Ap biology formula sheet 2020

If you're going to take the AP Biology exam, we have some good news! During the AP test, you get access to a formula sheet full of useful equations and definitions. However, you need to have a good sense of what's on the AP Bio formula sheet and how to use it for it to be useful to you during the test. That's where we come in! In this guide, we walk you through everything you need to know about the AP Bio review sheet. We'll explain each equation and definition it contains, show you what the formula sheet looks like, go over important information it doesn't contain but which you should know, and give you tips on how to get the most out of it. What's on AP Bio Formula Sheet? AP Biology formula sheets are actually two pages filled with formulas and definitions that can help you during the AP exam. The formula sheet will be at the beginning of both the multiple-choice and free answer sections of the exam, so you get access to it for the entire AP test. This means that you do not have to memorize any of the information that the formula sheet contains! So what's on this AP Bio reference sheet? Check this out, as well as the screenshots below (click on each image to enlarge). The AP Biology equation sheet covers six main subjects. Below the images we will list what equations and information each topic contains on the formula sheet. Statistical Analysis and Probability Rate and Growth Surface and Volume Water Potential Dilution Gibbs Free Energy Statistical Analysis and Probability Formulas Average Standard Deviation Standard Error of mean (you won't actually calculate using this equation on exam, it's only for reference) Chi-square Hardy-Weinberg equations (2) Information Chi-squared table Laws of probability (2) Metric prefix (8) Degrees of freedom explanation Definitions for : Speed and Growth Formulas Speed Population Growth Exponential Growth Logistic Growth Temperature Coefficient Primary Productivity Calculation Surface Area and Volume Formulas Volume of a Sphere Volume of a Rectangular Solid Volume of a Right Cylinder Surface of a Sphere Surface Area of a Cube Surface Area of a Rectangular Solid Water Potential Formulas Water Potential Solute Potential of a Solution Information Explanation of Water Potential in an Open Container Diluting Formulas Gibbs Free Energy Formulas Miscellaneous Formulas Formulas PH (you will not be required to be required to perform calculations with this equation on the test) In all, there are 23 formulas on the AP bio formula sheet. But as you can see by looking at the formula sheet, it contains much more information than just 23 formulas. This is because the formula sheet contains several keys that identify the different symbols used in formulas. This is extremely useful information to have because it provides more context to the formulas. For example, while the water potential section of the formula sheet contains two formulas, it has a key that explains symbols of pressure potential, solution potential, ionization constant, molar concentration, pressure constant, and temperature in Kelvin. When you look at an equation that, it says for Gibbs free energy, even if you know (or can look at the formula sheet) that the formula is ΔG = ΔH - TΔS, it doesn't mean much if you don't know what each symbol stands for. So in addition to giving you formulas, AP Biology equation sheets also give you the information needed to use these equations more easily. What's not on the AP Bio Formula Sheet that you need to know for exams? AP Biology reference sheets do an excellent job of covering the formulas you need to know for exams, but there are some other important pieces of information related to the formulas that will be helpful for you to have memorized. Population curves There are several equations about population growth and change on the AP Biology equation sheet, but you should also know what different population curves look like. There are two main things to know: Exponential Growth (J-Curve) Exponential Growth is when a population's per capita growth rate remains the same regardless of population size that causes the population to grow faster as it gets bigger. This causes population growth to take the form of a J when graphed. Eventually, this type of rapid population growth will be stopped by a limiting factor in the environment, such as lack of food or space. Logistic Growth (S-curve) Populations that show logistic growth have their per capita growth shrinking as the population gets closer to carrying capacity(k), which is the maximum population size possible in the environment. The population levels out when it reaches carrying capacity, due to limits somewhere, such as food, shelter or space. pH Rules There is a solitary pH formula on the AP Bio reference sheet, but pH is an important topic, and there are several other formulas and rules related to it that you should know. Here are three useful pH formulas: Converting between [H+] and pH: pH=-log[H+] (this equation included on the formula sheet) To convert between [OH-] and pOH: pOH=-log[OH-] For any aqueous solution of 25 C: pH +pOH=14 It's unlikely that you'll actually need to do calculations using these formulas, but they're important to know so you can understand how pH , pOH, [H+], and [OH-], relate to each other. For example, by looking at the first equation above and putting in some sample numbers, you can see that as [H+] gets smaller, pH goes up, and as [H+] gets bigger, pH goes down. You may also be asked if a solution is sour, basic, or neutral. Here are the rules for it: pH of less than 7 means it's sour pH at exactly 7 means it's neutral pH of greater than 7 means it's basic tips to get the most out of ap bio formula sheet you can see, AP Biology equation sheets can be very useful during the exam because it saves you time to memorize about two dozen equations. In this section, we discuss three tips to help you get the most out of it. #1: Review It, but don't memorize it Some students think that, because they will have AP Bio formula sheets with them on exam day, they don't have to worry about it in advance. But you don't want to waste precious time during your AP exam hunt through formulas and trying to figure out which one will be most useful to you. This means that you need to do some review of the formula sheet long before the test. You should aim to have a general idea of what is included on the formula sheet, as well as where the different equations are located. Then, during an exam, you can find the specific formula you are looking for quickly. #2: Know how to use each formula AP Bio reference sheet contains 23 formulas, and you should know how each of them works before the test day. College Board is not one to include irrelevant information about formula sheets, so if a formula is included on the sheet, that means there's a solid chance you'll have to use it on the sample. Although you will not use all formulas on the test day, you should know how they all work. You don't want to spend your degree trying to learn how to use, gibbs says free energy formula and hope you got it right! Well before exam day, be sure to go through each formula on the sheet and make sure you understand it and know how to use it. If you are struggling with one or more formulas, find where it is discussed in your textbook, or ask your teacher for help. #3: Taking practice tests with Formula Sheet Answering practice questions and taking practice tests using the AP Bio formula sheet is also the key to doing well on exams. You should take multiple AP Biology practice tests before the actual exam, and for each of them you should use the official formula sheet. Your teacher will also likely give you a copy of the formula sheet for your in-class exams, so you can get some practice in it as well. If you need help finding practice tests, check out our guide specifically on where to find the best AP Biology practice questions and tests. What's next? Is AP Biology particularly challenging compared to other ApS? Read this article for a detailed discussion on the severity of the course and exam. Want some more guidance preparing for the AP Biology exam? We have created the absolute best AP Biology study guide for you to use, and it has everything you need to ace the test. Itching to get started with AP Bio prep right away? We cover cell theory, enzymes, cell structures (endoplasmic reticellt and cell membranes), homologous and analog structures and the photosynthesis equation with subject-specific guides. Want to improve your SAT score by 160 points or your ACT with 4 points? We have written a guide for each test about the 5 strategies you need to use to have a chance to improve your score. Download it for free now: written by Hi, I'm Caroline Koffke! I am an AP Biology teacher from Chicago, IL and streamer at Fiveable. This year's exam is different than we expected, but I'm here to help. I've put together this study guide to keep you on track while studying from home. You can follow this guide on your own with a free Fiveable account! I will also join a group of students living on Mondays @ 8am ET during cram sessions. Pick up your cram pass to join us. Format for the new examThis year, AP Biology will look different than you expected. Since we are all quarantined due to COVID-19, the College Board has decided to update the format and content of the test to fit an online test format. You have 45 minutes to graduate online and it will only cover units 1-6. If you've already studied content from drive 7 or 8 don't rush! It's all worth knowing. These units are on the exam. Click on the device to see the study guide!1 - Life2 - Cell Structure and Function3 - Cellular Energy Source - Cell Communication and Cell Cycle5 - Heredity6 - Gene Expression & RegulationThese units will not be on exam:7 - Natural Selection 8 - EcologyAs on March 20, we know that the test will only contain free-answer questions and no multiple choice questions. How yet know exactly what this will look like. What will be on the test? Two FRQsQ1 = 25 minutes and will be 65% of your scoreSame type of response as FRQ 1You get a scenario + data table and need to fill in four parts:Part A: Describe and explain biological concepts, processes, or models, in applied contextPart B: Identify and justify experimental design proceduresPart C: Analyze dataPart D: Make and justify predictionsQ2 = 15 minutes and will be 35% of your scoreSam type of response as FRQ 4You get a scenario of a biological phenomenon with a disturbance and need to complete four parts:Part A: Describe biological concepts or processes, in Context Part B: Explain biological concepts or processes, in context Part C: Anticipating the causes or effects of a change in a biological systemPart D: Supporting or justifying a claim with reasoning or evidenceWhen is the exam and how do I take it? May 18 @ 2p eastern! Wherever you are in the world, now is the time to take the test. If you have not been approved for the make-up date in June, but only your school can request it. You take the test online. There will be a practice simulation posted by the College Board within the next few weeks. How do I prepare for the exam? With so many school closures and the stress of a global pandemic, this review season will be If this is your first AP exam, welcome! Don't worry, it's not usually this chaotic. We've put together this plan that you're going to follow between now and May. This will cover all devices and leave you time to practice questions before the test day. Some classes may have made units out of chronological order throughout the year, which is ok. The devices do not need to be taught in order. If you learn new material on your own and need some help, use the chat bubble on . We'll answer any questions you have. What resources does this study plan use? All the resources required are free, including cheat sheet PDF files. You need to create a free Fiveable account to jump in. We've also linked some other websites, articles and YouTube videos that you can access for free. Some of the suggested resources include paid products. There are some documentaries that you can find on streaming websites with a paid membership and we will also list streams and practice issues that require a paid squeeze pass on Fiveable.PRE-WORK: SET-UP YOUR LEARNING ENVIRONMENTBefore we start, take some time to get organized. Remote learning can be a good thing, but it also means that you have to hold yourself accountable more than usual. Create a study space. Make sure you have a designated place at home to study. Somewhere you can keep all your materials, where you can focus on learning, and where you are comfortable. Spend some time prepping the space with everything you need and you can even let others in the family know that this is your study space. Organize your study materials. Get your notebook, textbook, prep books, or whatever other physical material you have. Download the AP Biology 1-page cheat sheet from our collection of 2020 AP Cram Charts. Also create a space for you to keep track of review. Start a new section in your notebook to take notes or start a Google Docs to keep track of your notes. Get your self set up! Plan designated times to study. The hardest thing about studying from home is sticking to a routine. Decide in an hour each day that you can devote to studying. This may be what time of day, what works best for you. Set a timer on your phone for that time and really try to stick with it. The routine helps you stay on track. decide on a liability plan. How will you hold yourself responsible for this study plan? You may or may not have a teacher or rules set up to help you stay on track, so you need to set some for yourself. First set your goal. This can be to study for x number of hours or get through a device. Then, create a reward for yourself. If you reach your goal, then x. This will help to !1: Chemistry life Join the live cram stream: Unit 1 Review with Caroline Koffke. Sign up here! takeaways:Unit 1 introduces all chemistry concepts that need biological principles. The main elements are named, macromolecules are defi properties of the chemical contribution to life are laid out. The contents of this device can be a little dry, focusing on vocabulary and more detailed chemical applications than is seen in other aspects of the course. A lot of processes discussed in later units depend on a strong understanding of this entity. Definitely do this: Watch: Read: Introduction to Macromolecules (Khan Academy) Practice:Join the Discussion: What Are Some Important Ways to Remember the Different Elements of Each Macromolecule And Their Properties? Work through this POGIL on Biochemistry BasicsIf you have more time or want to dig deeper: UNIT 2: Cell Structure and Function Join live cram stream: Unit 2 Review with Caroline Koffke. Sign up here! Big Takeaways: Unit 2 introduces everything cellular. It starts with a basic overview of cells (review!) and then moves into the different types of transport and how the chemical composition of the membrane controls the movement of molecules. The transport of molecules becomes a major topic in Unit 3: Cellular Energetics, so make sure you are familiar with the composition of the plasma membrane and the different types of transport. Definitely do this: If you have more time or want to dig deeper: Check out the FRQ checkpoint for Unit 2 of AP Classroom Can you answer these questions about cell transportation? Take this quiz! UNIT 3: Cellular Energetics Join the live cram stream: Unit 3 Review with Caroline Koffke. Sign up here! Big Takeaways: Unit 3 is all about energy. This unit relies heavily on the knowledge gained in Unit 2, focusing on organelles and cellular transports. Cell respination and photosynthesis are the two largest substances in this unit. Don't worry. You don't have to have this memorize! You just need to understand why behind the energetic processes. Definitely do this: Watch These Videos:Unit 3 Review: A Full Review of The Main ConceptsCell Energy: A Review of the Importance of Cellular Energy With A Focus on Both Cellular Respiration and PhotosynthesisEnzyme Catalysis: Focusing on Enzymes, What Their Made Of, and Why They Are ImportantIf you have more time or want to dig deeper: Check out frq checkpoint for unit 3 in AP Classroom Can you answer these questions about cell breathing? Take this quiz! UNIT 4: Cell Communication and Cell Cycle Join live cram stream: Unit 4 Review with Caroline Koffke. Sign up here! Large takeaways: Unit 4 discusses the multiple methods where cells communicate with each other, focusing on signal transduction pathways. The subject mitosis and the regulation of the cell cycle are also major topics. Feedback mechanisms related to the many different body systems are also discussed in this unit. Definitely do this:About have more time or want to dig deeper: UNIT 5: Heredity Join the live cram stream: Unit 5 Review with Caroline Koffke. Sign up here! Great takeaways:Unit 5 includes a lot of material. From meiosis, to Mendelian and Non-Mendelian genetics, to chromosomal inheritance, there are many substances covered. The use of probability for both Mendelian and Non-Mendelian genetics is an important understanding, and this concept can be applied to chi-square analysis. Definitely do this:If you have more time or want to dig deeper: UNIT 6: Gene Expression and Regulation Join the live cram stream: Unit 6 Review with Caroline Koffke. Sign up here! Great takeaways:This device describes how a gene becomes and protein and the regulations that are in place for these processes. Transcription and translation are both discussed in detail. The regulation of genes is crucial for the preservation of energy in all organisms, and the process can be quite complex. Finally, mutations and biotechnology are discussed. Definitely do this:If you have more time or want to dig deeper:continue learning Slide 1 of 7connect more studentscreate an account on fiveableplay trivia, follow your topics, join free livestreams, and store your write speed results results results results