# K- 9 S.T.E.A.M. activities you can try at home:

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| Make a boat that can really float. How can you modify your design so that it would be a fun bath toy? Ask permission to use household materials such as aluminum foil. Try building boats with materials you find in nature. | Do batteries really power the world? Go on a scavenger hunt to find things powered by batteries. What kind of batteries can you find? Ask permission before removing any batteries though, because you might deprogram things! What else could you use to power things besides batteries? | Watch a movie about sports. How would you describe the different forms of motion? What needs to happen to make something move *fast*? What needs to happen to move *slowly*? | Create a gap that is about 12 inches across. Use different materials to create a simple bridge. How can you determine which bridge is the strongest? | Design and build a pair of scissors that can cut through dough. What can you use for the blades? |
| Experiment with freezing different mixtures of water and salt. What do you notice about the amount of salt and the time it takes to freeze? | Build a pendulum by tying a weight on a string. What do you notice about the swing when you change the length? How can you use this as a timer? | Using *only* paper or index cards, design a tall tower that can support an object. What object will you try to support? | Make a building with multiple floors. What do you need to do to ensure that the building is stable? Can you install an elevator? | Create a tool that helps you measure 6 feet accurately. What makes measuring this distance challenging? |

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| Louis Braille wanted to make reading easier for other blind people so he created a code of raised dots. Can you write a message in Braille or make up your own code?<br>If you have access to internet, you can see an example of the braille alphabet here: http://www.brailleauthority.org/learn/braillebasic.pdf | Make paper airplanes out of different types and sizes of paper. Then test and measure how far they fly. If you have access to the internet you can Google "Fold and fly Paper Airplane Designs" https://www.foldnfly.com/#/1-1-1-1-1-1-1-1-2, . Try folding their examples of different styles of paper airplanes. Also watch "How to make a paper plane, with science! \| Do Try This At Home \| We The Curious" to find out how the science of flight can help you design a better plane. | Build a sundial using materials found in nature. You could use 12 shells or rocks for the hours in the day, and you can use a tall stick to create the shadow. If you have internet, you can type in this address for more precise directions, but you can also just experiment on your own!: https://www.sparklestories.com/blog/post/nature-school-project-diy-sundials/ | The reason soap is so effective against viruses is that it tears them apart. Coronavirus, like many other viruses, is held together by a fatty shell, a lipid membrane. Soap, by its molecular nature, strips that protective fat layer away from the virus. Design a portable way to carry around soapy towels. To learn more, you can watch Bruce Yeany's video, "Hand Sanitizing Made Simple, Soapy Washcloth in Bag" | Create the ultimate creative rolling car that can go down a ramp. How many different ideas can you try? Design a car that can roll the fastest, then design one that is the slowest!<br>If you have access to YouTube, you can learn more from watching Bruce Yeany's video, "Rolling Objects Investigation /// Homemade Science with Bruce Yeany" |

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| Build a car or house entirely out of edible materials. Consider having an edible car race.<br>If you have access to YouTube, you can learn more about edible car derbies if you search for NCSTateCALS video "Edible Cars Derby" | Look closely at various kitchen tools. How do you think they work? See if you can develop a way they could be improved?<br>If you have access to YouTube, you can learn more from watching ABC News' video, "Family pitches product for late firefighter father on 'Shark Tank" | Transform a sheet of paper into a fan. How many different designs can you come up with? How else can you transform paper?<br>If you have access to YouTube, you can learn more from watching Seeker's video, "How NASA Engineers Use Origami to Design Future Spacecraft" | If you have LEGO type bricks and access to YouTube, you can Google "LEGO Bricks in the Making" by The LEGO Group to discover how LEGO bricks are made. Can you use *your* LEGOs to make one giant LEGO brick? | Get three different sized bouncing balls, go outside, and stack them on top of each other, and bounce them all at once to simulate a supernova. What do you notice about the maximum height?<br>If you have access to YouTube, watch Physics Girl's video "Stacked Ball Drop" to learn more about this phenomena. |

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| Take apart a click-to-write pen to see if you can get a closer look at the mechanisms that make it work.<br>If you have access to YouTube, watch Jared Owen's video "How does a Clicky Pen work?" to learn more about reverse engineering. | Plan and make a model playground. Who will you make a model playground for?<br>If you have access to YouTube, watch Landscape Structures' video, "Playground Design - Evos Landscape Structures" | Find six things that are held together with screws. Pick one and use a screwdriver to look inside. (Make sure you keep track of where you lay each screw down so you can put it back together properly.)<br>If you have access to YouTube, watch Jared Owen's video "How does a Nerf Gun work?" to learn more about reverse engineering. | Design a town square for the heart of a healthy community. What makes a community healthy and strong?<br>If you have access to YouTube, watch The School of Life's video "How to Make an Attractive City" to learn more about design principles. | Did you know that windshield wipers were invented by Mary Anderson? Google "History of Windshield Wipers \| Illuminating Moments in American History"<br>Experiment with making a model windshield wiper. Using found materials, build what would you invent for cars, Plushie windshield wipers -anyone? 😊 |

**Note: Activities inspired by and adapted from mechanical engineer and Outschool Instructor, Lindsey Nelson.**

https://docs.google.com/document/d/1oCM2Ue9w32EUIGfRXsjwEXU_-Up8D6FSSWT8YGiBEtE/edit