

Procedure for arguing for more points

1. Read through the comments and scores on your notebook
2. Read through the rubric and comments below
3. If you feel you earned more points than you did, email Marshall an argument stating which points you should earn and why **BASED ON THE RUBRIC**. Any arguments that boil down to Marshall "taking a second look" will not be accepted.
4. If this is done I'll happily return the points or explain any issues in understanding. Remember: the goal is **NOT** to get a 100% at all costs; it's to understand why points were taken away this time so that they won't be taken away in May.
5. Another reminder: I'm basing my grades on my training as an AP reader. This is the AP program's rubric, not my own.
6. If the issue is simply a miscounting of points (you earned 65 points but I gave you 55) and there aren't any arguments to be made, simply email me what score you think you've earned and I'll recount.
7. Finally, **YOUR GOAL IS TO NOT GIVE YOUR GRADERS ANY EXCUSE TO TAKE POINTS AWAY. ASSUME YOUR GRADERS WON'T "KNOW WHAT YOU MEAN." TAKE THE EXTRA STEPS TO FIX LITTLE ERRORS THAT MAKE THE DIFFERENCE BETWEEN A POSSIBLE MISS AND A DEFINITE POINT.**

Category	Score	Comments
Objective	3	Easy points to get. You simply need to state the overall goal of the lab.
Claim	3	1 pt: Here's what I think will happen 1 pt: It's something measurable 1 pt: A reason is provided, even if the reason turns out to be wrong NOTE: Claims must be made BEFORE the experiment. Predicting incorrect outcomes is normal. More often than not, if a claim is confirmed it either means the claim was done AFTER the experiment or was so simple that it would've been impossible to get it wrong. The big problem with claims is people's claims are so vague that you're basically guaranteeing a minimum 50/50 chance of being correct. "It will be better/more/higher" isn't good enough. If I increase your grade by 1% or by 30%, both are "better" and yet remarkably different. Be specific with your guess, and be specific as to WHY.
IV/DV	2 pt each 4 pt total	We are NOT measuring oxygen consumption OR rate of reaction. We might be eventually looking to analyze these things, but neither is the actual thing we are measuring. The IV of this lab was whether the peas were dry (dormant) or germinated. It was NOT temperature because the peas in either temperature were never compared or measured directly based on the other temperature. YOUR experiment only took place in one temp.

		The DV of this lab was the location of the water (or food coloring) in the pipet. Yes, we wanted to know how much oxygen was absorbed/CO ₂ emitted/cell respiration occurred, but the thing we actually MEASURED was the food coloring.
Controls	2 pt each 6 pt total	Common misses include: -Answers too vague to know whether you understood the control. "The beads" is not good enough. "Beads were added to vials to maintain the same volume in each respirometer" is acceptable. Also, people were throwing out the numbers "50ml" or "59ml". Those were simply measurements we calculated to find the total volume of peas, which was "9 ml". If you EXPLAINED those numbers and why they mattered, then great! But if you just said the numbers it wasn't enough. Acceptable answers: The volumes of peas/beads was always 9 ml (or whatever yours was) We used five drops of KOH in each respirometer We gave the respirometers 3/7/10 minutes to calibrate before recording data. The order of materials in the respirometer was the same to ensure the peas were safely isolated from the KOH If you said "temperature" was there any evidence that YOU controlled it? Or did you just put it in the water and assume it stayed the same temp?
Table	5 pts each	Filled out correctly with no empty spaces. Often students lost points due to incorrectly doing the math. Something really really weird is going on here. On 90% of the tables people are doing the math wrong, but only on one temperature. For example, the data is correctly calculated for room temp but incorrect for ice water; then a different student has the correct data for ice but incorrect for room. Not sure what is happening? How are so many people doing the exact same math equations correctly only half the time? HUGE problem this year with people doing averages. The data that was put on the page was NOT oxygen consumed or CO₂ produced. It was the line on the pipet. One group could have the line go from 0.8 to 0.4, and another go from 0.5 to 0.1, and they are getting the same results: a change of 0.4 overall. So unless you've done the calculations for EVERY group submission, you should not be taking any averages. You should obtain one of the data sets and using that data to perform calculations.
Graphs	5 pts each	NONE IN THIS LAB
CER Conclusion	3 pts	Claim: Restate your claim from earlier and whether it was supported. Evidence: Provide evidence that the claim was supported/not supported Reasoning: Explain why this evidence matters. Do not do circular reasoning.

		Assume I know nothing of the scientific concept you're studying, and help me understand it. POSSIBLE Example: It was not supported that the germinated peas would have triple the cell respiration. The Germinating peas in hot water did use approximately double the amount of oxygen (.42 vs .21 ml) as that in cold water, but in both cases the dry pea cell respiration basically didn't happen. The dry peas only consumed 0.01 ml, which is so little it's possible that this falls within the error. I think these numbers show that there's no reason to think non-germinated peas are respiring at all. Reminder: Most good claims are incorrect. Science is usually getting stuff wrong and learning from it. Any sign that your claim was established AFTER the experiment or that it was so vague as to make it difficult to pinpoint the exact reasons for something happening will not earn points.
Error Analysis	1 pt	Hardest point in the lab. You're looking for a problem with the LAB, not with your execution of the lab. Two examples in this lab were 1. The red dye moved out of the area of the pipet where numbers could be found. At those points we were forced to estimate #'s (basically any time it was above 0.9 ml). Nothing we could do about that. 2. The peas and beads can occasionally shift in the respirometers as the volume changes. Sometimes a pea or bead can shift and block the pipet, preventing any air exchange (like food getting stuck in a straw). If this happens, you can't get data and it's not your fault.
Scientific Learning	1 pt	As long as you provide a <u>specific thing</u> you learned in this lab, you'll get the points. So be honest here. I just want to know what stood out to you. NOTE: If the thing you learned was part of your claim, not only does it mean you didn't learn that but you probably needed to strengthen your claim.
Next Experiment	3 pts	The goal here is to continue the previous lab. Take what you've learned and expand on it. You must be specific about what you're experimenting and why (and no, you don't actually have to DO the experiment). Good example: "In this lab we learned that the germinating peas will respire and the dry peas will not. I'd like to do an experiment where we activate dry peas and test how much cell respiration is happening in peas that have been active for 1 hour, 2 hours, 6 hours, 12 hours, and 24 hours. This should tell us at what point the dry peas officially become germinating, respiring peas.
Q1: Negative Control	3 pts	The respiratory vial with beads only (since it only asked you to identify the group and not explain it, this was all you had to say)

Q2: Corrected Difference.	3 pts	3 points, looking for anything similar to the following: • The negative control group shows how much the volume of the respirometers change due to non-respiration factors, including ◦ CO₂ already in the vial that wasn't produced through respiration ◦ Atmospheric changes in pressure. • These conditions should be similar in each vial • By measuring these changes, and subtracting them from the other respirometers we can establish how much of the respiration in the experimental vials was due SOLELY to cell respiration.
Q3: Germination	3 pts	Apparently germination is the number one factor in whether a seed undergoes cell respiration. When germinated, they undergo respiration. If not germinated yet, they don't. Be sure to compare the numbers (don't just say "more" or "it does respiration" and be sure to mention both what germinated and dormant peas are doing (dormant peas are NOT dead). 1 pt: specific answer (not just "bigger") 1 pt: specific evidence from lab 1 pt: why did this happen
Q4: Temperature	3 pts	Everyone got different results here. You'd think that a warmer environment would encourage more germination, but at the end of the day you can only go with what the data provided you. Be sure to compare and be sure to mention both ice and room water. One explanation for colder temps having more respiration is that colder environments slow down the movement of molecules, helping them stay closer together (sure, heat helps them move faster, but maybe they move so fast they miss each other). 1 pt: specific answer (not just "bigger") 1 pt: specific evidence from lab 1 pt: why did this happen
Q5: KOH	3 pts	I awarded one point for any of the following clearly explained bullet points: • The KOH absorbs the CO₂ and converts it into water • Liquids have a lower volume than gas • The respirometer was sealed • The change in volume would reduce the volume inside the respirometer and draw in water • By measuring the change in water movement we can directly correlate that to the oxygen consumed/CO₂ produced in cell respiration.
Common comments		Really great improvement on questions. Lots of people got 2 out of 3 on answer/evidence/explanation criteria. Still work to do but tremendous growth. "Affect" and "Effect" are evil words. Never use them. They mean literally anything. • "The baking soda had a greater effect on the cake than the salt."

		• “The meteor affected the house” • “The news the doctor gave me greatly affected me.”
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/44 Pts