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**8th Grade Handbook**

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Welcome

Welcome to the exciting world of 8th grade physical science!

Get ready for an adventure as we explore matter and energy and learn how they make up the world around us. I am excited to get to know you better and to watch each of you grow as young scientists.

This year you will be developing your observational and critical thinking skills to help you solve problems in various labs and activities. You will get your hands dirty. We will blow things up. Don’t be surprised if you’re asked to call upon your English and math skills to get these jobs done. If you have not noticed already, many of the subjects you learn in school are interconnected.

As you prepare for high school, it will be particularly important to practice productive work habits like: time management, using all available resources, completing assignments on-time, and effective study skills. As physical science has a large amount of content to cover and we only see each other 2-3 times a week, you will be given assignments to practice after most classes to help you remember the material we’re learning.

If there is one word of advice that I can offer you to help you be successful this year, it is: initiative –taking the opportunity to act or take charge before others do. As young adults I challenge you to take initiative to ask questions and ask for help whenever you need it. Review class material early so you know what to expect on assessments and so you don’t need to cram. Take initiative and come prepared every class with the materials you will need for learning.

Get ready for a great school year!

Ms. Nguyen
What are we learning?

This year’s topics draw from the areas of physics and chemistry. Specifically we will be learning about matter and various types of energy and how they make up the world around us.

Topics at a glance:
Classroom Protocol

1. **Arrival** - You may not leave the classroom during the first ten minutes of class. This is important so that attendance can be taken and everyone can be debriefed on the agenda for the day. Upon entering the classroom please copy down and answer the journal prompt on the Promethean in your journal. Afterwards, you should copy down the homework for the day and take out any homework from last class.

2. **TARDY** - Sign the tardy log by the entrance of the classroom. Please silently take your seat and take out your class materials immediately afterwards. If you are tardy without an appropriate excuse for two classes in a row you will be asked to make up that time at lunch.

3. **Restroom/Nurse** - No need to raise your hand. Please sign the appropriate pass in your agenda. You may quietly bring up your agenda to be signed during a lesson transition.

4. **Water break** – Please quietly raise your hand to ask for permission. No pass is required.

5. **Dismissal** – It is considered disrespectful to pack up your belongings before the class lesson has ended. When the bell has rung, only students who are sitting in their seats quietly and have cleaned up their surrounding area will be dismissed.

6. **Other** – You may not bring food, drinks or electronic devices to class unless you have been previously given permission.

ROAR Expectations

1. Be on time (RESPONSIBILITY) – you must be in your seat by the time the bell rings.

2. Be safe (OWNERSHIP) – do not touch lab equipment without permission; do not attempt to complete labs without reading the directions first.

3. Come prepared (ACHIEVEMENT) – bring writing utensils and materials, have completed practice ready to be checked when you walk in the door; ask questions.

4. No insults or disrespectful comments (RESPECT) – about your peers, teachers, or yourself.
Lab Rules

1. All students must have a parent-signed lab permission form to participate in lab activities.
2. No food, drinks, or gum unless otherwise specified.
3. Do NOT touch lab equipment without permission.
4. Begin your lab by reading ALL directions and procedures first.
5. Closed-toed shoes are required for labs.
6. Long hair should be tied up. Loose jewelry should be removed. Loose sleeves or clothing should be pushed back.

Absences

All lessons, class activities, assignments, and upcoming due dates are available on the school website.

If you know that you will be away in advance, please take the initiative to ask your teacher what you will miss so you will be caught up when you return. Falling behind can lead to a vicious cycle of catch up if you leave all work to the last minute.

If you have missed work due to an illness, you have one extra class to make up your assignments. It is your responsibility to take the initiative to read up on the lesson you missed while out of class. If you miss a lab, you have one week to schedule a lab makeup date and make up a missed lab with your teacher.

Where can I find the science assignments online?

- From the Lunsford M.S. homepage click on “staff”, and then “Nguyen”.
- Click on “assignments” for class lessons and assignments.
- Click on “calendar” for important due dates and reminders.
Grading

50% - Labs & Classwork
50% - Tests & Quizzes
0% - Formative Assessments (ungraded)

Work should be put in the PRACTICE STATION to be marked as complete unless directed otherwise.

In addition to practice, students will track their learning progress through a series of ungraded tasks called formative assessments. This will help students to identify which learning targets they need to review using the learning progression scale below:

1 – Beginner   2 – Making progress   3 – Proficient   4 – Advanced proficient

What is the homework policy?

All practice must be completed by the assigned date. All assignments are posted after class on the school website.

Students will not be allowed to take summative assessments until the unit’s study guide is completed.

What is the retake/re-teach policy?

Retakes are mandatory for students who receive less than a 70% on any summative assessment.

All students will have an opportunity to retake summative assessments by appointment with their teacher after they have made test corrections and completed the retake assignment.

Retakes must be completed within two weeks. There are no retakes on labs or classwork.

Honor Code

Students are encouraged to ask for help when needed but expected to submit authentic work; using citations when necessary.

Any student seen copying, turning in another student’s work or giving their work to another student will be asked to redo their assignment or assessment. Disciplinary actions will be taken based on the Loudoun County policy as listed in the Student Rights and Responsibilities.

Not sure how to cite your work?

Ask for help in the library or use this guide to citing work in science class (ACS Style):
http://classguides.lib.uconn.edu/content.php?pid=86975&sid=647049
Science in the Community & DIY Points

Students are strongly encouraged to get involved in science in the community. Science literacy is an important part of becoming an informed and active global citizen. Whether you plan to pursue a career path in science or not science affects all aspects of our lives from explaining how electric cars run to how forensic scientists are able to solve crimes.

Each quarter students will be asked to earn 10 points of credit from exploring science outside of the classroom. Students may be asked to choose from a menu of activities of varying point values which will be posted at the beginning of each quarter. Some activities can be completed at home, while others will allow students to participate in local community events. Students are expected to discuss their activity choices with parents/guardians to determine which activities work best with their schedules.

New proposals for activities are always welcome. If you have an idea for an activity that explores science outside of the classroom, please feel free to contact me.

SOL Review

This year all 8th grade students will take their Middle School Science SOL. This test is cumulative of all the science standards taught in grades 6, 7, and 8. SOL review sessions will be offered second semester.

In the meantime, students can practice sample questions at: http://education.jlab.org/solquiz/

Contacting Ms. Nguyen

For extra help or questions you can find Ms. Nguyen during resource and before or after school upon appointment.

If it is short question about content that any science teacher could answer, tweet your question @JMLScience8 and one of the team teachers will get back to you.

You can also reach Ms. Nguyen at: jessica.nguyen@lcps.org Please allow 48 hours for reply.
Tips for Success

1. Stuck on a question or concept?
   a) Check the book.
   b) Re-read directions provided or notes.
   c) Discuss with 1-2 desk partners.

2. Stay organized. Do not throw anything out as it may come in handy during SOL review and your end of the year 8th grade test. You will need 7 tabs this year:
   - Nature of Science
   - Waves: Light & Sound
   - Chemistry
   - Heat
   - Electricity & Magnetism
   - Force & Motion
   - Matter & Energy

3. Studying for a quiz/test?
   a) Complete and study your study guide.
   b) Re-read all relevant class notes, labs, formatives, and assignments.
   c) Redo previous related problems that you had difficulty with on past related assessments. Cover up the correct answers. Try the problem again. Check your work.
   d) Read relevant sections in your science textbook.
   e) Try review games, videos and activities posted on science webpage. They will be posted a class before assessment day.

4. Do NOT cram. In the evening or resource class after each lesson, re-read your notes. Eighth grade science will be an adjustment as we cover several new topics every class. The best way to learn and retain this information is to see it every day and practice what you learn.

5. Get help early. Help will always be available for students who need it. If you need help outside of class, please speak to your teacher in advance about coming in either at lunch, before or after school. As many of our concepts will build on each other, it is more advantageous to get help early when you are having trouble understanding a topic.
Math Problems in Science

You will be permitted to use a calculator during science class. Formulas will be provided on most tests.

1. Round all final answers to the nearest hundredths (2 spots after the decimal place e.g. 2.019 = 2.02)

2. SHOW ALL WORK. No work = no credit.

3. Include appropriate units. No units = partial credit.

How to show work: Remember GRASS

Given – state, underline or highlight all given information

Required – circle what you are looking for

Analyze – write down the appropriate formula you will need to use

Substitute/Solve – Plug and chug. Don’t forget units!

Solution – Circle your final answer.

Example 1:

It is important for chocolatiers to know the density of their chocolate so that they can make the perfect recipes. A 200g bar of raw chocolate has a volume of 300 mL. What is the density of this bar of chocolate? (Hint: Density = mass ÷ volume)

<table>
<thead>
<tr>
<th>Given</th>
<th>state, underline or highlight all given information</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required</td>
<td>circle what you are looking for</td>
<td>✓</td>
</tr>
<tr>
<td>Analyze</td>
<td>write down the appropriate formula you will need to use</td>
<td></td>
</tr>
<tr>
<td>Substitute/Solve</td>
<td>Plug and chug. Don’t forget units!</td>
<td></td>
</tr>
<tr>
<td>Solution</td>
<td>Circle your final answer.</td>
<td>D = 0.67 g/mL</td>
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Density = \( \frac{mass}{volume} \)

\[ D = \frac{200g}{300mL} = 0.67 \text{ g/mL} \]
Example 2:

A jeweler approaches your mother and claims to have just got their hands on a new shipment of pure gold. They are willing to negotiate a cheap deal for 100 g of their finest gold. You are told the gold has a volume of 4 mL. What recommendation would you make for your mother?

(Hint: Density of pure gold = 19.3 g/cm$^3$, 1 mL = 1 cm$^3$)

Try it yourself!

How to Make Test Corrections

Your test corrections in science should include the following:

1. Restate your questions with the correct answer.
2. Explain how one would arrive at that answer using science. You may need to refer to your science notes or study guide if you are unsure.
3. Your test corrections should be written on a separate sheet of paper and turned in with your original test.
4. For math problems, you are permitted to “explain your answer” by showing your work (GRASS style)

Example:

1. Water is an _________
   a. element
   b. compound
   c. mixture

Test correction:

Water is a compound because it is a chemical combination of 2 parts hydrogen and 1 part oxygen (H$_2$O). Water cannot be a single element because it is made of both hydrogen and oxygen. Water is not a mixture because mixtures are only physically combined and cannot be separated easily.
Writing a Good Lab Conclusion

Good conclusions answer the following questions in this order and in paragraph form.

1. **Problem:** What was the problem you were trying to solve?
2. **Hypothesis:** What did you think would happen?
3. **Procedures:** What data did you collect?
4. **Analyzing data:** Were the results what you expected?
5. **Considering Error:** Why might your results be different from someone else’s data?
6. **Conclusion:** What did you learn?
7. **Restate the problem:** Rewrite the problem you were trying to solve in a declarative sentence.
8. **Future research:** What might you do next time to improve or expand on this experiment?

**Sample Conclusion:** Number each sentence to match the steps above. There may be more than one for each.

In this experiment my group was trying to figure out what the effect of the mass was on how fast a helicopter would fall. I guessed that the more mass there was the faster my paper helicopter would fall. To test this hypothesis we dropped the same helicopter three times with no paperclips on it and then three more times with two paperclips on the helicopter. We used a timer to record how much time it took to fall from the same height during each trial. Based on the results of my lab, I was correct that the more mass a helicopter has the faster it will fall to the ground.

Even though we were careful, sometimes we did not drop the helicopter from the same height; so some of the times weren’t even. Also, after we had dropped the helicopter 4 times one of the wings ripped, which might have also changed some of the results since the wings were providing more air resistance.

I learned that there are many things that can effect how a helicopter falls, including: how much mass they have, how high off the ground they are when they are dropped, and if the wings are able to spin or not. Most of all, I learned that the greater the mass, the faster a helicopter will fall. Next time I do this experiment, I might use a plastic helicopter instead of one made of paper (so it can’t rip). I would recommend this experiment for anyone trying to learn more about measuring time, height, or how independent variables work.