

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. Below are your 3 preparatory summer assignments.

Assignment #1: Scavenger Hunt

You will complete a scavenger hunt 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 <u>kwatson@hhh.k12.ny.us</u>

Goals

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

Guidelines

1. **CHOOSE AND FIND** 15 of the items on the list below. All items can be found locally, but you are encouraged to explore and be creative!

2. **PROOF** of finding each item is an image clearly showing:

- the item
- yourself
- Andrew the Ape [or, in a pinch, a date-identifying item]

3. Required **DOCUMENTATION** for each image includes:

- item identification
- item location (include a map!)
- the date the item was "collected"
- additional information (see list).

4. Your **PRODUCT** will be a slideshow **OR** a video. Products will be shared in class!

5. You may choose to work with **one partner** to submit a 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.

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 <u>kwatson@hhh.k12.ny.us</u> I check it periodically during the summer.



	Category	Best	Better	Good	Additional Info
1	Hydrosphere	Ocean	Bay	Flowing or standing water	Name of body of water
2	Atmosphere	Cumulus-type cloud	Stratus-type cloud	Cirrus-type cloud	Name of cloud type
3	Energy Flow	Carnivore consuming meat	Herbivore consuming producer	Photosynthesis occurring	Name of 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 between 15- 45 years of age	A human more than 70 years old	Name and age of human
6	Forest	Tree you can't reach more than half way around	Tree you can't reach all the way around	Tree you can reach around	Name of tree species
7	Biodiversity Preserve	National Park	State Park	County or City Park	Name of park
8	Food Crops	Food crop being grown on a farm	Food crop being transported	Food crop being processed or sold	Name of food crop
9	Meat	Animals being raised for food in an animal feeding operation (AFO) -more than 1000 animals	Animals being raised for food on rangeland	Meat being sold	Name of animal
10	Fishing	Commercial fishing	Recreational fishing	Fish being sold	Name of fish
11	Water Pollution	Point source of water pollution	Non-point source of water pollution	Polluted water or solid water pollutant	Type of water pollution
12	Air Pollution	Non-mobile point source emitting pollution	Mobile source emitting pollution	Air pollution without identified source	Type of air pollution
13	Renewable Energy	Solar, wind, geothermal commercial scale	Solar, wind, geothermal residential scale	Renewable powered appliance	Type of renewable energy

14	Fossil Fuels	Processing or refining (mine, well, refinery)	Sale or use of non-gasoline fossil fuel	Gasoline sale	Name of fossil fuel
15	Solid Waste	Example of	Example of	Example of	Potential waste that is
	Disposal	REDUCING	REUSING	RECYCLING	being
		waste	waste	waste	reduced/reused/recycled
16	Transportation	Riding public	Public mass	Private mass	Destination and quality
		mass transit	transit	transit	of ride
17	Politics and	Worker in	Volunteer in	Environmentally	Name and role of person
	Economics	environment	environment-	aware person	
		related	related work		
		profession			
18	Beauty	Non-human	Non-human	Non-human	What is it? Why is it
		thing that is	thing that is	thing that is not	beautiful, (or not)?
		extraordinary	beautiful	beautiful at all	

Assignment #2: Math Self-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.

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 quizzes or tests.

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 (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 300x10⁶ or 3x10⁸
- 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 *****VERY IMPORTANT*****

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

Due: Upon entering class on the first day of school. No exceptions.

Choose 2 articles, published since January 1, 2017, relating to environmental issues, (An <u>issue</u> 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. Our district website has a multitude of resources to use. Go to library and media center tab, and to the virtual reference collection. Explore.

The articles should reflect at least 2 of the topics listed below.

- Human population growth
- Transgenic species
- Non-native (invasive) species
- Food production, food safety
- Fossil fuels (coal, oil, natural gas)
- Renewable resources (solar, wind, geothermal, hydroelectric, etc.)
- Nuclear energy
- Air quality
- Water quality (surface or groundwater)
- CO₂ and global warming
- Recycling or another aspect of waste management (garbage)
- Nature Conservancy, Sierra Club, World Wildlife Fund, or similar NGO
- Overfishing, overhunting
- Deforestation
- Ozone depletion
- Legislation or International Treaty dealing with an environmental issue

Have a great summer! Feel free to contact me with questions or concerns.

kwatson@hhh.k12.ny.us

or text the message @hhhAPES to the number 81010

I'm looking forward to working with all of you!

Mrs. Watson