

## Environmental Systems

Assignment for April 27<sup>th</sup> - May 1<sup>st</sup>

1. Read the notes provided and remember you have the week to get this done.
2. Take the quiz when you have completed your reading.
3. Please take a picture of your work and send to your teacher.

Please contact your assigned teacher with questions regarding your assignment(s):

Coach Nance	<a href="mailto:cnance@mpisd.net">cnance@mpisd.net</a>
Coach Zaldivar	<a href="mailto:dzaldivar@mpisd.net">dzaldivar@mpisd.net</a>
Coach Henderson	<a href="mailto:rskelton@mpisd.net">rskelton@mpisd.net</a>

### Saving Species One at a Time

- When a species is clearly on the verge of extinction, concerned people sometimes make extraordinary efforts to save the last few individuals.
- These people hope that a stable population may be restored someday.
- Methods to preserve individual species often involve keeping and breeding the species in captivity.

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### Captive-Breeding Programs

- Wildlife experts may attempt to restore the population of a species through captive-breeding programs.
- These programs involve breeding species in captivity, with the hopes of reintroducing populations to their natural habitats.
- This type of program has been used successfully with the Californian condor, for example. But the question remains whether or not these restored populations will ever reproduce in the wild.

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### Preserving Genetic Material

- One way to save the essence of a species is by preserving its genetic material.
- Germ plasm is hereditary material (chromosomes and genes) that is usually contained in the protoplasm of germ cells and may be stored as seeds, sperm, eggs, or pure DNA.
- Germ-plasm banks store germ plasm in controlled environments for future use in research or species-recovery efforts.

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### Zoos, Aquariums, Parks, and Gardens

- In some cases, zoos now house the few remaining members of a species and are perhaps the species' last hope for survival.
- Zoos, wildlife parks, aquariums, and botanical gardens are living museums of the world's biodiversity.
- But, these kinds of facilities rarely have enough resources or knowledge to preserve more than a fraction of the world's rare and threatened species.

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### More Study Needed

- Ultimately, saving a few individuals does little to preserve a species as captive species may not reproduce or survive again in the wild.
- Also, small populations are vulnerable to infectious diseases and genetic disorders caused by inbreeding.
- Conservationists hope that these strategies are a last resort to save species.

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### Preserving Habitats and Ecosystems

- The most effective way to save species is to protect their habitats.
- Small plots of land for a single population is usually not enough because a species confined to a small area could be wiped out by a single natural disaster. While other species require a large range to find adequate food.
- Therefore, protecting the habitats of endangered and threatened species often means preserving or managing large areas.

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### Conservation Strategies

- Most conservationists now give priority to protecting entire ecosystems rather than individual species.
- By doing this, we may be able to save most of the species in an ecosystem instead of only the ones that have been identified as endangered.
- The general public has now begun to understand that Earth's biosphere depends on all its connected ecosystems.

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### Conservation Strategies

- While conservationists focus on the hotspots discussed earlier to protect biodiversity worldwide, they also support additional strategies.
- One strategy is to identify areas of native habitat that can be preserved, restored, and linked into large networks.
- Another promising strategy is to promote products that have been harvested with sustainable practices.

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## Biodiversity

Section 3

### More Study Needed

- Conservationists emphasize the urgent need for more serious study of the workings of species and ecosystems.
- Only in recent decades has there been research into basic questions as, How much fragmentation can a particular ecosystem tolerate?
- The answers to questions asked now may be years or decades away, but decisions affecting biodiversity continue to be made based on available information.

## Biodiversity

Section 3

### Legal Protection for Species

- Many nations have laws and regulations designed to prevent the extinction of species, and those in the United States are among the strongest.
- For example, in 1973, the U.S. Congress pass the Endangered Species Act.
- The Endangered Species Act is designed to protect any plant or animal species in danger of extinction.

## Biodiversity

Section 3

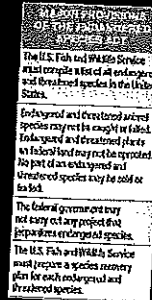
### U.S. Laws

- Under the first provision of the Endangered Species Act, the U.S. Fish and Wildlife Service (USFWS) must compile a list of all endangered and threatened species in the United States. As of 2012, 1,383 species of plants and animals were listed.
- The second main provision of the act protects listed species from human harm.
- The third provision prevents the federal government from carrying out any project that jeopardizes a listed species.

## Biodiversity

Section 3

### U.S. Laws



## Biodiversity

Section 3

### Recovery Plans

- Under the fourth main provision of the Endangered Species Act, the USFWS must prepare a species recovery plan for each listed species. These plans often propose to protect or restore habitat for each species.
- However, attempts to restrict human uses of land can be controversial. Real-estate developers may be prohibited from building in certain areas, and people may lose income and may object when their interests are placed below those of another species.

## Biodiversity

Section 3

### Habitat Conservation Plans

- Battles between environmentalists and developers are widely publicized, and in most cases, compromises are eventually worked out. One form of compromise is a habitat conservation plan.
- A habitat conservation plan is a land-use plan that attempts to protect threatened or endangered species across a given area by allowing some tradeoffs between harm to the species and additional conservation commitments among cooperating parties.

## Biodiversity

Section 3

### International Cooperation

- At the global level, the International Union for the Conservation of Nature and Natural Resources (IUCN) facilitates efforts to protect species and habitats.
- The IUCN publishes *Red Lists* of species in danger of extinction around the world, advises governments on ways to manage their natural resources, and works with groups like the World Wildlife Fund to sponsor projects such as attempting to stop poaching in Uganda.

## Biodiversity

Section 3

### International Trade and Poaching

- One product of the IUCN has been an international treaty called CITES (the Convention on International Trade in Endangered Species).
- The CITES treaty was the first effective effort to stop the slaughter of African elephants being killed by poachers who would then sell the ivory tusks.
- In 1989, the members of CITES proposed a total worldwide ban on all sales, imports, and exports of ivory, hoping to put a stop the problem.

Biodiversity Section 3

### International Trade and Poaching

- Some people worried that making ivory illegal might increase the rate of poaching instead of decrease it.
- They argued that illegal ivory, like illegal drugs, might sell for a higher price.
- But after the ban was enacted, the price of ivory dropped, and elephant poaching declined dramatically.

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Biodiversity Section 3

### The Biodiversity Treaty

- One of the most ambitious efforts to tackle environmental issues on a worldwide scale was the United Nations Conference on Environment and Development, also known as the first *Earth Summit*. An important result of the Earth Summit was the Biodiversity Treaty.
- The **Biodiversity Treaty** is an international agreement aimed at strengthening national control and preservation of biological resources.

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Biodiversity Section 3

### The Biodiversity Treaty

- The treaty's goal is to preserve biodiversity and ensure the sustainable and fair use of genetic resources in all countries.
- However, the treaty took several years to be adopted into law by the U.S. government.
- Some political groups objected to the treaty, especially to the suggestion that economic and trade agreements should take into account any impacts on biodiversity that might result from the agreements.

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Biodiversity Section 3

### Private Conservation Efforts

- Many private organizations work to protect species worldwide, often more effectively than government agencies.
- For example, the World Wildlife Fund encourages the sustainable use of resources and supports wildlife protection. The Nature Conservancy has helped purchase millions of hectares of habitat preserves in over 30 countries. Conservation International helps identify biodiversity hotspots. And, Greenpeace International organizes direct and sometimes confrontational actions.

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Biodiversity Section 3

### Balancing Human Needs

- Attempts to protect species often come into conflict with the interests of the world's human inhabitants.
- An endangered species might represent a source of food or income. Or a given species may not seem valuable to those who do not understand the species' role in an ecosystem.
- Many conservationists feel that an important part of protecting species is making the value of biodiversity understood by more people.

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Assessment

# Quiz

## Section 3: The Future of Biodiversity

### MATCHING

Write the letter of the term or phrase that best matches the description.

- |   |                         |
|---|-------------------------|
| _____ 1. ensures the sustainable and fair use of genetic resources in all countries | a. germ-plasm banks     |
| _____ 2. method used to attempt to restore the population of a species in the wild  | b. legal protection     |
| _____ 3. preserving genetic material (seeds, DNA, and sex cells)                    | c. Biodiversity Treaty  |
| _____ 4. protecting critical habitats and ecosystems                                | d. captive breeding     |
| _____ 5. laws and regulations to protect endangered species                         | e. habitat conservation |

### MULTIPLE CHOICE

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

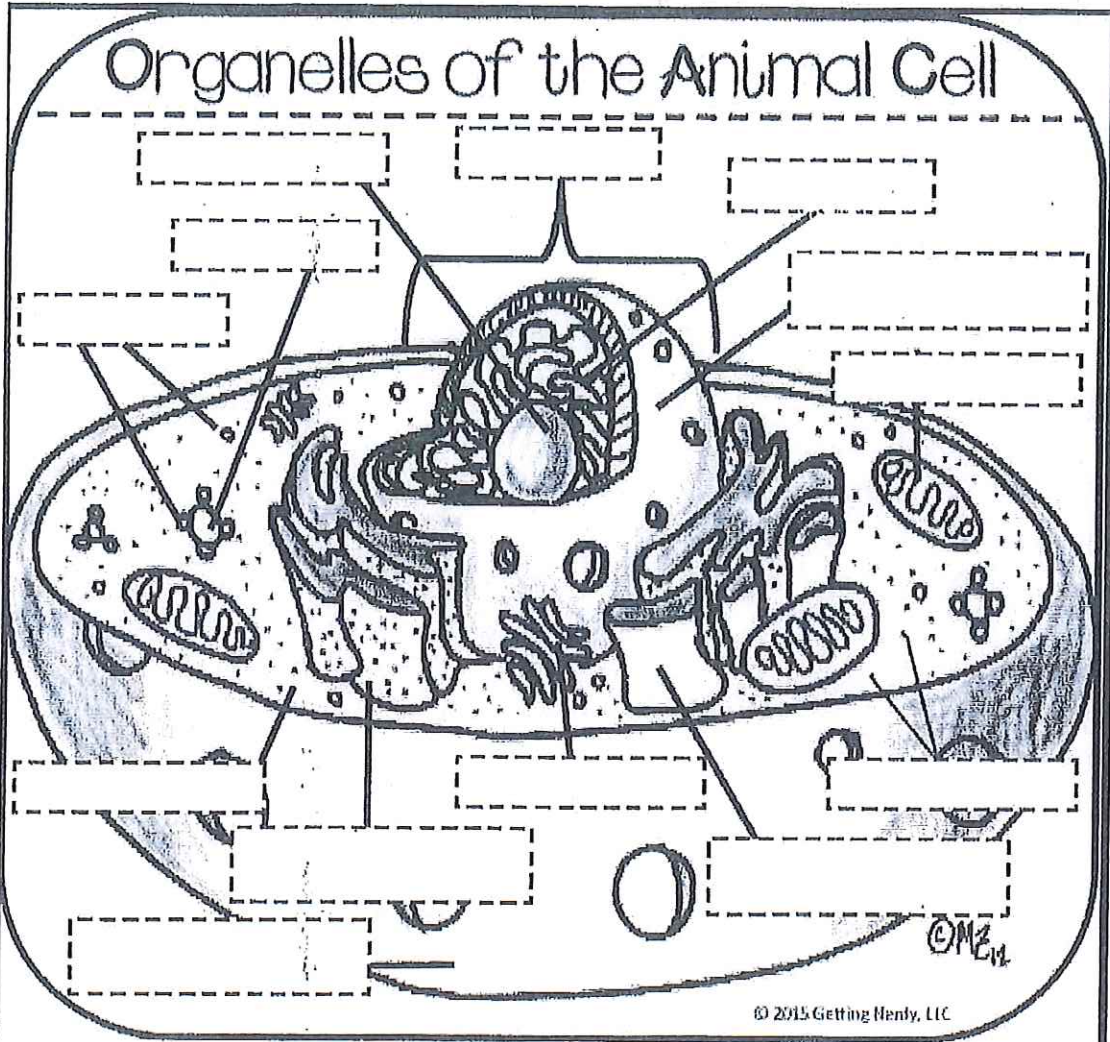
- \_\_\_\_\_ 6. Germ plasm is
- a. an infection caused by germs.
  - b. the genetic material of a species.
  - c. a conservation strategy.
  - d. an endemic plant of California.
- \_\_\_\_\_ 7. Which of these is *not* a major provision of the Endangered Species Act?
- a. Products of endangered species may not be sold or traded.
  - b. Countries that violate its provisions are placed under a trade embargo.
  - c. Lists of threatened or endangered species must be prepared.
  - d. A species recovery plan must be created.
- \_\_\_\_\_ 8. The California condor is a species that
- a. has a limited range of flight and will become extinct.
  - b. eats fruits and garden vegetables only.
  - c. has been bred in captivity and returned to the wild.
  - d. is now extinct.
- \_\_\_\_\_ 9. Which of the following is a useful strategy for preserving habitats?
- a. grow crops among native plants
  - b. set aside small plots of land
  - c. prohibit land development
  - d. both (a) and (c)
- \_\_\_\_\_ 10. Cooperative efforts to prevent extinction include the
- a. Biodiversity Treaty and Earth Summit.
  - b. worldwide ban on trade in ivory.
  - c. All of the above
  - d. None of the above



15101094 WEEK 5 4/21

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

- Go to [www.cellsalive.com](http://www.cellsalive.com)
- Click on "animal cell" on the right.
- Start the animation to label the cell below and write the functions on the previous page.
- Color each cell part you label a different color and color the matching name the same color as the part.
- Cut out the template and glue it on the previous page at the top only.



**Directions:** Cut out the cell organelle parts below and glue them onto the INB sheet to the right. Cut out the INB sheet.

- Nucleus
- Cell Membrane
- Cytoplasm
- Ribosome
- Rough Endoplasmic Reticulum
- Lysosome
- Smooth Endoplasmic Reticulum
- Mitochondria
- Nucleolus
- Nuclear Membrane
- Golgi Bodies
- Chromatin
- Vacuole

# Concentration of Solutions

**T**he concentration of a solution is a measure of the amount of solute in a given amount of solvent or solution. Some medications are solutions of drugs—a one-teaspoon dose at the correct concentration might cure the patient, while the same dose in the wrong concentration might kill the patient.

In this section, we introduce two different ways of expressing the concentrations of solutions: molarity and molality.

Sometimes solutions are referred to as “dilute” or “concentrated,” but these are not very definite terms. “Dilute” just means that there is a relatively small amount of solute in a solvent. “Concentrated,” on the other hand, means that there is a relatively large amount of solute in a solvent. Note that these terms are unrelated to the degree to which a solution is saturated. A saturated solution of a substance that is not very soluble might be very dilute.

## Molarity

**Molarity** is the number of moles of solute in one liter of solution. To find the molarity of a solution, you must know the molar mass of the solute. For example, a “one-molar” solution of sodium hydroxide, NaOH, contains one mole of NaOH in every liter of solution. The symbol for molarity is M, and the concentration of a one-molar solution of sodium hydroxide is written as 1 M NaOH.

One mole of NaOH has a mass of 40.0 g. If this quantity of NaOH is dissolved in enough water to make exactly 1.00 L of solution, the solution is a 1 M solution. If 20.0 g of NaOH, which is 0.500 mol, is dissolved in enough water to make 1.00 L of solution, a 0.500 M NaOH solution is produced. This relationship between molarity, moles, and volume may be expressed in the following ways.

$$\begin{aligned}\text{molarity (M)} &= \frac{\text{amount of solute (mol)}}{\text{volume of solution (L)}} \\ &= \frac{0.500 \text{ mol NaOH}}{1.00 \text{ L}} \\ &= 0.500 \text{ M NaOH}\end{aligned}$$

**SAMPLE PROBLEM 13-1**

You have 3.50 L of solution that contains 90.0 g of sodium chloride, NaCl.  
What is the molarity of that solution?

**SOLUTION**

- 1 *ANALYZE* Given: solute mass = 90.0 g NaCl  
solution volume = 3.50 L  
Unknown: molarity of NaCl solution

- 2 *PLAN* Molarity is the number of moles of solute per liter of solution. The solute is described in the problem by mass, not the amount in moles. You need one conversion (grams to moles of solute) using the inverted molar mass of NaCl to arrive at your answer.

grams of solute  $\longrightarrow$  number of moles of solute  $\longrightarrow$  molarity

$$\text{g NaCl} \times \frac{1 \text{ mol NaCl}}{58.44 \text{ g NaCl}} = \text{mol NaCl}$$

$$\frac{\text{amount of solute (mol)}}{V \text{ solution (L)}} = \text{molarity of solution (M)}$$

- 3 *COMPUTE* You will need the molar mass of NaCl.  
NaCl = 58.44 g/mol

$$90.0 \text{ g NaCl} \times \frac{1 \text{ mol NaCl}}{58.44 \text{ g NaCl}} = 1.54 \text{ mol NaCl}$$

$$\frac{1.54 \text{ mol NaCl}}{3.50 \text{ L of solution}} = 0.440 \text{ M NaCl}$$

- 4 *EVALUATE* Because each factor involved is limited to three significant digits, the answer should have three significant digits, which it does. The units cancel correctly to give the desired moles of solute per liter of solution, which is molarity.

1. What is the molarity of a solution composed of 5.85 g of potassium iodide, KI, dissolved in enough water to make 0.125 L of solution?
  2. How many moles of  $\text{H}_2\text{SO}_4$  are present in 0.500 L of a 0.150 M  $\text{H}_2\text{SO}_4$  solution?
  3. What volume of 3.00 M NaCl is needed for a reaction that requires 146.3 g of NaCl?
- 
17. How many moles of NaOH are contained in 65.0 mL of a 2.20 M solution of NaOH in  $\text{H}_2\text{O}$ ? (Hint: See Sample Problem 13-2.)
  18. A solution is made by dissolving 26.42 g of  $(\text{NH}_4)_2\text{SO}_4$  in enough  $\text{H}_2\text{O}$  to make 50.00 mL of solution.

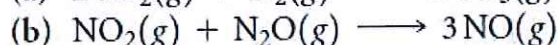
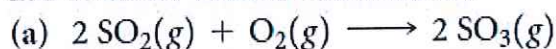


AP Chemistry (Mr. Trickey): See Schoology for textbook information and links.

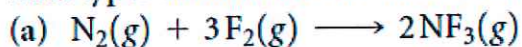
Dual credit students need to get their assignment from Blackboard

19.57 For a certain chemical reaction,  $\Delta H^\circ = -35.4 \text{ kJ}$  and  $\Delta S^\circ = -85.5 \text{ J/K}$ . (a) Is the reaction exothermic or endothermic? (b) Does the reaction lead to an increase or decrease in the randomness or disorder of the system? (c) Calculate  $\Delta G^\circ$  for the reaction at 298 K. (d) Is the reaction spontaneous at 298 K under standard conditions?

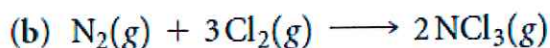
19.61 Using data from Appendix C, calculate  $\Delta G^\circ$  for the following reactions. Indicate whether each reaction is spontaneous at 298 K under standard conditions.



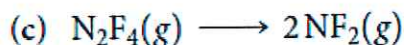
19.65 Classify each of the following reactions as one of the four possible types summarized in Table 19.3:



$$\Delta H^\circ = -249 \text{ kJ}; \Delta S^\circ = -278 \text{ J/K}$$



$$\Delta H^\circ = 460 \text{ kJ}; \Delta S^\circ = -275 \text{ J/K}$$



$$\Delta H^\circ = 85 \text{ kJ}; \Delta S^\circ = 198 \text{ J/K}$$

19.66 From the values given for  $\Delta H^\circ$  and  $\Delta S^\circ$ , calculate  $\Delta G^\circ$  for each of the following reactions at 298 K. If the reaction is not spontaneous under standard conditions at 298 K, at what temperature (if any) would the reaction become spontaneous?



$$\Delta H^\circ = -844 \text{ kJ}; \Delta S^\circ = -165 \text{ J/K}$$



$$\Delta H^\circ = 572 \text{ kJ}; \Delta S^\circ = 179 \text{ J/K}$$

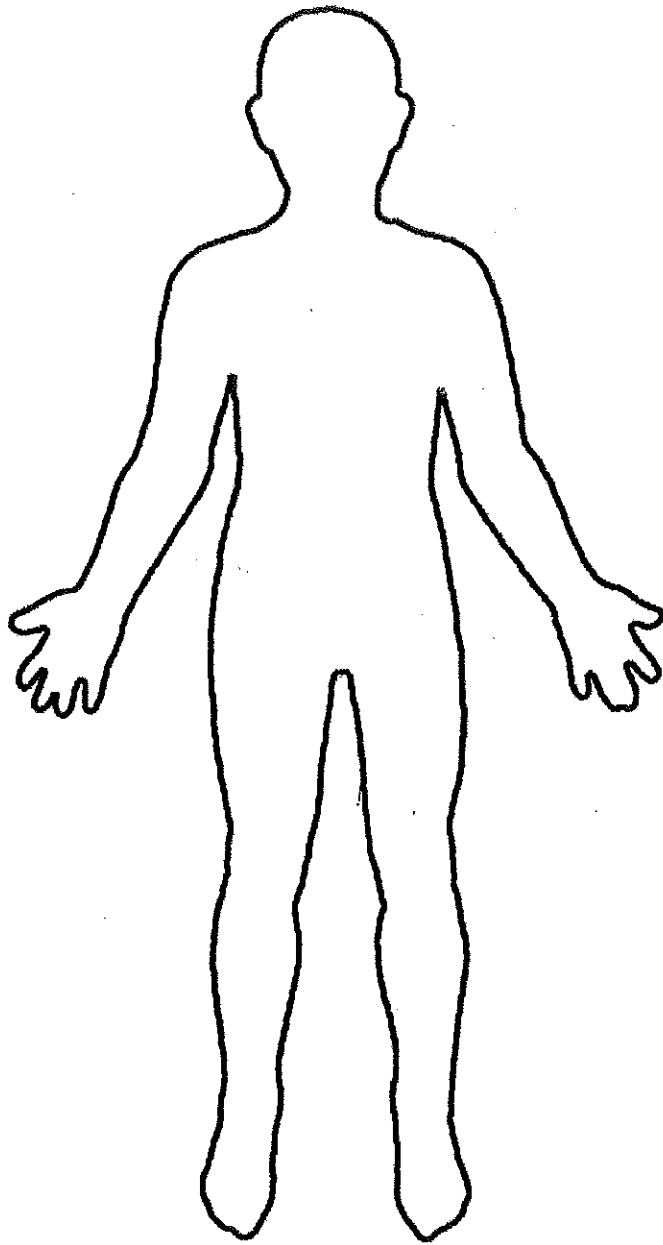
19.89 For each of the following processes, indicate whether the signs of  $\Delta S$  and  $\Delta H$  are expected to be positive, negative, or about zero. (a) A solid sublimates. (b) The temperature of a sample of  $\text{Co}(\text{s})$  is lowered from  $60^\circ\text{C}$  to  $25^\circ\text{C}$ . (c) Ethyl alcohol evaporates from a beaker. (d) A diatomic molecule dissociates into atoms. (e) A piece of charcoal is combusted to form  $\text{CO}_2(\text{g})$  and  $\text{H}_2\text{O}(\text{g})$ .

Assignment for AP Biology for Weeks of April 27<sup>th</sup> to May 10th, 2020

You are to complete 11 Body Systems. The Body Template is for drawing the particular organs associated with the Body System. Be sure to label and color the organs involved. On another sheet of paper (or in you Composition Book) Describe the functions of the Body System. For example: The Digestive System has the mouth, esophagus, liver, stomach, pancreas, gall bladder, small intestine, large intestine, and rectum. I will be posting a picture of this on Schoology. Again if you have not signed in to Schoology, the code is 6FNXS-3NJCZ

The 11 Body Systems are:

Respiratory, Digestive, Circulatory, Endocrine, Integumentary, Skeletal, Muscular, Nervous, Reproductive, Immune and Urinary.



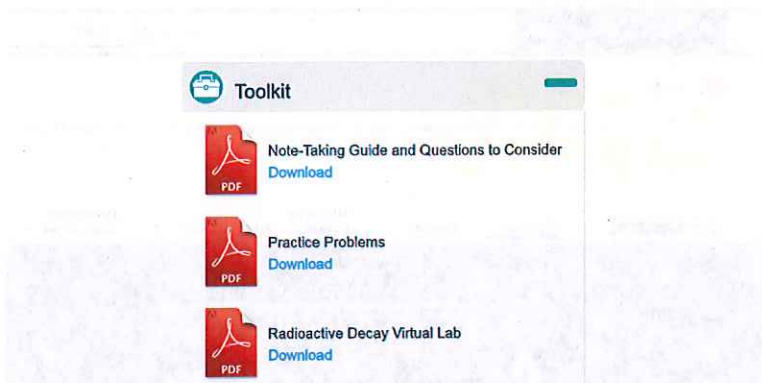
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Pre-AP Physics (L. Russell)  
Assignment for Weeks April 27 – May 8

These materials are on the Georgia Public Broadcasting website. Watch the internet video about radioactivity using

<https://www.gpb.org/physics-in-motion/unit-7/radioactive-decay>

These files are found on the same web page as the video above. Click on the “+” beside the word Toolkit in order to access them. Complete the Note Taking Guide as you watch the video, complete the Practice Problems, then perform the Radioactive Decay Virtual Lab. The virtual lab is available on the “phet” website shown in the lab writeup.



These materials are on the Georgia Public Broadcasting website. Watch the internet video about nuclear fission

<https://www.gpb.org/physics-in-motion/unit-7/fission>

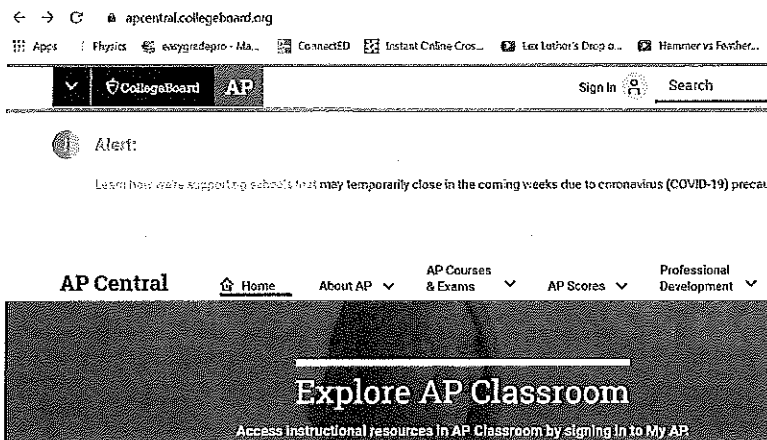
These files are found on the same web page as the video above. Click on the “+” beside the word Toolkit in order to access them. Complete the Note Taking Guide as you watch the video, complete the Practice Problems, then perform the Simulating Nuclear Fission Lab. The virtual lab is available on the “phet” website shown in the lab writeup.





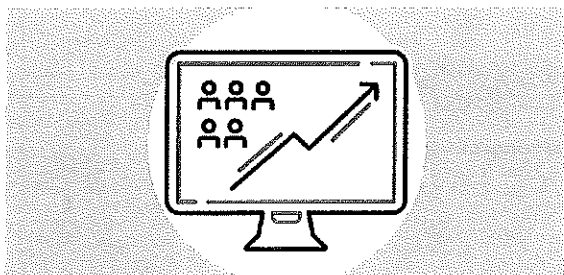
AP Physics C (L. Russell)  
Assignment for Week April 27– May 8

Go to [apcentral.collegeboard.org](http://apcentral.collegeboard.org) and click on the “Learn how we’re supporting schools” tab that you see in the screenshot below. Then click on the “AP Online Course Schedule” tab on the next screen. This gives you access to a list of video lessons that the College Board is providing now for AP students. The AP exam will not cover oscillations or gravitation this year due to the shortened schedule. I posted an old AP exam on Schoology in the folder “AP Review Materials”. Here is the access code for our Schoology course if you need it. **J4ZN-CXRF-7RFF9** You can take a picture of your answers with your phone and submit using Schoology and I’ll check it for you.



## Resources for Remote Teaching

To support communities that experience substantial disruption or school closures, we're providing several ways for teachers to help students prepare for exam day.



### AP Classroom Resources and Tools

Continue to provide remote instruction with AP Classroom. You can assign Topic Questions and use Personal Progress Checks to evaluate where students may want to focus their reviews for exam prep.

[Get Tips](#)



### AP Online Course Schedule

Get more details, including the schedule, for AP online classes and review sessions. These mobile-friendly classes, designed to be used alongside your work, are recorded and available on demand.

[Learn More](#)