**Sample Abstracts for Bioplastics Summative Assessment** Date \_\_\_\_\_\_\_\_\_\_\_\_Use colored pencils or highlighters to indicate in the sample abstracts, where each requirement is met.  
Then, note anything that is missing or that you believe could be improved.

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| COLOR KEY: ☐ Introduction ☐ Hypothesis ☐ Methods ☐ Results ☐ Conclusion  \_\_\_ big picture purpose \_\_\_ future studies |

1. DEVELOPMENT BY DESIGN AND TESTING OF A MINIATURE TURBINE TO HARNESS KINETIC ENERGY FROM AIRFLOW AROUND A MOVING AUTOMOBLE  
This project presents a summary of a successful design, fabrication and testing of wind turbines mounted on a car roof for the purpose of extracting power from the kinetic energy (dynamic pressure) contained in the wind flow around the car. The placement of the turbine was based on aerodynamic considerations. Various design concepts were tested and evaluated. Drag tests were conducted that showed the turbine did not negatively impact vehicle performance. NACA (National Advisory Committee for Aeronautics) ducts were evaluated and shown to offer additional choice for turbine design and placement. The results obtained from the tests conducted in this research demonstrate the feasibility for the efficient extraction of energy from wind flow around an automobile. Literature research consisting mainly of a review of NACA reports supported the findings of this study. (132 words)

http://www.nwse.org/node/44

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| This abstract could be improved by: |

2. The Life of AAA Batteries

Advertisers are always touting more powerful and longer lasting batteries, but which batteries really do last longer, and is battery life impacted by the speed of the current drain? This project looks at which AA battery maintains its voltage for the longest period of time in low, medium, and high current drain devices. The batteries were tested in a CD player (low drain device), a flashlight (medium drain device), and a camera flash (high drain device) by measuring the battery voltage (dependent variable) at different time intervals (independent variable) for each of the battery types in each of the devices. My hypothesis was that Energizer would last the longest in all of the devices tested. The experimental results supported my hypothesis by showing that the Energizer performs with increasing superiority, the higher the current drain of the device. The experiment also showed that the heavy-duty non-alkaline batteries do not maintain their voltage as long as either alkaline battery at any level of current drain. (164 words)

http://www.sciencebuddies.org/science-fair-projects/project\_sample\_abstract.shtml

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| This abstract could be improved by: |

3. On Your March, Get Set, Rust!

The title of my project is called On Your March, Get Set, Rust! The purpose of my experiment was to find out if salt water rusts nails faster than freshwater and which type of nails, galvanized or common, will rust quickly. The procedure involved sanding ten galvanized and common nails. The nails were placed in glass jars and added with 150 mL of water mixed with 15 mL of salt. The experiment was observed for two weeks. The amount of rust was recorded on both types of nails. I repeated these steps for two types of nails in freshwater. My results of my data resolves that galvanized and common nails in freshwater had a higher average of rust than the other nails in salt water. My data also concludes that the rusting color was black. In conclusion the nails in freshwater rusted more than the nails in saltwater. Saltwater may rust something faster than freshwater, but salt contains sodium chloride in which it causes the nails in saltwater to rust at a slower rate. (174 words)

https://www.sefmd.org/Abstracts/SampleAbstracts.htm

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| This abstract could be improved by: |

4. The Effect of Motor Oil on Daphnia magna

The purpose of my project was to model how motor oil released to a lake impacts the organisms that live there. Whole effluent toxicity (WET) testing is used by regulatory agencies to determine how clean an effluent must be before release to the environment. In a WET test, aquatic animals are exposed to an effluent to determine if the effluent harms the animals.  
  
I conducted eight experiments using the organism Daphnia magna. I added oxygenated, dechlorinated water to sample containers, then added varying concentrations of motor oil. For each experiment, two replicates were prepared. To each sample, I added Daphnia magna and then recorded the number of organisms alive after 24 and 48 hours. Great care was taken to properly maintain the Daphnia magna culture for the experiments. I maintained optimal temperature and lighting and followed the appropriate schedule for feeding and water changes.   
  
I initially tested motor oil concentrations of 0.2% and higher. When all the Daphnia magna neonates died, I conducted two experiments using NaCl, since their response to NaCl is known. When the Daphnia magna reacted as expected, I continued the experiments, eventually using motor oil concentrations as low as 0.00017%. Using data from Replicate #1 Experiment #8 24-hour observations, I was able to generate a graph which revealed a motor oil LC50 of 30 mg/l. This is the concentration at which 50% of the organisms die. This very low concentration confirms how only a little bit of oil can cause serious damage to the environment. (249 words)

<https://www.sefmd.org/Abstracts/SampleAbstracts.htm>

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| This abstract could be improved by: |