Welcome to Advanced Placement Environmental Science (APES)!!!

The APES course has an extensive syllabus and is more interdisciplinary than most other courses you have taken. We will incorporate aspects of Earth Science, Biology, Chemistry, Physics, Economics, Government, and more. It is important that you come to class in September with a basis from which to begin the year; listed below are your preparatory summer assignments. Because we have so much ground to cover, I have some work for you to do over the summer to get you started thinking along these lines.

Assignment #1: Scavenger Hunt
Assignment #2: Math Self Assessment
Assignment #3: Current Events

Assignment #1: Scavenger Hunt
You will complete a "to-do" list with your pal Andrew the Ape, see the following page for directions and rubric.
Due: FIRST Friday on the FIRST week of class. **NO EXCEPTIONS**. Please feel free to send me a picture or update at lmaynard@hhh.k12.ny.us

Summer Scavenger Hunt Guidelines

A. GOALS: * Explore, enjoy, honor, consider and document your environment.
* Take the Andrew the Ape out sightseeing! He's going to be your summer companion.

B. RULES

1. **CHOOSE AND FIND** 15 out of the 20 items on the list (see list). Your choice. All items can be found locally, but you are encouraged to explore!

2. **PROOF** of finding each item is an image (digital or film, still or motion), clearly showing (a) the item, (b) yourself, and (c) the Andrew the Ape [or, in a pinch, a date-identifying item].

3. Required **DOCUMENTATION** for each image is (a) the item identification, (b) the item location, (c) the date the item was "collected", and (d) "additional information" (see list).

4. Your **PRODUCT** will be a powerpoint slideshow **OR** a video.
    a) submitted on google classroom
    b) Due on Friday of the first week of class, but early submissions are encouraged
    c) It will be shown in class

5. **HELPING** each other:
    a. If your product is a video: you can work with one partner (in pairs) to submit one video product for both of you. Both partners must be represented with **every** item.

6. You are **NOT ALLOWED** to trespass, obstruct traffic, violate any laws, jeopardize your safety or compromise your integrity in any way in pursuit of any item.

C. PRODUCT: Video **OR** Slideshow including maps, with checklist

1. **VIDEO:** Each item would be a clip, including the item, the icon, you, and the requisite documentation (which could be audio, of course).

2. **Google SLIDESHOW:** Each item is a slide, including the item, the icon, you and the requisite documentation.

Slideshows must be submitted individually or with ONE partner.

3. Maps: image locations marked on a map or maps; ideally the map or maps would be an additional slide or slides, or video clip or clips. □

4. Checklist: highlight the boxes you got on the Scavenger Hunt List (this needn't be elaborate, just highlight). □

D. CREDIT

1. Full credit is more or less the expectation.
2. "Best" is generally worth more than "Better", which is generally worth more than "good", but all will satisfy the item.□
3. Clarity and quality of imagery is important□
4. Accuracy and thoroughness of documentation are important.
5. Creativity and entertainment value are way better than no creativity or entertainment value
6. Evidence of trespassing, obstruction of traffic, violation of laws, jeopardizing safety or compromising integrity will cost credit. Photoshopping or other image manipulation to gain advantage constitutes an absolute abandonment of integrity.

E. SUGGESTIONS

1. Have fun with it; it's not supposed to be "work."□
2. Build it gradually throughout the summer. Saving it all for the last day would make it "**WORK**".
3. Keep the Ape in your wallet or with your phone, so you're always ready. When you see something, take out the Ape, take a picture or clip, and collect the info.
5. If questions arise, try lmaynard@hhh.k12.ny.us ; I check it irregularly during the summer.

Andrew the Ape

APES 2018-2019 Summer Scavenger Hunt List

#	Category	Best	Better	Good	Additional Information
1.	Hydrosphere	Ocean	Bay	Flowing or standing water in a watershed	Name of water body
2.	Atmosphere	Cumulus-type cloud	Stratus-type cloud	Cirrus-type cloud	Name of cloud type
3.	Energy Flow	Carnivore consuming herbivore or carnivore (not processed "food")	Herbivore consuming producer (not processed "food")	Photosynthesis happening	Names of participating species
4.	Biodiversity	Native endangered animal, in its habitat	Native endangered plant, in its habitat	Non-native endangered species	Name of species
5.	Population Growth	A human less than 1 year old	A human less than 2 years old	A human less than 5 years old	Name of the human, and a quote from the human or the human's minder
6.	Forest	Native tree you can't reach more than one quarter of the way around	Native tree you can't reach more than halfway around	Non-native tree you can't reach more than halfway around	Name of species
7	Biodiversity Preserve	National park system unit	State park system unit	County or city park system unit	Name of park
8	Food Crops	Food crop being grown on a farm	Food crop being transported	Food crop being processed or retailed	Name of food crop
9	Meat	Animals being raised for food in a CAFO	Animals being raised for food on rangeland	Meat being retailed	Name of animal

10	Fishing	Commercial fishing operation	Recreational fishing	Fish being retailed	Name of fish
11	Water Pollution	Point source of water pollution	Nonpoint source of water pollution	Polluted water or solid water pollutant	Type of water pollution
12	Air Pollution	Nonmobile point source emitting pollution	Mobile source emitting pollution	Air pollution without identified source	Type of air pollution
13	Renewable Energy	Renewable power generating plant (solar, wind, geothermal...)	Renewable residential or commercial generator	Renewably-powered appliance	Type of renewable energy
14	Fossil Fuels	Fossil fuel production or processing (mine, well, refinery...)	Non-gasoline fossil fuel use or retail	gasoline retail	Name of fossil fuel
15	Solid Waste disposal	REDUCING waste generation: instead of reusing,recycling or discarding	REUSE of potential waste (instead of recycling or discarding)	RECYCLEing potential waste (instead of discarding)	Potential waste that is being averted
16	Transportation	Riding public mass transit	Public mass transit	Private mass transit	Destination and ride quality
17	Politics and Economics	Worker in environment-related profession	Volunteer in environment- related work	Environmentally aware person	Name and environmental role of person, and quote from person.
18	Beauty	A non-human thing in the environment that you find extraordinarily beautiful	A non-human thing in the environment that you find moderately beautiful	A non-human thing in the environment that you find not beautiful at all	What it is, and why it's beautiful or not

Assignment #2: Math Self Assessment

Math Assessment due: Upon entering class on the first day of school. No exceptions.
Being able to do basic math is essential to this course. We will have to do math calculations in several assignments throughout the year, and we will not have time to review the basics. Go over this help sheet and complete the attached problem set. This will not be graded; however, there will be a quiz that includes math problems. Get help and do lots of practice this summer if you don't feel like you are up to speed on all of these types of math problems, otherwise your quiz grades will suffer.

Basic operations without a calculator
Calculators are not allowed on the APES Exam, so you will need to be comfortable doing addition, subtraction, multiplication, and division without an electronic crutch. Class activities sometimes require calculators, but you will not be able to use calculators on the weekly quizzes.

Scientific Notation
If you are used to having your calculator figure this out for you, you''ll need to practice scientific notation.

Thousand = 10^3 =1,000
Million = 10^6 =1,000,000 (people in the US = 310 million)
Billion = 10^9 =1,000,000,000 (people on Earth = 7 billion; age of the Earth = 4.6 billion years)
Trillion = 10^{12} =1,000,000,000,000 (National debt = $17 trillion)

- When using very large numbers, scientific method makes numbers easier to manipulate. For example, the US population is 300 million people or $300x10^6$ or $3x10^8$
- When adding or subtracting, exponents must be the same. Add the numbers in front of the ten and keep the exponent the same.
- When multiplying or dividing, multiply or divide the number in front of the ten and add the exponents if multiplying or subtract the exponents if dividing

Dimensional Analysis
You should be able to convert any unit into any other unit accurately if given the conversion factor. Online tutorials are available:

- http://www.chemprofessor.com/dimension_text.htm
- http://www.chem.tamu.edu/class/fyp/mathrev/mr-da.html

Metric Prefixes

m (milli) =1/1000 =10^{-3}	M (mega) =1,000,000 =10^6
c (centi) =1/100 =10^{-2}	G (giga) =1,000,000,000 =10^9
k (kilo) =1000 =10^3	T (tera) =1,000,000,000,000 =10^{12}

Percentages:
Be able to solve problems using fractions and percentages.

APES Math Problems

Answer the questions. Use a separate sheet of paper if necessary. **Show all work neatly.**

1. What is one million times one thousand? Show your work in scientific notation. Give the answer in scientific notation and in words.

2. A population of deer had 200 individuals. If the population grows by 15% in one year, how many deer will there be the next year?

3. Last year I had 14 AP Environmental Science students and next year I will have 32 AP Environmental Science students, what percentage did the population of APES students grow by?

4. Electricity costs 6 cents per kilowatt hour. In one month one home uses one megawatt hour of electricity. How much will the electric bill be? Use dimensional analysis to solve.

Assignment #3: Current Events

A. Current Events - Collect copies of 2 articles, published since January 1, 2017, relating to environmental issues, *preferably* on Long Island. (An issue involves an environmental concern, not just some interesting scientific finding.) For each, write *at least* 2 paragraphs, a paragraph or two summarizing the content, and a paragraph or two discussing your reaction. For example, does the article teach you something new? Does it support or refute other information you've heard or read? Are there other points of view on this issue? The sources may be scientific publications, popular magazines, newspapers or the like. Try the NY Times (especially Tuesdays), National Geographic, Discover Magazine, Natural History Magazine, as well as the more scholarly Scientific American, Science, Nature, etc. You may look online, but you must indicate the source. Among the 10, be sure that at least 10 of the following topics are represented, and label each summary according to its topic. For example, if your first article and summary is about overpopulation, be sure your heading indicates this (1HumanPopulation _Student Last Name)

Our district website has a MULTITUDE of resources to use. Go to library and media center tab, and to the virtual reference collection. Explore. There's also a current events tab here: https://destiny.hhh.k12.ny.us/common/servlet/presenthomeform.do;jsessionid=78E785742D0F9AADA87E4FDF24BDB25F?l2m=Home&tm=Home&l2m=Home

Attach a copy or link each article to your summary and reaction paragraphs. This assignment is worth 50 points, and is also due upon entering class on the first day of school. NO EXCEPTIONS. You should submit via Google doc but it must be shared by the date above.

The two articles MUST be drawn from the topic list below, making sure that at least some of the topics are represented.

1) Human population growth
2) Transgenic species
3) Non-native (invasive) species
4) Food production, food safety
5) Fossil fuels (coal, oil, natural gas)
6) Renewable resources (solar, wind, geothermal, hydroelectric, etc.)
7) Nuclear energy
8) Air quality
9) Water quality (surface or groundwater)
10) CO_2 and global warming
11) Recycling or another aspect of waste management (garbage)
12) Nature Conservancy, Sierra Club, World Wildlife Fund, or similar NGO
13) Overfishing, overhunting
14) Deforestation
15) Ozone depletion
16) Legislation or International Treaty dealing with an environmental issue

Have a great summer! Do not hesitate to contact me with questions or concerns.
lmaynard@hhh.k12.ny.us

I am looking forward to working with you!