

# AP Biology Summer Assignment

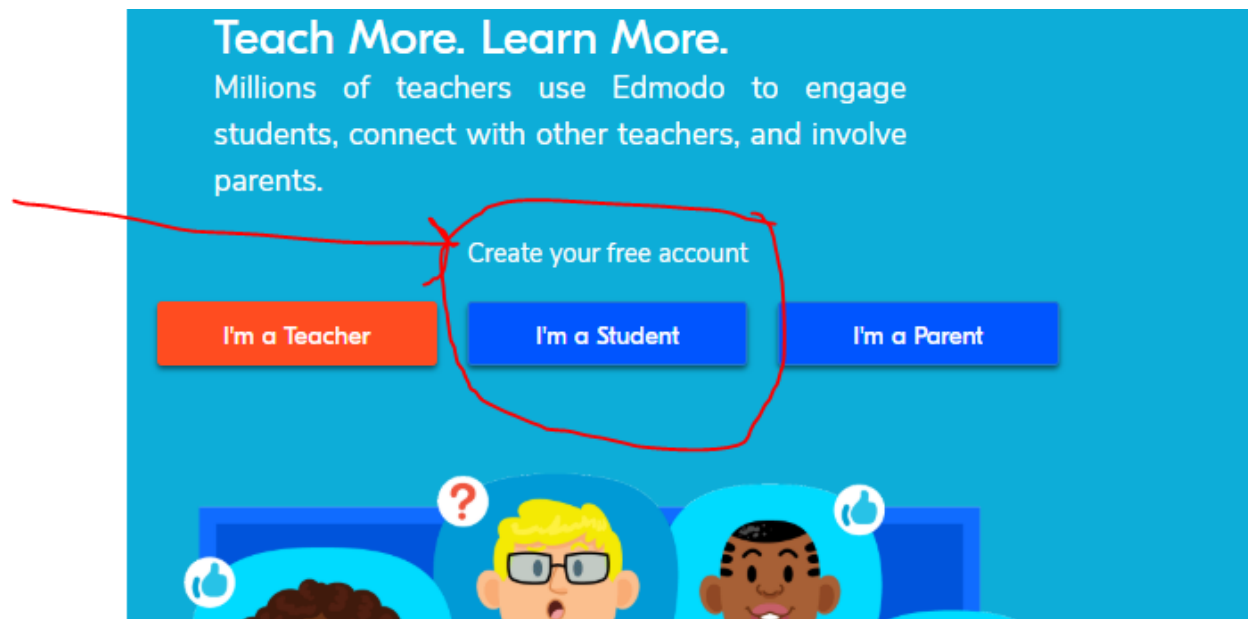
Mrs. Slomnicki

You will be accessing your summer assignment through a website called [www.edmodo.com](http://www.edmodo.com). **I encourage you to set up a profile immediately.** You will also be using this website throughout the year to access learning videos, at-home quizzes, and other assignments.

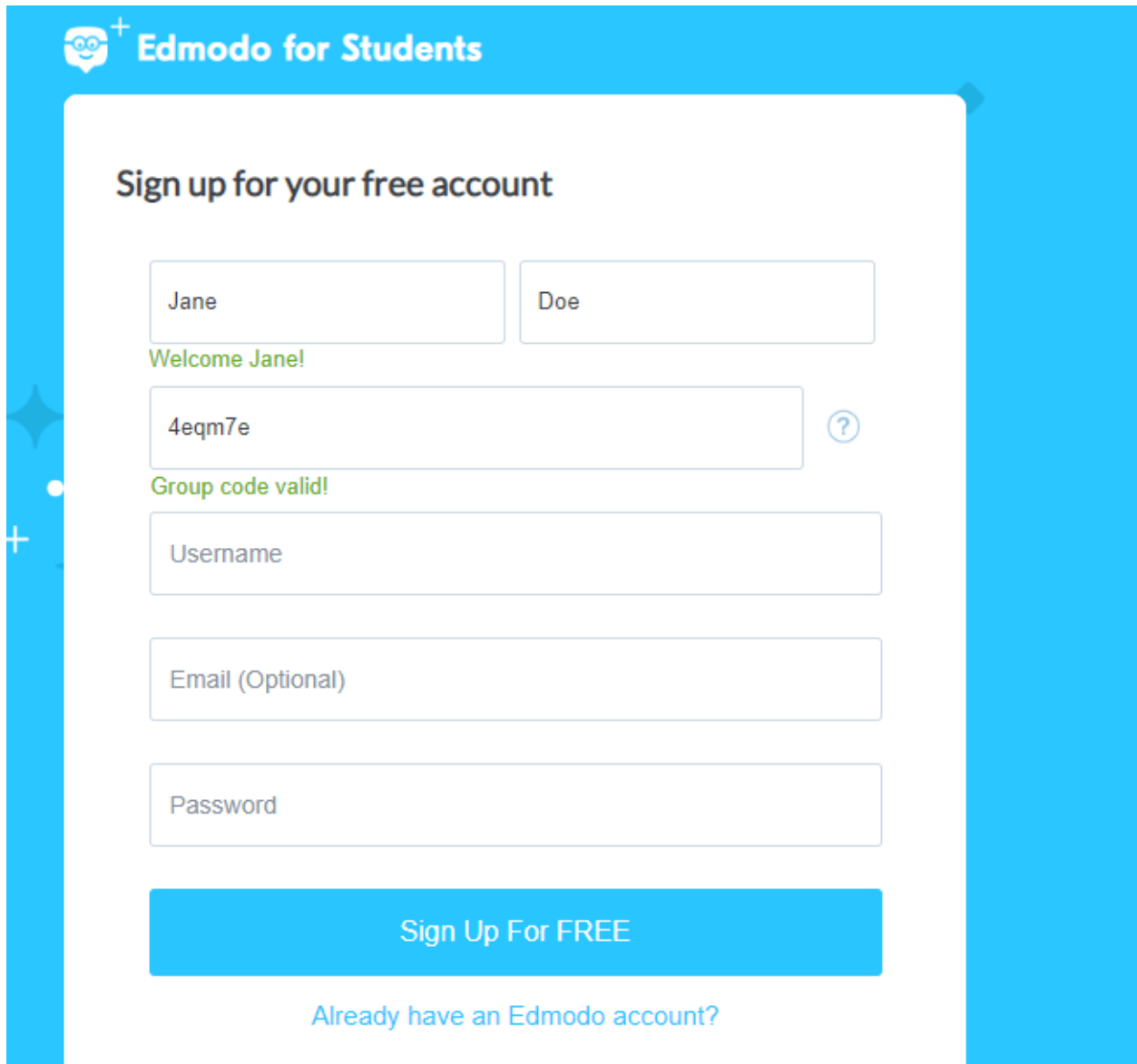
Here's how to sign up:

- Visit [Edmodo.com](http://Edmodo.com). Click on "Join Edmodo for Free".

Then Click on the "I'm a Student" button under "Create your Free Account"



- Create an account using your name. Create a username and password. Use your Ma'ayanot email address for the email address area so you will receive notifications. Under group code, put **4eqm7e**.



The image shows a sign-up form for Edmodo for Students. The form is set against a blue background with the Edmodo logo and the text "Edmodo for Students" at the top left. The main heading is "Sign up for your free account". The form consists of several input fields: a first name field containing "Jane", a last name field containing "Doe", a group code field containing "4eqm7e" with a help icon, a username field, an email field labeled "Email (Optional)", and a password field. A green message "Welcome Jane!" is displayed below the name fields, and another green message "Group code valid!" is displayed below the group code field. At the bottom of the form is a large blue button labeled "Sign Up For FREE". Below the button is a link that says "Already have an Edmodo account?".

**Edmodo for Students**

### Sign up for your free account

Jane Doe

Welcome Jane!

4eqm7e ?

Group code valid!

Username

Email (Optional)

Password


**Sign Up For FREE**

[Already have an Edmodo account?](#)

You will be taken to this screen- you can x it out without filling it out.

**Account Safety** ×

Provide your Parent's contact information so that we can notify them that you are using Edmodo. When you do, you will be able to unlock all Edmodo features.



Mobile phone

Enter your Parent's mobile number

Email

Enter your Parent's email address

By clicking on "Notify", I confirm that I have permission to send this person text messages and emails.

**Notify**

Your summer assignment is (or, will be) uploaded onto Edmodo. There will be two parts:

- 1- A review of graphing skills. This will be accomplished through portions of actual free response questions that will be assigned through the Edmodo page.
- 2- The first unit that we cover is Ecology, and your summer assignment will require you to learn sections of this topic on your own. I posted videos on the Ecology information on Edmodo along with accompanying note packets for you to print out. You must take notes in the note packets while watching these videos. In addition, there is a short quiz posted on edmodo for each

video. I will only briefly review the contents of these videos in class upon our return, I will not re-teach the material. There will be additional Ecology material that I will teach you in class.

My recommendation would be to complete the graphing packet earlier, and save the ecology videos closer to when you return to school- I want to make sure the material is fresh in your head. (Don't leave them all until the night before school starts, though- you will be overwhelmed!).

There is no AP Biology textbook that you will be given.

Don't hesitate to be in touch if you have any questions. Wishing you all a relaxing and enjoyable summer. I'm looking forward to teaching you next year, and hope you are looking forward to working hard, being challenged, and learning a great deal of exciting material!

Mrs. Slomnicki

## What's the Format of the AP Biology Exam?

The AP Biology Exam is 3 hours long. Like other AP tests, **it has two parts, a multiple choice section and a free response section** (each of which is worth 50 percent of your score), although these sections are divided further into different types of questions.

**The multiple choice section has 60 multiple choice questions.** This section is one hour and 30 minutes total. Each multiple choice question has four choices.

**The free response section has six questions total:** four short response questions and two long response questions. This section takes up the remaining hour and thirty minutes of time. There is a 10 minute reading period at the beginning of the free response section.

## What Do Questions Look Like on the AP Biology Exam?

Here's an example of a multiple choice question you might see on the AP Biology exam:

An experiment to measure the rate of respiration in crickets and mice at 10°C and 25°C was performed using a respirometer, an apparatus that measures changes in gas volume. Respiration was measured in mL of O<sub>2</sub> consumed per gram of organism over several five-minute trials, and the following data were obtained.

Organism	Temperature (°C)	Average respiration (mL O <sub>2</sub> /g/min)
Mouse	10	0.0518
Mouse	25	0.0321
Cricket	10	0.0013
Cricket	25	0.0038

8. During aerobic cellular respiration, oxygen gas is consumed at the same rate as carbon dioxide gas is produced. In order to provide accurate volumetric measurements of oxygen gas consumption, the experimental setup should include which of the following?
- (A) A substance that removes carbon dioxide gas
  - (B) A plant to produce oxygen
  - (C) A glucose reserve
  - (D) A valve to release excess water

**The answer is A** because the total volume of gas wouldn't change (and oxygen consumption would be unmeasurable) unless the carbon dioxide produced by the organisms was removed from the environment.

Here's an example of a short free response question from the 2013 exam:

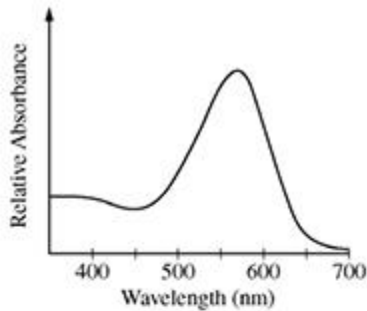
3. Fossils of lobe-finned fishes, which are ancestors of amphibians, are found in rocks that are at least 380 million years old. Fossils of the oldest amphibian-like vertebrate animals with true legs and lungs are found in rocks that are approximately 363 million years old.

Three samples of rocks are available that might contain fossils of a transitional species between lobe-finned fishes and amphibians: one rock sample that is 350 million years old, one that is 370 million years old, and one that is 390 million years old.

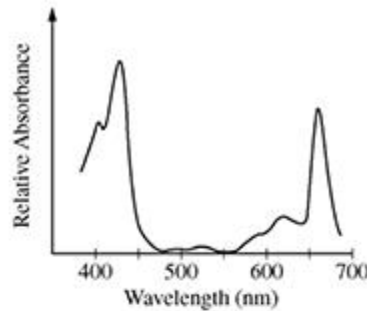
- (a) **Select** the most appropriate sample of rocks in which to search for a transitional species between lobe-finned fishes and amphibians. **Justify** your selection.
- (b) **Describe** TWO pieces of evidence provided by fossils of a transitional species that would support a hypothesis that amphibians evolved from lobe-finned fishes.

This question requires an understanding of how evolution shapes the formation of new species. To get the correct answer, **you have to know the facts about evolution, but you also need to be able to apply that knowledge to make inferences about this specific scenario.** This is why a deeper understanding of the main topics in AP Biology is so critical - the difference between knowing the facts about something and comprehending how it works can be surprisingly large.

Here's an example of a long free response question:



Graph I



Graph II

Color	Wavelength (nm)
Violet	380–450
Blue	450–475
Cyan	475–495
Green	495–570
Yellow	570–590
Orange	590–620
Red	620–750

2. An absorption spectrum indicates the relative amount of light absorbed across a range of wavelengths. The graphs above represent the absorption spectra of individual pigments isolated from two different organisms. One of the pigments is chlorophyll *a*, commonly found in green plants. The other pigment is bacteriorhodopsin, commonly found in purple photosynthetic bacteria. The table above shows the approximate ranges of wavelengths of different colors in the visible light spectrum.
- Identify** the pigment (chlorophyll *a* or bacteriorhodopsin) used to generate the absorption spectrum in each of the graphs above. **Explain** and **justify** your answer.
  - In an experiment, identical organisms containing the pigment from Graph II as the predominant light-capturing pigment are separated into three groups. The organisms in each group are illuminated with light of a single wavelength (650 nm for the first group, 550 nm for the second group, and 430 nm for the third group). The three light sources are of equal intensity, and all organisms are illuminated for equal lengths of time. **Predict** the relative rate of photosynthesis in each of the three groups. **Justify** your predictions.
  - Bacteriorhodopsin has been found in aquatic organisms whose ancestors existed before the ancestors of plants evolved in the same environment. **Propose** a possible evolutionary history of plants that could have resulted in a predominant photosynthetic system that uses only some of the colors of the visible light spectrum.

This question is also heavier on analysis than straight up biology knowledge. You need to be able to read and understand the graphs and table so you can use them to inform your answer to the question. **Once again, an understanding of evolution and the ability to apply that knowledge to a specific scenario is critical.**