

Dear Students and Guardians,

Once again, I hope that everyone is healthy and staying engaged in their education during this time apart. We have included in this mailing a list of our offline activities and charts for students to use and help keep them engaged in their education. Our teachers have continued to post weekly activities/lessons on their individual Google Classrooms, host online meetings with classes, email with students, talk with students over the phone, and create activities for students who are unable to complete activities online. PLEASE encourage your child to check their school email and their Google Classrooms. If they are unable to access their email, please contact Mr. Hugus or myself at 474-7503. If your child does not have access to the internet please use the Offline activities included to keep your child engaged. All of these activities, online and offline, are optional and designed to keep your student engaged in their education.

Seniors

Mr. Williams and I have been in constant communication regarding your end of the year activities, i.e. senior awards, prom, and graduation. We are waiting to hear more guidance from the Department of Education and the Health Department regarding these large gatherings and the likelihood of these events in the near future. These events are a treasured experience for you and your families and we will do everything in our power to make sure you are able to experience these in some format. As these decisions are made, we will share the details with you immediately.

If you are a senior concerned about not meeting requirements for graduation please contact Mrs. King, Miss Straub, or Mr. Smith at 474-7503.

Device Plan

Logan Elm will continue to offer offline activities during the statewide school closure period. In addition, Logan Elm Schools is in the process of collecting information on the technology needs of households within our district. Please contact your building principal if you are in need of a technology device within your household, for the purpose of:

1. Your child completing work from their academic teachers.
2. Your child remaining in contact with their teachers.

Week 3+ Science Department Projects

Students: Pick 2 activities to work on from the choices on front and back and complete them each week. Please contact your teacher to ask for help or if you have any questions. Submit via email or post link to video. Keep this table for use later if necessary.

	<u>Astronomy</u>	<u>Physics/Physical Science</u>	<u>Chemistry</u>	<u>Biology</u>	<u>Earth/Weather Science</u>
<u>Diagrams</u>	Draw and label a diagram showing the known structure of a black hole. Include: point singularity, event horizon, Schwarzschild Radius, and Hawking Radiation.	Draw and label a phase change diagram for water. The vertical axis should be "change of temperature" and the horizontal axis should be labeled "change of heat energy".	Draw two-dimensional diagrams that compare and contrast the movement and spacing of particles in the three major phases of matter (solid, liquid, and gas).	Draw and label a diagram illustrating the production of a 10 amino acid protein from DNA to RNA to protein. You may make up any DNA sequence to use as the template.	Draw and label an illustration of a tornado. Be sure to include all relevant info on how it forms, is sustained and ends.

<p><u>Math</u></p>	<p>Using the speed of light in a vacuum, calculate how long light from the sun takes to get to each of the 8 planets in the solar system. Show your work.</p>	<p>Make a study guide that includes all of the equations we have used so far this year. Use different colored pencils and pens to personalize your equations.</p>	<p>Find 2 or 3 household products (over-the-counter medications, cleaners, etc.) which has the percent mass or volume of its active ingredient listed. Using that percentage, find the mass or volume of the active ingredient that is present in a full container of that product.</p>	<p>Using the Hardy-Weinberg equation, calculate the frequency of homozygous AA and aa, and heterozygous Aa individuals in a population if the $p = 0.55$ for A and $q = 0.45$ for a. Show your work.</p>	<p>Using the known densities of each layer of the earth, calculate the average density of the entire earth. Be sure to include the relative thickness of each layer in your calculations. Compare this to the known density of earth and the densities of the other terrestrial planets.</p>
<p><u>Short Answer</u></p>	<p>Define what determines if an object is called a planet and use this information to discuss why Pluto is classified as a dwarf planet.</p>	<p>Design a bridge out of a material of your choosing and test its weight capacity. After your first trial, design and make improvements to your bridge and test its weight capacity again.</p>	<p>In 1 to 2 paragraphs briefly describe potential physical changes and chemical changes that may occur in the process of cooking or baking a food of your choice.</p>	<p>In 1 or 2 paragraphs, explain how geographic isolation can result in the production of a new species that is no longer able to breed with the parent species.</p>	<p>In 1 or 2 paragraphs describe the process that forms tornadoes and why this process occurs so often in tornado alley. Use terms such as jetstream, uplift and rotation in your descriptions.</p>
<p><u>Extended Response</u></p> <p><u>Extended Response</u></p>	<p>Using diagrams explain the lifecycle of our sun. Talk about the major phases our sun will have during its life cycle. What will happen to the earth?</p>	<p>Make a video of your own gravity experiments. Use objects of different mass but similar shape and see which hits the ground first. Then see what happens if you use objects of different shapes. During the video, explain why these objects either hit the ground at the same time or at different times.</p>	<p>Using both visual and written descriptions compare and contrast the processes of dissolving table salt (NaCl) and table sugar (sucrose-$C_{12}H_{22}O_{11}$) in water. Your descriptions should include the role of water in the solution process and what similarities and differences are observed between the two solutions.</p>	<p>Describe the process of genetic engineering using recombinant DNA and how this is used to produce Genetically Modified Organisms (GMOs). Pick a side (GMOs Yes/GMOs No) explain why GMOs are good/bad for people and the environment. Use specific evidence from reputable sources to support your position.</p>	<p>Catalog 2 of your favorite minerals. Describe the mineral in terms of crystal structure, look, color, hardness (Mohs hardness scale), texture, density and any other descriptors you would like to use. Take a picture and add it as well. The easiest way is to put it all on a google doc.</p>
<p><u>Miscellaneous</u></p>	<p>Draw and label an illustration showing how a stellar mass black hole forms. Include the final phase of the star that becomes the black hole and the stages that occur as the star dies and the black hole is formed.</p>	<p>Make a Youtube style video or poster that illustrates Newton's three laws of motion. Include the description of each law and an explanation of how your example illustrates each law.</p>	<p>Make a video that contrasts the rate of diffusion of food color in water with, and without, stirring the solution. Explain what is happening that causes the observed differences.</p>	<p>Build your family tree using as many generations as you can. Document a few genetic traits that are passed down your families generations (height, hair color, facial features, etc...) Use pictures if they are available to you.</p>	<p>Using a 2 liter bottle, look up how to make a "Tornado in a bottle" and make a Youtube style video of the tornado explaining how this is, and is not, like a real tornado.</p>