the North Sea. These fields supply oil to most of Europe.

West Texas Intermediate (WTI) is a lighter oil that is produced mostly in the U.S. state of Texas. It is "sweet" and "light" — considered very high quality. WTI supplies much of North America with oil.

Dubai crude, also known as Fateh or Dubai-Oman crude, is a light, sour oil that is produced in Dubai, part of the United Arab Emirates. The nearby country of Oman has recently begun producing oil. Dubai and Oman crudes are used as a reference point for pricing Persian Gulf oils that are mostly exported to Asia.

The OPEC Reference Basket is another important oil source. OPEC is the Organization of the Petroleum Exporting Countries founded in 1960 by Iran, Iraq, Kuwait, Saudi Arabia and Venezuela. Other countries have joined or left the organization from that time. The OPEC Reference Basket is the average price of petroleum from OPEC's member countries.

Classification: Sulfur Content

Sulfur is considered an "impurity" in petroleum. Sulfur in crude oil can corrode metal in the refining process and contribute to air pollution. Petroleum with more than 0.5 percent sulfur is called "sour," while petroleum with less than 0.5 percent sulfur is "sweet."

Sweet oil is usually much more valuable than sour because it does not require as much refining and is less harmful to the environment.

Classification: API Gravity

The American Petroleum Institute (API) is a trade association for businesses in the oil and natural gas industries. The API has established accepted systems of standards for a variety of oil- and gas-related products, such as gauges, pumps and drilling machinery. The API has also established several units of measurement. The "API unit," for instance, measures gamma radiation in a borehole (a shaft drilled into the ground).

API gravity is a measure of the density of petroleum liquid compared to water. If a petroleum liquid's API gravity is greater than 10, it is "light," and floats on top of water. If the API gravity is less than 10, it is "heavy," and sinks in water.

Light oils are preferred because they have a higher yield of hydrocarbons. Heavier oils have greater concentrations of metals and sulfur and require more refining.

Petroleum Reservoirs

Petroleum is found in underground pockets called reservoirs. Deep beneath the Earth, pressure is extremely high. Petroleum slowly seeps out toward the surface, where there is lower pressure. It continues this movement from high to low pressure until it encounters a layer of rock that is impermeable. The petroleum then collects in reservoirs, which can be several hundred meters below the surface of the Earth.

Petroleum can be contained by structural traps, which are formed when massive layers of rock are bent or faulted (broken) from the Earth's shifting land masses. Oil can also be contained by stratigraphic traps. Different strata, or layers of rock, can have different amounts of porosity. Crude oil migrates easily through a layer of sandstone, for instance, but would be trapped beneath a layer of shale.

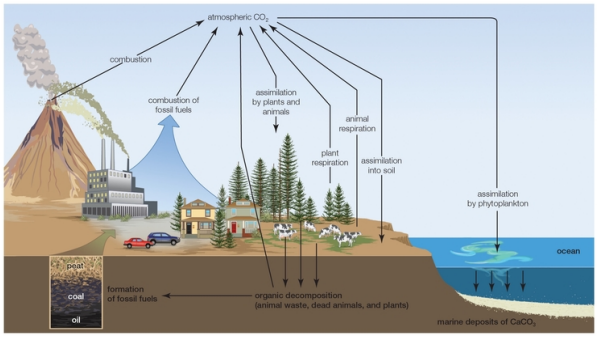
Geologists, chemists and engineers look for geological structures that typically trap petroleum. They use a process called "seismic reflection" to locate underground rock structures that might have trapped crude oil. During the process, a small explosion is set off. Sound waves travel underground, bounce off of the different types of rock, and return to the surface. Sensors on the ground interpret the returning sound waves to determine the underground geological layout and possibility of a petroleum reservoir.

The amount of petroleum in a reservoir is measured in barrels or tons. An oil barrel is about 42 gallons. This measurement is usually used by oil producers in the United States. Oil producers in Europe and Asia tend to measure in metric tons. There are about six to eight barrels of oil in a metric ton.

Crude oil is frequently found in reservoirs along with natural gas. Sometimes, natural gas is either burned or allowed to escape into the atmosphere. Technology has also been developed to capture the natural gas and either re-inject it into the well or compress it into liquid natural gas (LNG). LNG is easily transportable and has versatile uses.

Carbon Cycle

There are major disadvantages to extracting fossil fuels, and extracting petroleum is a controversial industry.



Carbon, an essential element on Earth, makes up about 85 of the hydrocarbons in petroleum. Carbon constantly cycles between the water, land and atmosphere.

Carbon is absorbed by plants and is part of every living organism as it moves through the food web. Carbon is naturally released through volcanoes, soil erosion and evaporation. When carbon is released into the atmosphere, it absorbs and retains heat, regulating Earth's temperature and making our planet habitable.

Not all of the carbon on Earth is involved in the carbon cycle above ground. Vast quantities of it are sequestered, or stored, underground, in the form of fossil fuels and in the soil. This sequestered carbon is necessary because it keeps the Earth's "carbon budget" balanced.

However, that budget is falling out of balance. Since the Industrial Revolution, fossil fuels have been aggressively extracted and burned for energy or fuel. This releases the carbon that has been sequestered underground and upsets the carbon budget. This affects the quality of our air, water and overall climate.

The taiga, for example, sequesters vast amounts of carbon in its trees and below the forest floor. Drilling for natural resources not only releases the carbon stored in the fossil fuels, but also the carbon stored in the forest itself.

Combusting gasoline, which is made from petroleum, is particularly harmful to the environment. Every 3.8 liters (1 gallon) of ethanol-free gas that is combusted in a car's engine releases about 9 kilograms (20 pounds) of carbon dioxide into the environment. (Gasoline infused with 10 percent ethanol releases about 8 kilograms (17 pounds.)) Diesel fuel releases about 10 kilograms (22 pounds) of carbon dioxide, while biodiesel (diesel with 10 percent biofuel) emits about 9 kilograms (20 pounds).

Gasoline and diesel also directly pollute the atmosphere. They emit toxic compounds and particulates, including formaldehyde and benzene.

People And Petroleum

Oil is a major component of modern civilization. In developing countries, access to affordable energy can empower citizens and lead to higher quality of life. Petroleum provides transportation fuel, is a part of many chemicals and medicines, and is used to make crucial items such as heart valves, contact lenses and bandages. Oil reserves attract outside investment and are important for improving countries' overall economy.

However, in some countries, having access to oil can lead government to be less democratic — a situation nicknamed a "petro-dictatorship." Russia, Nigeria and Iran have all been accused of having petro-authoritarian regimes.

Peak Oil

Oil is a non-renewable resource, and the world's oil reserves will not always be enough to provide for the world's demand for petroleum. Peak oil is the point when the oil industry is extracting the maximum possible amount of petroleum. After peak oil, petroleum production will only decrease. After peak oil, there will be a decline in production and a rise in costs for the remaining supply.

Measuring peak oil uses the reserves-to-production ratio (RPR). This ratio compares the amount of proven oil reserves to the current extraction rate. The reserves-to-production ratio is expressed in years.

According to one industry report, the United States has an RPR of about nine years. The oil-rich, developing nation of Iran, which has a much lower consumption rate, has an RPR of more than 80 years.

It is impossible to know the precise year for peak oil. Some geologists argue it has already passed, while others maintain that extraction technology will delay peak oil for decades. Many geologists estimate that peak oil might be reached within 20 years.

Petroleum Alternatives

Individuals, industries and organizations are increasingly concerned with peak oil and environmental consequences of petroleum extraction. Alternatives to oil are being developed in some areas and governments and organizations are encouraging citizens to change their habits so we do not rely so heavily on oil. Bioasphalts, for example, are asphalts made from renewable sources such as molasses, sugar, corn, potato starch, or even byproducts of oil processes.

Algae is also a potentially enormous source of energy. Algae oil (so-called "green crude") can be converted into a biofuel. Algae grows extremely quickly and takes up a fraction of the space used by other biofuel feedstocks. About 38,849 square kilometers (15,000 square miles) of algae— less than half the size of the U.S. state of Maine — would provide enough biofuel to replace all of the U.S.'s petroleum needs. Algae absorbs pollution, releases oxygen, and does not require freshwater.

The country of Sweden has made it a priority to drastically reduce its dependence on oil and other fossil fuel energy by 2020. Experts in agriculture, science, industry, forestry and energy have come together to develop sources of sustainable energy, including geothermal heat pumps, wind farms, wave and solar energy and domestic biofuel for hybrid vehicles. Changes in society's habits, such as increasing public transportation and video-conferencing for businesses, are also part of the plan to decrease oil use.

The Unique Nature of Places – Part 3

Benchmark Standard	Geography 3a: Students will understand the processes which result in distinctive cultures, economic activity, and settlement form in particular locations across the world.
Grade	9
Vocabulary / Key Concepts	Census

~This lesson is a part of the DRC Unit "The Unique Nature of Places" – Modified by CSD for use at home~

ACTIVITY 1: Complete the four square graphic organizer for "census"

Definition:	Sentence:
CENSUS	
Characteristics:	I think… (What are the most populated towns / cities in Delaware vs. the smallest?)

ACTIVITY 2: After completing the graphic organizer, check your answers regarding your initial perceptions of Delaware's smallest versus largest towns/cities. Were you correct?

http://censusviewer.com/cities/DE/2010

Town / City	population	Town / city	population	Town / city	Population	Town / city	Population	Town / city	Population
Arden	439	Dagsboro	805	Glasgow	14,303	Long Neck	1,980	Rising Sun-Lebanon	3,391
Ardencroft	231	Delaware City	1,695	Greenville	2,326	Magnolia	225	Riverview	2,456
Ardentown	264	Delmar	1,597	Greenwood	973	Middletown	18,871	Rodney Village	1,487
Bear	19,371	Dewey Beach	341	Harrington	3,562	Milford	9,559	Seaford	6,928
Bellefonte	1,193	Dover	36,047	Hartly	74	Millsboro	3,877	Selbyville	2,167
Bethany Beach	1,060	Dover Base Housing	3,450	Henlopen Acres	122	Millville	544	Slaughter Beach	207
Bethel	171	Edgemoor	5,677	Highland Acres	3,459	Milton	2,576	Smyrna	10,023
Blades	1,241	Ellendale	381	Hockessin	13,527	New Castle	5,285	South Bethany	449
Bowers	335	Elsmere	6,131	Houston	374	Newark	31,454	Townsend	2,049
Bridgeville	2,048	Farmington	110	Kent Acres	1,890	Newport	1,055	Viola	157
Brookside	14,353	Felton	1,298	Kenton	261	North Star	7,980	Wilmington	70,851
Camden	3,464	Fenwick Island	379	Laurel	3,708	Ocean View	1,882	Wilmington Manor	7,889
Cheswold	1,380	Frankford	847	Leipsic	183	Odessa	364	Woodside	181
Claymont	8,253	Frederica	774	Lewes	2,747	Pike Creek	7,898	Woodside East	2,316
Clayton	2,918	Georgetown	6,422	Little Creek	224	Rehoboth Beach	1,327	Wyoming (Camden-Wyoming)	1,313

ACTIVITY 3: Compare and contrast the 2010 Census Data vs. the 2000 Census Data.

1. Which are the six most populated Delaware towns/cities in 2010? What is each town/city's population?
2. Which are the six least populated Delaware towns/cities in 2010? What is each town/city's population?
3. Which are the six most populated Delaware towns/cities in 2000? What is each town/city's population?
4. Which are the six least populated Delaware towns/cities in 2000? What is each town/city's population?
5. What stayed the same? What changed?
6. Which towns had the greatest change?

Observe the 1999 Road Map of Delaware (page 3) to the 2020 Road Map of Delaware (page 4).

7. Why might that change have occurred (the towns that had the greatest change)?

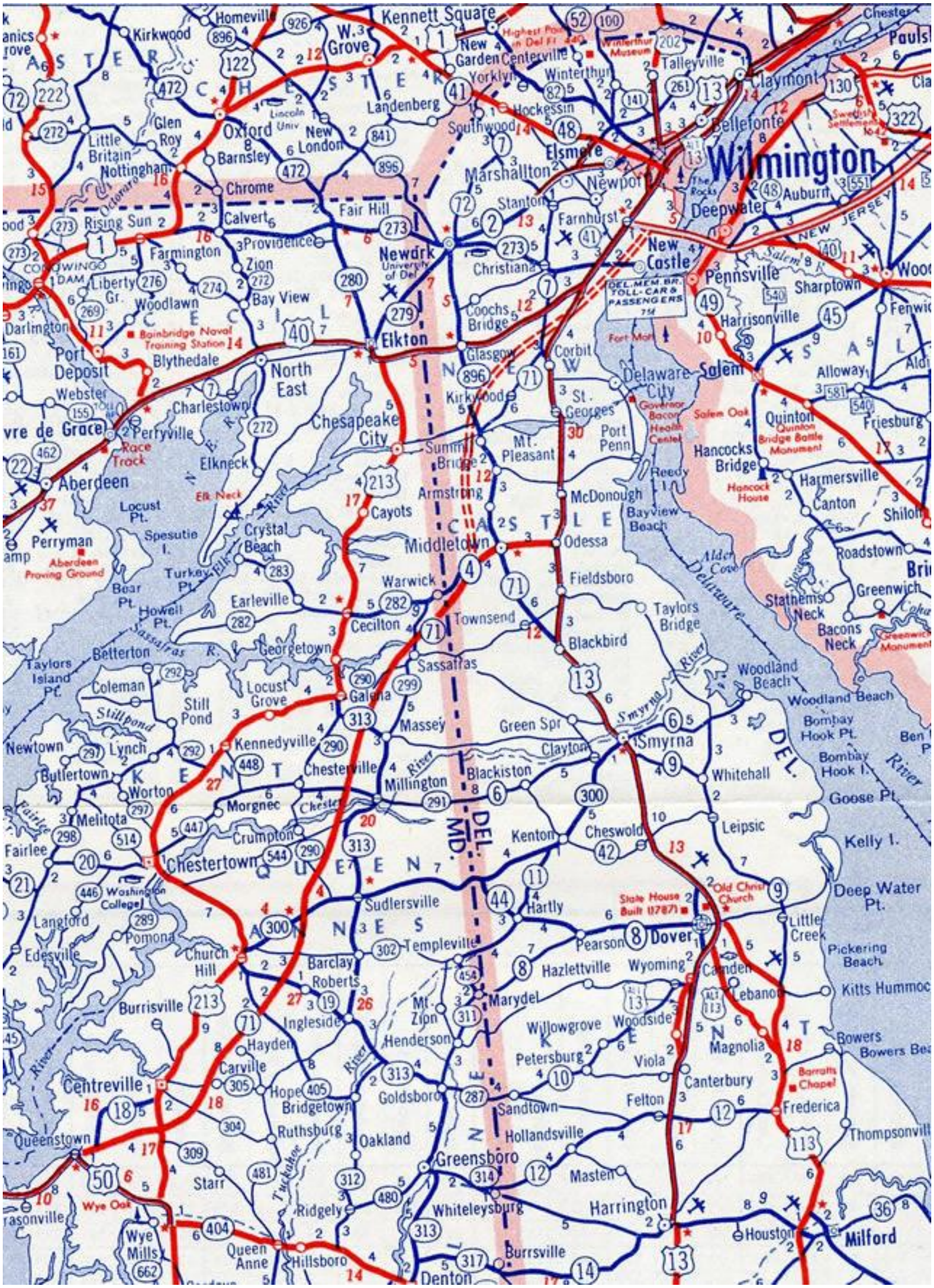
http://censusviewer.com/cities/DE/2000

Town / City	population	Town / city	population	Town / city	Population	Town / city	Population	Town / city	Population
Arden	474	Dagsboro	519	Glasgow	12,840	Long Neck	1,629	Rising Sun-Lebanon	2,458
Ardencroft	267	Delaware City	1,453	Greenville	2,332	Magnolia	226	Riverview	1,583
Ardentown	300	Delmar	1,407	Greenwood	837	Middletown	6,161	Rodney Village	1,602
Bear	17,593	Dewey Beach	301	Harrington	3,174	Milford	6,732	Seaford	6,699
Bellefonte	1,249	Dover	32,135	Hartly	78	Millsboro	2,360	Selbyville	1,645
Bethany Beach	903	Dover Base Housing	3,394	Henlopen Acres	139	Millville	259	Slaughter Beach	198
Bethel	184	Edgemoor	5,992	Highland Acres	3,379	Milton	1,657	Smyrna	5,679
Blades	956	Ellendale	327	Hockessin	12,902	New Castle	4,862	South Bethany	492
Bowers	305	Elsmere	5,800	Houston	430	Newark	28,547	Townsend	346
Bridgeville	1,436	Farmington	75	Kent Acres	1,637	Newport	1,122	Viola	156
Brookside	14,806	Felton	784	Kenton	237	North Star	8,277	Wilmington	72,664
Camden	2,100	Fenwick Island	342	Laurel	3,668	Ocean View	1,006	Wilmington Manor	8,262
Cheswold	313	Frankford	714	Leipsic	203	Odessa	286	Woodside	184
Claymont	9,220	Frederica	648	Lewes	2,932	Pike Creek	19,751	Woodside East	2,174
Clayton	1,273	Georgetown	4,643	Little Creek	195	Rehoboth Beach	1,495	Wyoming (Camden-Wyoming)	1,141

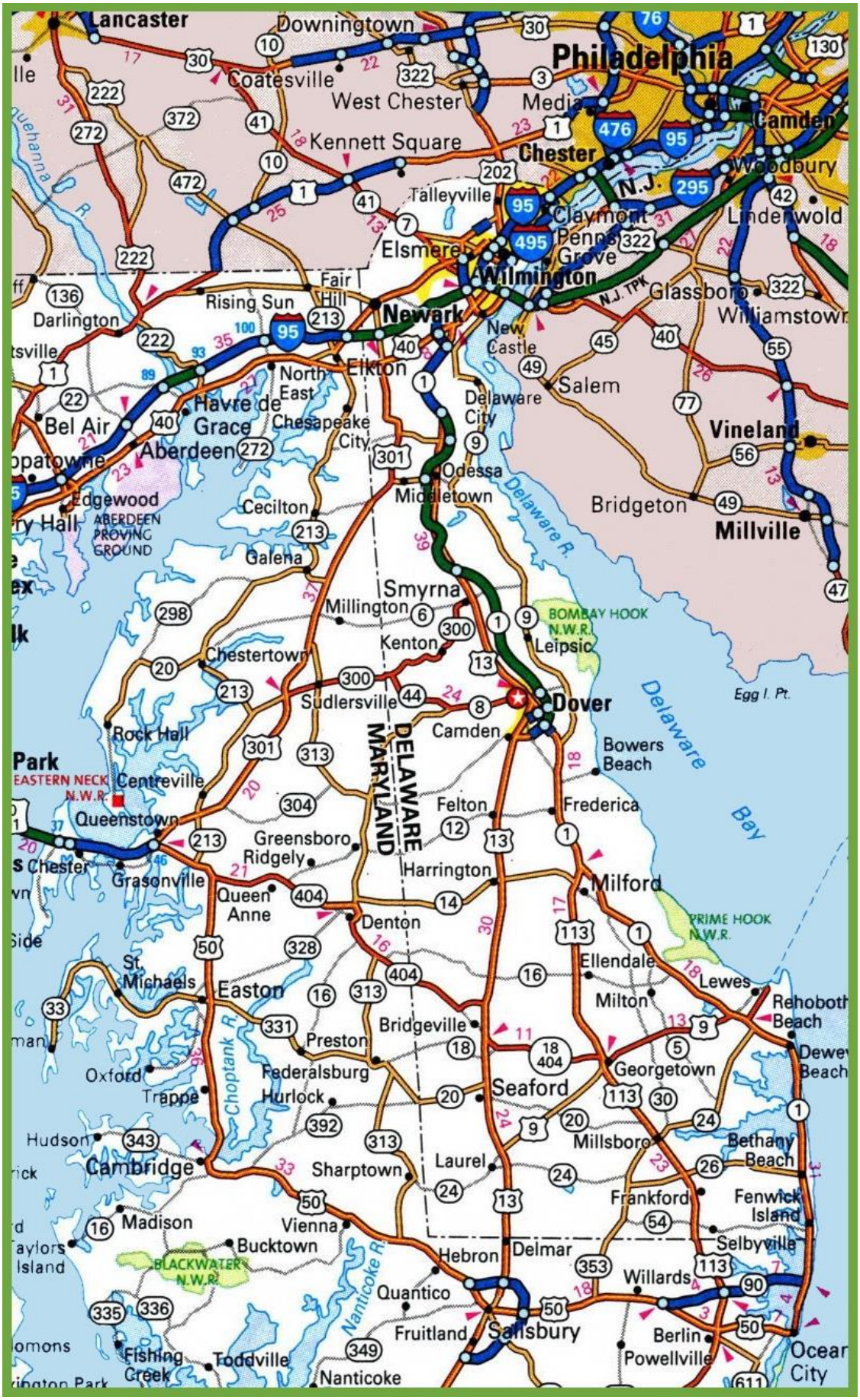
ACTIVITY 4: Checks for Understanding: Review the information you learned in this lesson and complete the following questions on a separate sheet of paper.

1. Why have some towns/cities in Delaware stayed the same while others have changed significantly over the last twenty years? Explain and support your answer with evidence from this lesson.
2. How did the situation of some of these communities improve over the last twenty years? Explain and support your answer with evidence from this lesson.

1999 Delaware Road Map



2020 Delaware Road Map


Lancaster
Downingtown
Philadelphia
Coatesville
West Chester
Media
Camden
Kennett Square
Chester
Woodbury
N.J.
Talleyville
Claymont
Elsmere
Penns Grove
Wilmington
Lindenwold
Fair Hill
Rising Sun
Newark
N.J. TPK
Glassboro
Williamstown
Darlington
New Castle
Elkton
North East
Salem
Havre de Grace
Chesapeake City
Delaware City
Vineland
Bel Air
Aberdeen
Odessa
Middletown
Edgewood
ABERDEEN PROVING GROUND
Cecilton
Bridgeton
Millville
Galena
Smyrna
Millington
BOMBAY HOOK N.W.R.
Kenton
Leipsic
Chestertown
Sudlersville
Dover
Egg I. Pt.
Rock Hall
Camden
Bowers Beach
Delaware
Centreville
EASTERN NECK N.W.R.
Felton
Frederica
Queenstown
Greensboro
Ridgely
DELAWARE
MARYLAND
Harrington
Milford
Grasonville
Queen Anne
Denton
PRIME HOOK N.W.R.
Ellendale
St. Michaels
Easton
Lewes
Milton
Rehoboth Beach
Bridgeville
Preston
Georgetown
Oxford
Federalsburg
Choptank R.
Trappe
Hurlock
Seaford
Hudson
Millsboro
Bethany Beach
Cambridge
Sharptown
Laurel
Frankford
Fenwick Island
Madison
Vienna
Selbyville
Bucktown
Hebron
Delmar
BLACKWATER N.W.R.
Willards
Quantico
Nanticoke R.
Fruitland
Salisbury
Berlin
Ocean City
Fishing Creek
Toddville
Powellville
Nanticoke

Christina School District Assignment Board

Student's First & Last Name_____ Student ID/Lunch # _____ School _____ Grade_____

Grade Level: 9th

Week of June 1st, 2020

	Day 1	CSD PD	Day 2	Day 3	Day 4
ELA	This week you will read blogs in order to become a blog writer --- What do you already know about blogs? Have you ever read a blog? Think of a blog you've read and explain what it was about. Why did you choose to read it? Read **"What is A Blog Anyway?"** As you read, annotate important details. Summarize your understanding in 12 words exactly.		Read the blog sample 1. **How to Make an Omelet As** you read and make notes. Underline things you find interesting. Complete the graphic organizer for the blog	Read the blog sample 2. **"Help Your Child …** **"**As you read, make notes. Underline things you find interesting. How is this blog different/ similar to blog 1? Complete the graphic organizer for the blog	Read the blog samples 2. **"The Main Event**". As you read, make notes. Underline things you find interesting. How is this blog different/ similar to blogs 1 and 2. Complete the graphic organizer for the blog. **Challenge:** Create your own Blog
Math (IM1/ Algebra 1)	*Exponential Growth and Decay/Compound Interest* *Answer "Which One Doesn't Belong?" and justify your choice. (attached) Read Concept Summary:*		*Complete Exponential Growth and Decay Worksheet 2 #1-9. (attached) Refer to Concept Summary if needed.*	*Complete Exponential Growth and Decay Worksheet 3 #1-5. (attached) Refer to Concept Summary if needed.*	*Complete Exponential Growth and Decay Worksheet 4 #1-4. (attached) Refer to Concept Summary if needed.*

Christina School District Assignment Board

Student's First & Last Name_____ Student ID/Lunch # _____ School _____ Grade_____

	Exponential Growth and Decay to complete Exponential Growth and Decay Worksheet 1 # 1-3. (attached)				
Science	**Drilling Deep for Knowledge About Fossil Fuels – Power and Pollution (part 1):** Read article. In YELLOW highlight or underline information regarding different kinds of fossil fuel energy sources. In GREEN, highlight or underline potential concerns about the global supply of these nonrenewable resources. In RED, highlight or underline potential environmental concerns associated with the use of fossil fuels.		**Drilling Deep for Knowledge About Fossil Fuels – Power and Pollution (part 1):** **Reread article and/or notations as necessary.** **Read the following claim: It is critical to diversify to alternate energy sources because other than being used up rapidly, fossil fuels are also causing long term changes to the global climate and weather patterns.** **Write your best answer(s): What details from the article justify this claim? Explain why the details justify the claim.**	**Drilling Down Into Petroleum's Impact on Life on Earth (part 1):** Read article. In YELLOW highlight or underline information regarding different kinds of fossil fuel energy sources. In GREEN, highlight or underline potential concerns about the global supply of these nonrenewable resources. In RED, highlight or underline potential environmental concerns associated with the use of fossil fuels.	**Drilling Down Into Petroleum's Impact on Life on Earth (part 2):** Reread article and/or notations as necessary. Write your best answers to the following: a) What are two products that can be made from petroleum? b) Peak oil is measured in RPRs (reserve-to-production ratios), which are recorded in years. Why does Iran have a higher RPR (80 years) than the United States (9 years)? c) Carbon is a natural element that regulates Earth's temperature and makes the planet livable. Which event has led to major shifts in the carbon cycle becoming? d) Which statement from the article provides evidence of the causes of global warming?
Social Studies	Complete Activity 1 and Activity 2 from the document titled, "The Unique Nature of Places-PART 3"		Complete Activity 3 from the document titled, "The Unique Nature of Places-PART 3"	Complete Activity 4, #1 from the document titled, "The Unique Nature of Places-PART 3"	Complete Activity 4, #2 from the document titled, "The Unique Nature of Places-PART 3"

Name _____ ID#/Lunch# _____ School _____ Grade _____

What Is A Blog Anyway?

You've seen the word, you've seen the websites and you may even have one. But have you ever wondered: What's the big deal about blogs?

To make sense of blogs, you have to think about the news and who makes it. We'll look at news in the 20th vs. the 21st century to make our point. In the 20th century, the news was produced professionally. When news happened, reporters wrote the stories and a tiny group of people decided what appeared in a newspaper or broadcast. Professional news was mainstream: general and limited.

The 21st century marked the point where news became both professional and personal. A new kind of web site called a weblog or blog came onto the scene that let anyone be a reporter and publisher - often for free. As blogs became popular, they created millions of news sources and gave everyone an audience for their own version of news. Of course, we're using the word "news" loosely. But really - isn't everything news to someone?

With a blog...A business owner can share news about his business. A mother can share news about her family. A sport's star can share news with fans. These people are all "bloggers".

How did this happen? Well, blogs made sharing news on the web easy. Anyone with an idea can start a new blog with the click of a button and share news minutes later. Here's how blogs work.

Blogs are websites that are organized by blog posts - these are individual news stories, like articles in the paper. Bloggers simply fill out a form and with the click of a button, the blog post appears at the top of the web page, just above yesterday's news. Over time, the blog becomes a collection of these posts, all archived for easy reference.

Also, each blog post can become a discussion through comments left by readers. Blogs make the news a two-way street. Additionally, Bloggers often work together. In addition to comments, you'll read each other's posts, quote each other and link your blogs together. This creates communities of bloggers that inspire and motivate each other.

Whether it's their ease of use or the opportunities they offer, blogs have been adopted in a very big way. Since 2003, there have been over 70 million blogs created, each with its own version of news. So, the big deal about blogs is that they gave people like you the power of the media and creates a personal kind of news that appeals to a high number of small audiences.

Common Blog Features

- A title that grabs the reader's attention
- An exploration of news ideas and content
- Text that is easy to read and formatted
- Text that is written in a "human" voice (avoid academic-ese)
- Blogs can use any layout and can cover many different topics, but they all have basic characteristics in common.
- Blog entries usually include the date and specific time that they were posted (a timestamp).
- The blogger's name is usually listed with the timestamp. By default, blogs usually end "Posted by [blogger's name]."
- Depending upon the blog site, you may also find other kinds of information with each blog entry.
- Blogs often contain pictures or links to other products
- Readers and the blogger can usually comment on (or reply to) a blog entry. The comments can turn into a dialogue, with the readers and blogger talking together.

Name _____ ID#/Lunch# _____ School _____ Grade _____

BY SALLY VARGAS **Updated May 4, 2020**

How to Make an Omelette

Never fear! Making an omelette at home is not difficult. With a few basic steps and a flip of the wrist you can pull this off in minutes. Fill it with whatever you have on hand—it's a great way to use up leftovers!

Not only is an omelette quick and easy to make, it is a paragon of economy. Odds and ends (a.k.a. leftovers) rise to a new level when placed inside an omelette.

Leftover, cooked vegetables paired with a little cheese and folded into eggs present a much more cheerful meal than a bowl of vegetables haphazardly reheated in the microwave!

FRENCH VERSES AMERICAN OMELETTES

It seems that the French invented omelettes, possibly stealing the idea from the Romans. Let's leave the argument there and just say that the *omelette* has a long history.

A French omelette starts out with beaten eggs in the pan (just like scrambled eggs). The pan is shaken constantly during cooking until the eggs just begin to set. When the eggs are cooked, the omelette is rolled and snugly folded to form an oval and finally turned out onto a plate with the seam side down.

It can be plain or filled, with or without cheese. (An *omelette with fines herbes* is a famous standard French dish. An assortment of chopped herbs is stirred into the eggs before cooking; no cheese.)

American omelettes (or "omelets" as they are sometimes spelled) start out in the same way, but as the eggs cook, the edges are lifted from the sides of the pan with a spatula so the runny eggs can flow underneath.

When the eggs are nearly set, the filling is added and the omelette is folded in half rather than rolled.

HOW TO MAKE AN OMELETTE

For our purposes here, we'll make an American-style omelette and you will see how easy it is to accomplish even if you have never tried to make an omelette before.

Here are the key steps to read before you start so you know where you are going:

1. **Beat the eggs:** Use two or three eggs per omelette, depending on how hungry you are. Beat the eggs lightly with a fork.
2. **Melt the butter:** Use an 8-inch nonstick skillet for a 2-egg omelette, a 9-inch skillet for 3 eggs. Melt the butter over medium-low heat, and keep the temperature low and slow when cooking the eggs so the bottom doesn't get too brown or overcooked.
3. **Add the eggs:** Let the eggs sit for a minute, then use a heatproof silicone spatula to gently lift the cooked eggs from the edges of the pan. Tilt the pan to allow the uncooked eggs to flow to the edge of the pan.
4. **Fill the omelette:** Add the filling—but don't overstuff the omelette—when the eggs begin to set. Cook for a few more seconds
5. **Fold and serve:** Fold the omelette in half. Slide it onto a plate with a silicone spatula.

DON'T OVERSTUFF YOUR OMELETTE!

Use your imagination and what appeals to you for the filling.Channel your inner elegant French cook and don't overstuff the omelette! You should have enough filling to make the omelette tasty, but not so much that it's bursting and spilling out of the eggs. With practice, you will be able to eyeball how much to put in the omelette.

So make an omelet and let me know how you fill it. Share below in the comments.

Name _____ ID#/Lunch# _____ School _____ Grade _____

Help Your Child Work Through Their Disappointment of NO Sports

By Janis Meredith | Posted 4/29/2020

Could disappointment in children really be healthy for them? As parents, you hate to see the disappointment your children are feeling now not being able to play the game they love. They may be sad or depressed and their pain is hard to watch. Your instinct is to do everything you can to relieve them of the disappointment, but that would be an unfortunate parenting error.

Disappointment never feels good, but it is not an emotion that should be avoided at any cost. It is actually a healthy and positive feeling that can be beneficial for a child's emotional, intellectual and social development.

Here's how you can help them work through their disappointment in this season:

Check your own attitude. Your attitude towards your child's disappointments influences how they will respond to life's problems. If you show disappointment, you put on them the burden of dealing with their own disappointment as well as yours.

Let them express their disappointment. Trying to talk them out of it, minimizing it, or simply ignoring it is not going to help them work through it. No need to sugarcoat things either. It's okay to admit with them, "this really sucks!"

Gather a village. Your child needs other people in their life besides Mom and Dad that they can turn to in hard times. Studies indicate that the most resilient kids have others to draw on for strength besides parents.

Support them without trying to reward them out of their disappointment. Trying to bribe them out of their sadness with a "consolation" prize is not facing the disappointment, it's medicating it. It's much better to acknowledge it with them, let them vent and then talk about their response and options to the situation.

If your child can acquire the tools to get over disappointment, they'll be able to use them throughout childhood and into adulthood. "When children learn at an early age that they have the tools to get over a disappointing situation, they'll be able to rely on that throughout childhood and even as adults," says Robert Brooks, PhD, coauthor of Raising Resilient Children. "If you bend over backwards to shield them from disappointment, you're keeping them from developing some important skills."

Janis Meredith is a family life coach who wants to help all parents raise champions. You can find out more at rcfamilies.com.

Name _____ ID#/Lunch# _____ School _____ Grade _____

The Main Event

Nick Allen April 10, 2020

Netflix's "The Main Event" is about a magical mask and wholesale storytelling device that gives superpowers to an 11-year-old wrestling super fan named Leo (Seth Carr). Because it makes him more confident (by making his voice deeper, and giving him super strength), Leo uses those powers to become a wrestling phenomenon, despite still having the scrawny frame of an 11-year-old. The script for "The Main Event" wants to make it about the heart that it takes to be a wrestler worthy of the WWE, but this movie is so blatantly not about that. This fantasy from director Jay Karas, as harmless as it may be, is all because of the mask and the over-the-top abilities it gives one lucky preteen. It's not about the hard work that's intrinsic with all of wrestling, so much as the WWE's open willingness to sacrifice its core values for lazy family-friendly amusement.

Leo stumbles upon this mask as kids always do in movies like this—by accident while escaping school bullies (who are also wrestling fans, but they seem to get a different message from it). Despite how it reeks like "old bus seats," the blue mask gives him Krypton-grade strength: he can kick down trees, do quadruple backflips, and hurl beer kegs through auditorium ceilings. When he does the latter during a tryout, in order to enter an amateur tournament for the corporation's NXT branch, a bunch of real-life wrestlers like The Miz stand in awe. No one questions how someone of Leo's size can do that, or that he does indeed look like a kid, which makes the people in the WWE and the movie's writers look equally dumb.

His invincible alter ego Kid Chaos has no equal when he puts on that mask, and such an overzealous plot component makes for tedious, repeatedly empty moments of watching Leo's physically impossible strength and speed against his adult opponents. Not even the sweaty wrestler who can fart for 25 seconds (Niko Bogojevic) has a chance against him, and that's all part of how the movie tries to make professional wrestling look like it's a PG-rated battle royale that sometimes plays out in slow-motion, all without the threat of an 11-year-old getting hurt. Later on in the story, because the script is so amorphous about the mask's powers, it even lets Leo do some crime-fighting while out with his friends. Kid Chaos becomes a wrestling superstar and also a web-less Spider-Man, while seeming like a cheap version of both.

There's a lot more on Leo's mind outside the ring, and as busy as the script may be with his family and friend drama, it struggles to ring emotionally true despite some spirited supporting work. Tichina Arnold gets in a few giggles as Leo's grandma who wants to be a social media influencer and lusts after the wrestler Kofi Kingston; Adam Pally plays Leo's sad and overworked dad, who keeps putting off an important conversation about how Leo's mom simply abandoned them. For good measure, the script even throws in a talent show that Leo agreed to perform in with his new friend and crush Erica (Momona Tamada), and bases a conflict on whether Leo can look past his time-consuming fame to honor that commitment.

For a movie made to further sell the WWE as a family-friendly fantasy factory, it's not very flattering. For one, you'd think that they'd check IDs when it comes to who enters their tournaments, and the detail that literally anyone could weasel into their competition is a clumsiness that's never really explained (even when one of Kid Chaos' fans speculates that he's Kevin Hart, method actor). And instead of Leo's progress feeling triumphant, it becomes hard to even root for Kid Chaos when his ascension to the climactic cage match is made possible by Leo essentially cheating, with the script's four writers giving up on how to legitimize him. By the time you get to Leo's final showdown with the towering, monosyllabic baddie Samson (Babatunde Aiyegbusi), "The Main Event" fully embraces the laziest shortcuts to glory.

I know, I know. Kids are merely intended to take in the elementary lessons in between the matches, and the adults aren't supposed to overthink something that features so much jaunty music and wide-eyed young actors. But "The Main Event" treats the prospect of making a kid's sports movie as a full excuse to throw together a chintzy product, and when movies are so transparently indifferent like this, it's hard to forgive them even if they depict a good kid living a dream. Even worse, it's a considerable step back from last year's WWE story "Fighting with My Family," a much better movie that was inspired in its filmmaking and story about rising the top. "The Main Event" pointlessly adds magic to the spectacle of wrestling, and makes for a bland, wearying movie that should be a lot more fun, and authentic.

Name _____ ID#/Lunch# _____ School _____ Grade _____

	Day 1- Blog 1	Day 2- Blog 2	Day 3- Blog 3
What do you notice about the blog?			
What do you like?			
What do you dislike?			
What is the blogger's purpose in writing?			
Who is the audience?			
What did you learn about blogs by viewing the sample?			

Challenge: Create your own blog

Think about the following questions. Choose 1 of the styles form the blog samples and 1 of the prompts below to create your own blog. Most blogs have pictures- cut out magazines or draw pictures to compliment your blog.

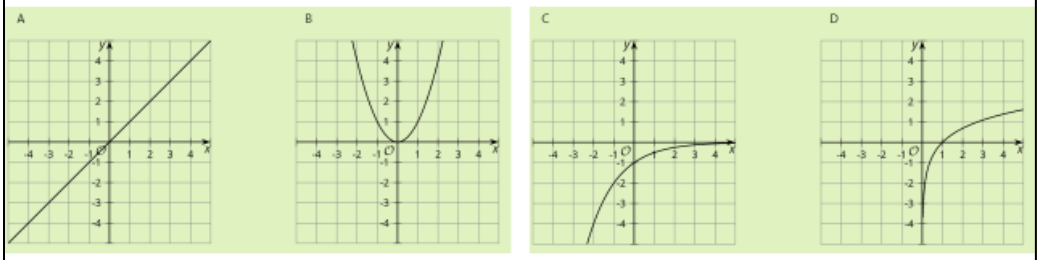
- What hobbies do you have?
- Share a picture of any collections you have or tell your readers how you got interested in a hobby.
- What's the best book you've read lately? What did you like about it?
- Look in your phone choose a picture you've taken recently and tell about it.
- Describe your favorite meal to have for dinner.
- List all the ways you can think of to earn money around the house.
- Review a movie you've watched.
- Tell about your time being restricted by the stay-at-home order.

  - ❖ Be sure to include blog features.
  - ❖ Have someone in your home read your blog, ask them to write a comment to your blog.

IM1/Algebra 1 – Week of June 1st

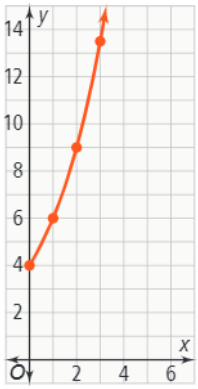
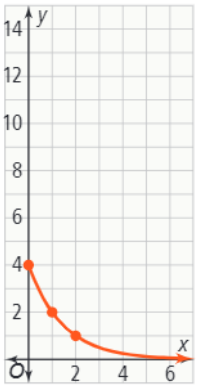
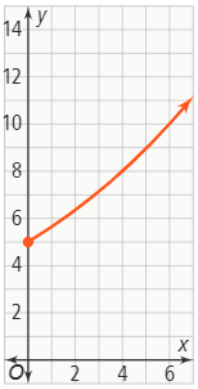
Exponential Growth and Decay/Compound Interest

Which One Doesn't Belong? Why?



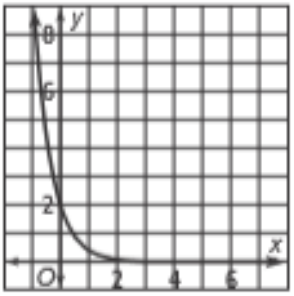
Concept Summary Assess

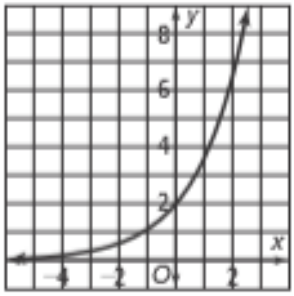
CONCEPT SUMMARY Exponential Growth and Decay

	Exponential Growth	Exponential Decay	Compound Interest
ALGEBRA	$f(x) = a \cdot b^x$ $f(x) = a(1 + r)^x$	$f(x) = a \cdot b^x$ $f(x) = a(1 - r)^x$	$f(x) = a \cdot b^x$ $A = P\left(1 + \frac{r}{n}\right)^{nt}$
NUMBERS	$f(x) = 4(1 + 0.5)^x$	$f(x) = 4(1 - 0.5)^x$	$A = 5\left(1 + \frac{0.12}{2}\right)^{2t}$
WORDS	initial value: 4 growth rate: 50% growth factor: 0.5	initial value: 4 decay rate: 50% decay factor: 0.5	principal: 5 annual interest rate: 12% periods per year: 2
GRAPHS			

Exponential Growth and Decay Worksheet 1

1. Label each graph by writing *exponential growth* or *exponential decay* in the blank.





_____ _____

$f(x) = a(1 + r)^x$, where $r > 0$ _____

$f(x) = a(1 - r)^x$, where $r > 0$ _____

2. Complete the steps for finding the value of a car after 5 years of depreciation.

Initial value of a car: \$15,000 Decay factor: 12% per year Time: 5 years

$f(x) = a(1 - r)^x$ Write the function to model exponential decay.

$f(x) =$ _____ $(1 -$ _____$)^{\text{—}}$ Substitute values for a, r, and x.

$f(x) =$ _____ Simplify.

The value of a \$15,000 car after 5 years would be around _____.

3. Hannah invested \$4,000 in a savings account that earned 2% interest compounded quarterly. She determined that if she does not withdraw or deposit any more money, the value of the account at the end of 3 years will be \$4,244.83. What error did Hannah make in her calculations? What will the account balance be after 3 years? Explain.

Exponential Growth and Decay Worksheet 2

Write an exponential growth model for each situation.

1. initial value: 2,000
   growth rate: 6%

2. initial value: 50
   growth rate: 75%

3. initial value: 40
   growth rate: 100%

Write an exponential decay model for each situation. The value of x for each value of $f(x)$ will lie between two consecutive whole numbers. List the whole numbers.

4. initial value: 1,000
   decay rate: 20%
   $f(x) = 500$

5. initial value: 1,800
   decay rate: 7%
   $f(x) = 400$

6. initial value: 1,200
   decay rate: 12.5%
   $f(x) = 450$

7. Suppose the function f has an initial value of 1,000 and a decay rate of 5%. Let the function g have an initial value of 400 and increase at a growth rate of 17%. Estimate a value of x, to the nearest tenth, for which $f(x) = g(x)$.

8. An exponential function has an initial value of 500 and a decay rate of 15%. Compare the average rate of change for the interval $0 < x < 4$ to the average rate for the interval $4 < x < 8$. What do you think will happen to the average rate of change for intervals beyond $x = 8$? Explain.

9. Harrison is comparing two certificates of deposit, one at a local financial institution and the other at an online financial institution. The local institution offers a rate of 6% compounded annually while the online institution offers a rate of 6% compounded quarterly. If Harrison has a principal amount of $5,000, which institution offers the better deal, assuming he makes no further deposits or withdrawals? Explain.

Exponential Growth and Decay Worksheet 3

1. A wildlife biologist determines that there are approximately 200 deer in a region of a national park. The population grows at a rate of 7% per year. What is an exponential function that models the expected population?

   Ⓐ $f(x) = 200(0.07)^x$ Ⓒ $f(x) = 1.07(200)^x$

   Ⓑ $f(x) = 200(1.07)^x$ Ⓓ $f(x) = 7(200)^x$

2. Compare Accounts A and B. Account _____ will be worth more after 10 years. It will have a value of $_____.

Account A	Account B
principal: $16,000 annual interest: 3% compounded quarterly number of years: 10	principal: $16,000 annual interest: 3% compounded monthly number of years: 10

3. A business purchases a computer system for $3,000. The value of the system decreases at a rate of 15% per year. Write an exponential function to model this situation. Then determine how much the computer will be worth after 4 years.

   function: $f(x) =$ _____ value after 4 years: _____

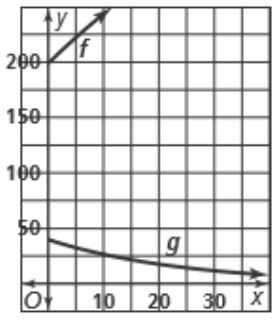
4. There are approximately 3,000 bass in a lake. The population grows at a rate of 2% per year. From Year 1 to Year 4, the average rate of change of the population was about _____ bass per year. From Year 5 to Year 8, the average rate of change of the population was about _____ bass per year. The rate of change increased by about _____ bass per year.

5. Which graph represents functions f and g?

   f: initial value of 200 decreasing at a rate of 4%

   g: initial value of 40 increasing at a rate of 8%

Ⓐ



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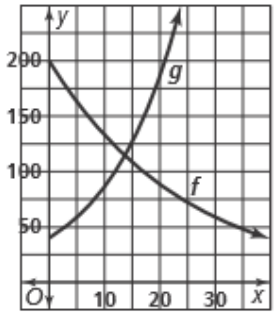

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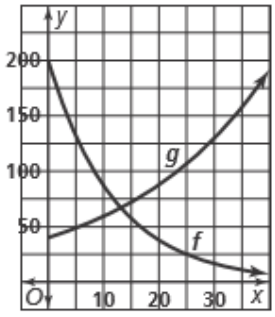

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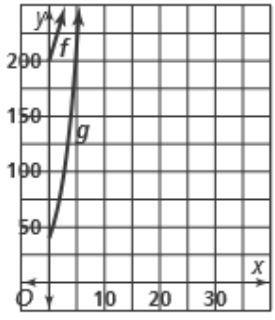


Exponential Growth and Decay Worksheet 4

When Tanya was born, her family put $2,500 into an account for her that earns 5.5% annually. Her family plans to use the money to purchase a trip for her when she graduates from high school.

Package A	Package B	Package C
• London • Paris $5,000	• London • Paris • Madrid $6,500	• London • Paris • Madrid • Rome $8,000

1. Write the formula to determine the amount of money in the account after *x* years.

2. She graduates from high school on her 18th birthday. How much money is in the account?

3. Which vacation package(s) can her family purchase with the money in the account?

4. Tanya decides to wait to purchase a vacation package until she graduates from college, at age 22. She hopes that she will be able to afford Package D, which includes trips to London, Paris, Madrid, Rome, and Athens. Package D costs $9,500. Will she have enough money? If not, how much more money will she need?

Drilling deep for knowledge about fossil fuels - power and pollution

By Encyclopaedia Britannica, adapted by Newsela staff on 07.06.17
Word Count **942**
Level **1030L**

Big Bend Power Station is a major coal-fired power plant near Apollo Beach, Florida.

A fossil fuel is a natural substance like oil or coal, formed from the buried remains of organisms. Fossil fuels are used as a source of energy.

It took millions of years for fossil fuels to form. Heat and pressure from layers of sediment changed the decayed organic remains into materials such as coal and petroleum.

The energy in fossil fuels is the energy from sunlight stored in the tissues of the buried organisms as a result of photosynthesis. Photosynthesis is the process that plants use to make their own food.

Fossil fuel usage has steadily increased since the Industrial Revolution, which started in the mid-1700s. This is when new manufacturing processes came about. Fossil fuels also enabled people to generate electricity on a large scale to light homes, offices and city streets. They powered new and faster types of transportation like steam boats and locomotives, and later automobiles and jet planes.

At the start of the 21st century, fossil fuels made up nearly 90 percent of the world's energy supplies. However, fossil fuels are nonrenewable resources, which means once we use them, they are gone forever.

Because it takes millions of years for fossil fuels to form, they cannot be replaced.

Fossil fuels may be solids, liquids or gases. All fossil fuels are hydrocarbons, a class of chemicals composed only of carbon and hydrogen atoms. Coal, petroleum and natural gas are the most commonly known fossil fuels.

Coal

Coal is the most widely used of the solid fossil fuels. Most coal formed from plants that grew in or near swamps in warm, humid regions of the Earth. This happened during the Carboniferous Period, which was about 359 to 299 million years ago.

Dead plant matter fell into the swamps and settled at the swamp bottom. Over millions of years, sediment covered and compressed the decaying plant matter, forming peat. The pressure and heat of more sediment layers changed the peat into lignite, which is soft coal. Continued heat and pressure on the lignite changed it into harder forms of coal.

Anthracite is the hardest coal and was the last to form. Hard coals are considered the best energy sources among the coals because they burn the hottest and do not release as many pollutants into the air as other types of coal.

Oil And Natural Gas

Petroleum, or oil, is the most common liquid fossil fuel and natural gas is the most gaseous fossil fuel. Petroleum is often called crude oil, or just oil.

Oil and natural gas formed through a similar process, often in the same swampy location. They were made from the buried remains of tiny water organisms. As these organisms died and sank to the muddy bottom, their buried remains changed into a substance called kerogen.

Over millions of years, increasing heat and pressure from more sediment layers changed the kerogen into petroleum. Depth and temperature determined whether the petroleum was liquid or gaseous. Natural gas formed at deeper, hotter locations.

The main liquid fossil fuels used today are made from oil. These include gasoline, fuel oils such as diesel and jet fuel, and oils for home heating.

Kerosene was used a long time ago to provide light, and is still used in many places for cooking. It also is the main fuel for modern jet engines.

Natural gas is used for heating and cooking in the home and for industrial heating. It is also used to generate electricity.

Other Fossil Fuels

Peat and coke are solid fossil fuels that are commonly used today. Peat is used as a heating fuel in areas where other fuels are not available. But, it burns slowly and produces a lot of smoke and very

little heat. Coke is a residue that remains after gases and tar are extracted from some types of coal. Coke is to make iron and in other processes.

As fossil fuel reserves are used, the search for other fuel sources has increased. Two such resources are oil shale and tar sands, which contain fuel sources. Extracting useful substances from them is difficult and costly. Until recent years, these resources were not good fuel options.

Where Fossil Fuels Are Found

Fossil fuels are not found equally around the world. For example, the United States, Russia, and China have the largest coal deposits. Australia, India and South Africa also have large amounts.

More than half of the world's known oil and natural gas reserves are located in the Middle East. This means that the Middle East contains more oil than the rest of the world combined.

Limited Supply, Pollution Problems

Two main disadvantages of fossil fuels are their limited supply and the environmental harm they cause. Burning petroleum and coal releases harmful gases into the air. These gases pollute the air and react with moisture in the atmosphere to create acid rain.

Burning fossil fuels also releases carbon dioxide into the atmosphere. Over many years, the percentage of carbon dioxide in the atmosphere has increased. Scientific evidence shows this buildup increases temperatures. This warming of Earth's atmosphere is called the greenhouse effect. It contributes to climate change, which is a serious environmental concern.

These problems have led scientists and engineers to develop new ways to generate power without using fossil fuels.

For example, some cars are now powered by electricity instead of gasoline. Homes can be heated using solar or geothermal energy. Some electric power plants run on nuclear energy, water power or wind power.

These alternative energy sources are forms of renewable resources because—unlike fossil fuels—they cannot be depleted. Also, renewable energy does not emit carbon dioxide. This can help limit climate change.

Drilling down into petroleum's impact on life on Earth

By National Geographic Society on 03.26.19
Word Count **2,404**
Level **MAX**

Image 1. Oil surrounds the feet of local resident Morgan Miller as he patrols the beach for oiled wildlife on May 19, 2015, north of Goleta, California. About 21,000 gallons spilled from an abandoned pipeline on the land near Refugio State Beach, spreading over about 4 miles of beach within hours. The largest oil spill ever in U.S. waters at the time occurred in the same section of the coast in 1969 where numerous offshore oil platforms can be seen, giving birth to the modern American environmental movement. Photo by David McNew/Getty Images

Petroleum (also known as crude oil or simply oil) is a fossil fuel that was formed from the remains of ancient marine organisms.

Millions of years ago, algae and plants lived in shallow seas. After dying and sinking to the seafloor, the organic material mixed with other sediments and was buried. Over millions of years under high pressure and high temperature, the remains of these organisms transformed into what we know today as fossil fuels. Coal, natural gas and petroleum are all fossil fuels that formed under similar conditions.

Today, petroleum is found in vast underground reservoirs where ancient seas were located. Petroleum reservoirs can be found beneath land or the ocean floor. Their crude oil is extracted

with giant drilling machines.

Crude oil is usually black or dark brown, but can also be yellowish, reddish, tan or even greenish. Variations in color indicate the distinct chemical compositions of different supplies of crude oil.

Petroleum is used to make gasoline, an important product in our everyday lives. It is also processed and part of thousands of different items, including tires, refrigerators, life jackets and anesthetics.

When petroleum products such as gasoline are burned for energy, they release toxic gases and high amounts of carbon dioxide, a greenhouse gas. Carbon helps regulate the Earth's atmospheric temperature, and adding to the natural balance by burning fossil fuels adversely affects our climate.

There are huge quantities of petroleum found under Earth's surface and in tar pits that bubble to the surface. However, petroleum, like coal and natural gas, is a non-renewable source of energy. It took millions of years for it to form, and when it is extracted and consumed, there is no way for us to replace it.

Oil supplies will run out. Eventually, the world will reach "peak oil," or its highest production level. Some experts predict peak oil could come as soon as 2050. Finding alternatives to petroleum is crucial to global energy use, and is the focus of many industries.

Formation Of Petroleum

The geological conditions that would eventually create petroleum formed millions of years ago, when plants, algae and plankton drifted in oceans and shallow seas. These organisms sank to the seafloor at the end of their life cycle. Over time, they were buried and crushed under millions of tons of sediment and even more layers of plant debris.

Eventually, ancient seas dried up and dry basins remained, called sedimentary basins. Deep under the basin floor, the organic material was compressed between Earth's mantle, with very high temperatures, and millions of tons of rock and sediment above. Oxygen was almost completely absent in these conditions, and the organic matter began to transform into a waxy substance called kerogen.

With more heat, time and pressure, the kerogen underwent a process called catagenesis, and transformed into hydrocarbons. Hydrocarbons are simply chemicals made up of hydrogen and carbon. Different combinations of heat and pressure can create different forms of hydrocarbons. Some other examples are coal, peat and natural gas.

Sedimentary basins, where ancient seabeds used to lie, are sometimes sources of petroleum. In Africa, the Niger Delta sedimentary basin covers land in Nigeria, Cameroon and Equatorial Guinea. More than 500 oil deposits have been discovered in the massive Niger Delta basin, and they comprise one of the most productive oil fields in Africa.

Chemistry And Classification Of Crude Oil

The gasoline we use to fuel our cars, the synthetic fabrics of our backpacks and shoes, and the thousands of different useful products made from petroleum come in forms that are consistent

and reliable. However, the crude oil from which these items are produced is neither consistent nor uniform.

Chemistry

Crude oil is composed of hydrocarbons, which are mainly hydrogen (about 13 percent by weight) and carbon (about 85 percent). Other elements such as nitrogen (about 0.5 percent), sulfur (0.5 percent), oxygen (1 percent), and metals such as iron, nickel and copper (less than 0.1 percent) can also be mixed in with the hydrocarbons in small amounts. The way molecules are organized in the hydrocarbon is a result of the original composition of the algae, plants or plankton from millions of years ago. The amount of heat and pressure the plants were exposed to also contributes to variations that are found in hydrocarbons and crude oil.

Due to this variation, crude oil that is pumped from the ground can consist of hundreds of different petroleum compounds. Light oils can contain up to 97 percent hydrocarbons, while heavier oils and bitumens might contain only 50 percent hydrocarbons and larger quantities of other elements. It is almost always necessary to refine crude oil in order to make useful products.

Classification

Oil is classified according to three main categories: the geographic location where it was drilled, its sulfur content and its API gravity (a measure of density).

Classification: Geography

Oil is drilled all over the world. However, there are three primary sources of crude oil that set reference points for ranking and pricing other oil supplies: Brent Crude, West Texas Intermediate and Dubai and Oman.

Brent Crude is a mixture that comes from 15 different oil fields between Scotland and Norway in the North Sea. These fields supply oil to most of Europe.

West Texas Intermediate (WTI) is a lighter oil that is produced mostly in the U.S. state of Texas. It is "sweet" and "light" — considered very high quality. WTI supplies much of North America with oil.

Dubai crude, also known as Fateh or Dubai-Oman crude, is a light, sour oil that is produced in Dubai, part of the United Arab Emirates. The nearby country of Oman has recently begun producing oil. Dubai and Oman crudes are used as a reference point for pricing Persian Gulf oils that are mostly exported to Asia.

The OPEC Reference Basket is another important oil source. OPEC is the Organization of the Petroleum Exporting Countries founded in 1960 by Iran, Iraq, Kuwait, Saudi Arabia and Venezuela. Other countries have joined or left the organization from that time. The OPEC Reference Basket is the average price of petroleum from OPEC's member countries.

Classification: Sulfur Content

Sulfur is considered an "impurity" in petroleum. Sulfur in crude oil can corrode metal in the refining process and contribute to air pollution. Petroleum with more than 0.5 percent sulfur is called "sour," while petroleum with less than 0.5 percent sulfur is "sweet."

Sweet oil is usually much more valuable than sour because it does not require as much refining and is less harmful to the environment.

Classification: API Gravity

The American Petroleum Institute (API) is a trade association for businesses in the oil and natural gas industries. The API has established accepted systems of standards for a variety of oil- and gas-related products, such as gauges, pumps and drilling machinery. The API has also established several units of measurement. The "API unit," for instance, measures gamma radiation in a borehole (a shaft drilled into the ground).

API gravity is a measure of the density of petroleum liquid compared to water. If a petroleum liquid's API gravity is greater than 10, it is "light," and floats on top of water. If the API gravity is less than 10, it is "heavy," and sinks in water.

Light oils are preferred because they have a higher yield of hydrocarbons. Heavier oils have greater concentrations of metals and sulfur and require more refining.

Petroleum Reservoirs

Petroleum is found in underground pockets called reservoirs. Deep beneath the Earth, pressure is extremely high. Petroleum slowly seeps out toward the surface, where there is lower pressure. It continues this movement from high to low pressure until it encounters a layer of rock that is impermeable. The petroleum then collects in reservoirs, which can be several hundred meters below the surface of the Earth.

Petroleum can be contained by structural traps, which are formed when massive layers of rock are bent or faulted (broken) from the Earth's shifting land masses. Oil can also be contained by stratigraphic traps. Different strata, or layers of rock, can have different amounts of porosity. Crude oil migrates easily through a layer of sandstone, for instance, but would be trapped beneath a layer of shale.

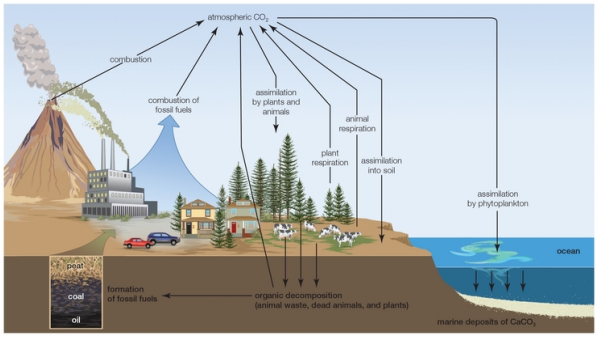
Geologists, chemists and engineers look for geological structures that typically trap petroleum. They use a process called "seismic reflection" to locate underground rock structures that might have trapped crude oil. During the process, a small explosion is set off. Sound waves travel underground, bounce off of the different types of rock, and return to the surface. Sensors on the ground interpret the returning sound waves to determine the underground geological layout and possibility of a petroleum reservoir.

The amount of petroleum in a reservoir is measured in barrels or tons. An oil barrel is about 42 gallons. This measurement is usually used by oil producers in the United States. Oil producers in Europe and Asia tend to measure in metric tons. There are about six to eight barrels of oil in a metric ton.

Crude oil is frequently found in reservoirs along with natural gas. Sometimes, natural gas is either burned or allowed to escape into the atmosphere. Technology has also been developed to capture the natural gas and either re-inject it into the well or compress it into liquid natural gas (LNG). LNG is easily transportable and has versatile uses.

Carbon Cycle

There are major disadvantages to extracting fossil fuels, and extracting petroleum is a controversial industry.



Carbon, an essential element on Earth, makes up about 85 of the hydrocarbons in petroleum. Carbon constantly cycles between the water, land and atmosphere.

Carbon is absorbed by plants and is part of every living organism as it moves through the food web. Carbon is naturally released through volcanoes, soil erosion and evaporation. When carbon is released into the atmosphere, it absorbs and retains heat, regulating Earth's temperature and making our planet habitable.

Not all of the carbon on Earth is involved in the carbon cycle above ground. Vast quantities of it are sequestered, or stored, underground, in the form of fossil fuels and in the soil. This sequestered carbon is necessary because it keeps the Earth's "carbon budget" balanced.

However, that budget is falling out of balance. Since the Industrial Revolution, fossil fuels have been aggressively extracted and burned for energy or fuel. This releases the carbon that has been sequestered underground and upsets the carbon budget. This affects the quality of our air, water and overall climate.

The taiga, for example, sequesters vast amounts of carbon in its trees and below the forest floor. Drilling for natural resources not only releases the carbon stored in the fossil fuels, but also the carbon stored in the forest itself.

Combusting gasoline, which is made from petroleum, is particularly harmful to the environment. Every 3.8 liters (1 gallon) of ethanol-free gas that is combusted in a car's engine releases about 9 kilograms (20 pounds) of carbon dioxide into the environment. (Gasoline infused with 10 percent ethanol releases about 8 kilograms (17 pounds.)) Diesel fuel releases about 10 kilograms (22 pounds) of carbon dioxide, while biodiesel (diesel with 10 percent biofuel) emits about 9 kilograms (20 pounds).

Gasoline and diesel also directly pollute the atmosphere. They emit toxic compounds and particulates, including formaldehyde and benzene.

People And Petroleum

Oil is a major component of modern civilization. In developing countries, access to affordable energy can empower citizens and lead to higher quality of life. Petroleum provides transportation fuel, is a part of many chemicals and medicines, and is used to make crucial items such as heart valves, contact lenses and bandages. Oil reserves attract outside investment and are important for improving countries' overall economy.

However, in some countries, having access to oil can lead government to be less democratic — a situation nicknamed a "petro-dictatorship." Russia, Nigeria and Iran have all been accused of having petro-authoritarian regimes.

Peak Oil

Oil is a non-renewable resource, and the world's oil reserves will not always be enough to provide for the world's demand for petroleum. Peak oil is the point when the oil industry is extracting the maximum possible amount of petroleum. After peak oil, petroleum production will only decrease. After peak oil, there will be a decline in production and a rise in costs for the remaining supply.

Measuring peak oil uses the reserves-to-production ratio (RPR). This ratio compares the amount of proven oil reserves to the current extraction rate. The reserves-to-production ratio is expressed in years.

According to one industry report, the United States has an RPR of about nine years. The oil-rich, developing nation of Iran, which has a much lower consumption rate, has an RPR of more than 80 years.

It is impossible to know the precise year for peak oil. Some geologists argue it has already passed, while others maintain that extraction technology will delay peak oil for decades. Many geologists estimate that peak oil might be reached within 20 years.

Petroleum Alternatives

Individuals, industries and organizations are increasingly concerned with peak oil and environmental consequences of petroleum extraction. Alternatives to oil are being developed in some areas and governments and organizations are encouraging citizens to change their habits so we do not rely so heavily on oil. Bioasphalts, for example, are asphalts made from renewable sources such as molasses, sugar, corn, potato starch, or even byproducts of oil processes.

Algae is also a potentially enormous source of energy. Algae oil (so-called "green crude") can be converted into a biofuel. Algae grows extremely quickly and takes up a fraction of the space used by other biofuel feedstocks. About 38,849 square kilometers (15,000 square miles) of algae— less than half the size of the U.S. state of Maine — would provide enough biofuel to replace all of the U.S.'s petroleum needs. Algae absorbs pollution, releases oxygen, and does not require freshwater.

The country of Sweden has made it a priority to drastically reduce its dependence on oil and other fossil fuel energy by 2020. Experts in agriculture, science, industry, forestry and energy have come together to develop sources of sustainable energy, including geothermal heat pumps, wind farms, wave and solar energy and domestic biofuel for hybrid vehicles. Changes in society's habits, such as increasing public transportation and video-conferencing for businesses, are also part of the plan to decrease oil use.

The Unique Nature of Places – Part 3

Benchmark Standard	Geography 3a: Students will understand the processes which result in distinctive cultures, economic activity, and settlement form in particular locations across the world.
Grade	9
Vocabulary / Key Concepts	Census

~This lesson is a part of the DRC Unit "The Unique Nature of Places" – Modified by CSD for use at home~

ACTIVITY 1: Complete the four square graphic organizer for "census"

Definition:	Sentence:
CENSUS	
Characteristics:	I think… (What are the most populated towns / cities in Delaware vs. the smallest?)

ACTIVITY 2: After completing the graphic organizer, check your answers regarding your initial perceptions of Delaware's smallest versus largest towns/cities. Were you correct?

http://censusviewer.com/cities/DE/2010

Town / City	population	Town / city	population	Town / city	Population	Town / city	Population	Town / city	Population
Arden	439	Dagsboro	805	Glasgow	14,303	Long Neck	1,980	Rising Sun-Lebanon	3,391
Ardencroft	231	Delaware City	1,695	Greenville	2,326	Magnolia	225	Riverview	2,456
Ardentown	264	Delmar	1,597	Greenwood	973	Middletown	18,871	Rodney Village	1,487
Bear	19,371	Dewey Beach	341	Harrington	3,562	Milford	9,559	Seaford	6,928
Bellefonte	1,193	Dover	36,047	Hartly	74	Millsboro	3,877	Selbyville	2,167
Bethany Beach	1,060	Dover Base Housing	3,450	Henlopen Acres	122	Millville	544	Slaughter Beach	207
Bethel	171	Edgemoor	5,677	Highland Acres	3,459	Milton	2,576	Smyrna	10,023
Blades	1,241	Ellendale	381	Hockessin	13,527	New Castle	5,285	South Bethany	449
Bowers	335	Elsmere	6,131	Houston	374	Newark	31,454	Townsend	2,049
Bridgeville	2,048	Farmington	110	Kent Acres	1,890	Newport	1,055	Viola	157
Brookside	14,353	Felton	1,298	Kenton	261	North Star	7,980	Wilmington	70,851
Camden	3,464	Fenwick Island	379	Laurel	3,708	Ocean View	1,882	Wilmington Manor	7,889
Cheswold	1,380	Frankford	847	Leipsic	183	Odessa	364	Woodside	181
Claymont	8,253	Frederica	774	Lewes	2,747	Pike Creek	7,898	Woodside East	2,316
Clayton	2,918	Georgetown	6,422	Little Creek	224	Rehoboth Beach	1,327	Wyoming (Camden-Wyoming)	1,313

ACTIVITY 3: Compare and contrast the 2010 Census Data vs. the 2000 Census Data.

1. Which are the six most populated Delaware towns/cities in 2010? What is each town/city's population?
2. Which are the six least populated Delaware towns/cities in 2010? What is each town/city's population?
3. Which are the six most populated Delaware towns/cities in 2000? What is each town/city's population?
4. Which are the six least populated Delaware towns/cities in 2000? What is each town/city's population?
5. What stayed the same? What changed?
6. Which towns had the greatest change?

Observe the 1999 Road Map of Delaware (page 3) to the 2020 Road Map of Delaware (page 4).

7. Why might that change have occurred (the towns that had the greatest change)?

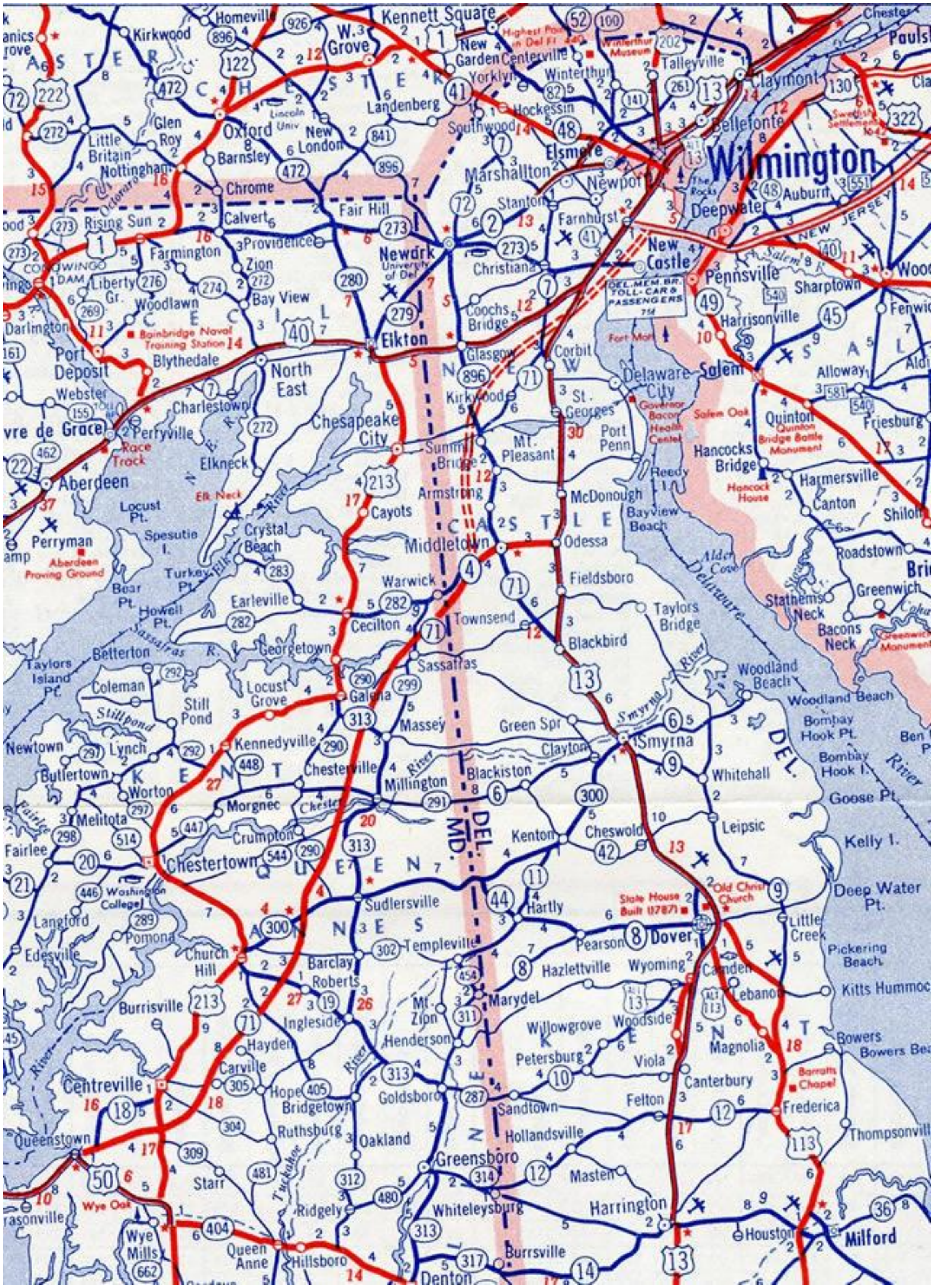
http://censusviewer.com/cities/DE/2000

Town / City	population	Town / city	population	Town / city	Population	Town / city	Population	Town / city	Population
Arden	474	Dagsboro	519	Glasgow	12,840	Long Neck	1,629	Rising Sun-Lebanon	2,458
Ardencroft	267	Delaware City	1,453	Greenville	2,332	Magnolia	226	Riverview	1,583
Ardentown	300	Delmar	1,407	Greenwood	837	Middletown	6,161	Rodney Village	1,602
Bear	17,593	Dewey Beach	301	Harrington	3,174	Milford	6,732	Seaford	6,699
Bellefonte	1,249	Dover	32,135	Hartly	78	Millsboro	2,360	Selbyville	1,645
Bethany Beach	903	Dover Base Housing	3,394	Henlopen Acres	139	Millville	259	Slaughter Beach	198
Bethel	184	Edgemoor	5,992	Highland Acres	3,379	Milton	1,657	Smyrna	5,679
Blades	956	Ellendale	327	Hockessin	12,902	New Castle	4,862	South Bethany	492
Bowers	305	Elsmere	5,800	Houston	430	Newark	28,547	Townsend	346
Bridgeville	1,436	Farmington	75	Kent Acres	1,637	Newport	1,122	Viola	156
Brookside	14,806	Felton	784	Kenton	237	North Star	8,277	Wilmington	72,664
Camden	2,100	Fenwick Island	342	Laurel	3,668	Ocean View	1,006	Wilmington Manor	8,262
Cheswold	313	Frankford	714	Leipsic	203	Odessa	286	Woodside	184
Claymont	9,220	Frederica	648	Lewes	2,932	Pike Creek	19,751	Woodside East	2,174
Clayton	1,273	Georgetown	4,643	Little Creek	195	Rehoboth Beach	1,495	Wyoming (Camden-Wyoming)	1,141

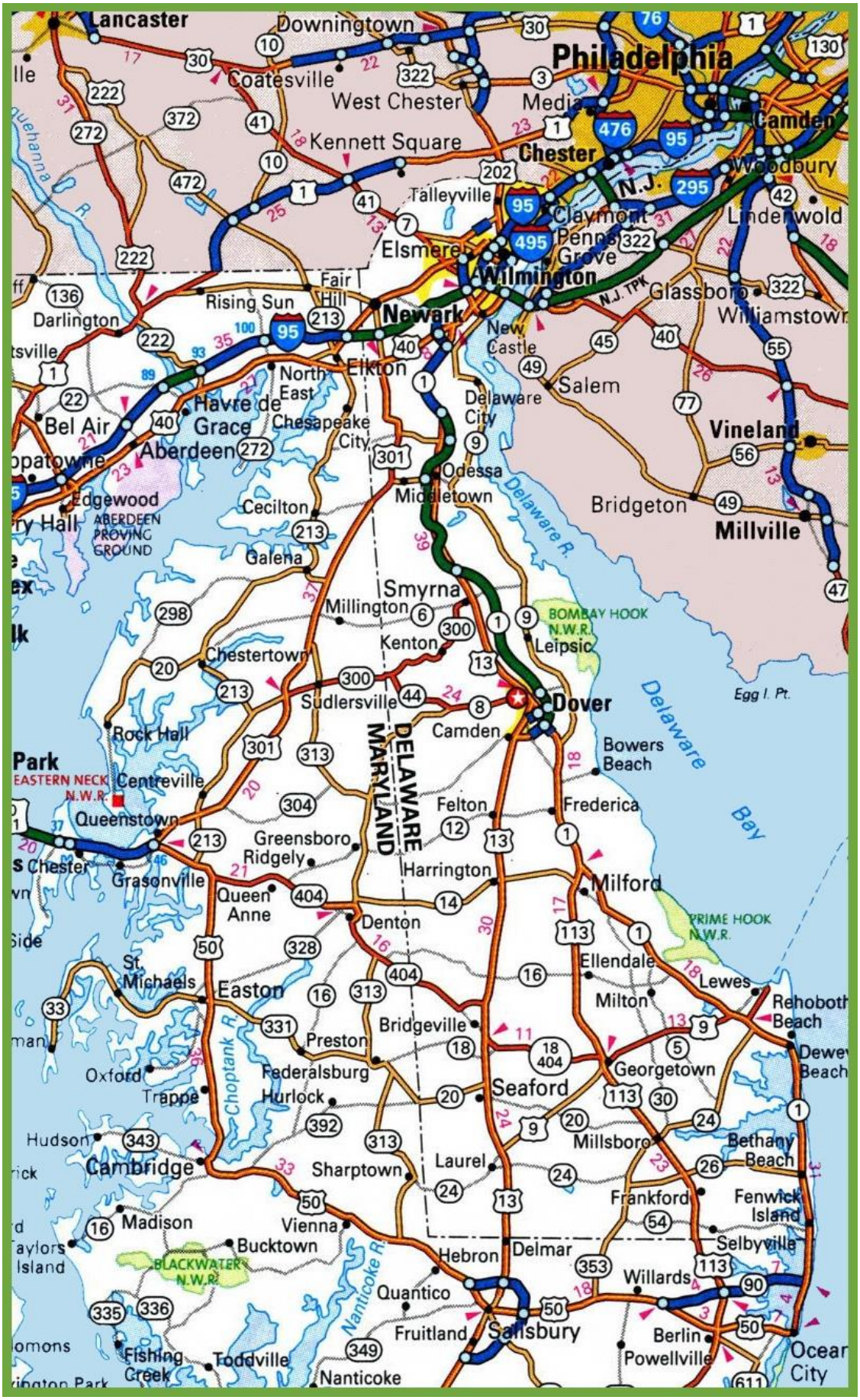
ACTIVITY 4: Checks for Understanding: Review the information you learned in this lesson and complete the following questions on a separate sheet of paper.

1. Why have some towns/cities in Delaware stayed the same while others have changed significantly over the last twenty years? Explain and support your answer with evidence from this lesson.
2. How did the situation of some of these communities improve over the last twenty years? Explain and support your answer with evidence from this lesson.

1999 Delaware Road Map



2020 Delaware Road Map


Lancaster
Downingtown
Philadelphia
Coatesville
West Chester
Media
Camden
Kennett Square
Chester
Woodbury
N.J.
Talleyville
Claymont
Elsmere
Penns Grove
Wilmington
Lindenwold
Fair Hill
Rising Sun
Newark
N.J. TPK
Glassboro
Williamstown
Darlington
New Castle
Elkton
North East
Salem
Havre de Grace
Chesapeake City
Delaware City
Vineland
Bel Air
Aberdeen
Odessa
Middletown
Edgewood
ABERDEEN PROVING GROUND
Cecilton
Bridgeton
Millville
Galena
Smyrna
Millington
BOMBAY HOOK N.W.R.
Kenton
Leipsic
Chestertown
Sudlersville
Dover
Egg I. Pt.
Rock Hall
Camden
Bowers Beach
Delaware
Centreville
EASTERN NECK N.W.R.
Felton
Frederica
Queenstown
Greensboro
Ridgely
DELAWARE
MARYLAND
Harrington
Milford
Grasonville
Queen Anne
Denton
PRIME HOOK N.W.R.
Ellendale
St. Michaels
Easton
Lewes
Milton
Rehoboth Beach
Bridgeville
Preston
Georgetown
Oxford
Federalsburg
Choptank R.
Trappe
Hurlock
Seaford
Hudson
Millsboro
Bethany Beach
Cambridge
Sharptown
Laurel
Frankford
Fenwick Island
Madison
Vienna
Selbyville
Bucktown
Hebron
Delmar
BLACKWATER N.W.R.
Willards
Quantico
Nanticoke R.
Fruitland
Salisbury
Berlin
Ocean City
Fishing Creek
Toddville
Powellville
Nanticoke