



**THE
EDUCATION
FUND**

FOR EXCELLENCE IN MIAMI-DADE PUBLIC SCHOOLS

2019-2020

Ideas with **IMPACT**



idea packet

sponsored by:



FORD MOTOR COMPANY FUND



ASSURANT®

**A School of Fish
with a STEAM Twist**

A School of Fish with a STEAM Twist

This project, which was inspired by the American artist Alexander Calder, has students use wire hangers to sculpt fish and sea creatures. The main resources used were: wire hangers, permanent markers, #6 plastic, fishing line, sandpaper, and hole punchers. With the wire hangers, students must create the exoskeleton of their sculptures, which is used as a basis for their designs. Students must cut and measure the wire to accommodate the size and proportions of their sketches. The next part of the project requires students to calculate the shrinking ratio of plastic as it is heated in a toaster oven. Large plastic trays soon become tiny 'tokens' of hardened plastic after undergoing this heating process. Prior to shrinking, students color designs on the plastic trays in order to personalize their fish. When this is completed, every individual must get the hardened tokens inside of the larger wire fish frame by joining it with a thinner wire and letting the tokens hang.

During the project, students will learn a multitude of STEAM related concepts. They witness how the density of an object is directly related to temperature, and each student will commence their own density change when heating the plastic trays. Technology is incorporated into this project when creating video clips and graphic illustrations outlining the process. Students are required to plan the designs for their plastic tokens before being heated. This means they have to calculate how much the plastic shrinks when heated in order to properly fit 10 pieces within the nine-inch maximum size of their fish. Students will often need to play around a little bit in order to adjust the size of their sketches and receive accurate outcomes. Therefore, engineering is used in the actual creation process of the fish, including the adjusting and readjusting of their designs to meet their size needs. However, it is also a design project; students need to use their artistic viewpoints to convey their desired idea within each token. They manipulate materials and think about the negative space of their overall design and composition. Math is used in making sure the fish do not exceed 9 inches on either side and in calculating the actual shrinking ratio of the plastic.



