**LUSD STEAM Festival Assignment May 19-20, 2017**

**Friday 5-8pm**

**Saturday 9-Noon**

**Science, Technology, Engineering, Art and Math**

**Elementary Assignment**

You won’t want to miss the opportunity to attend the LUSD STEAM Festival at Lompoc High School. For more information go to: <http://www.ccstemexpo.org/> and click on “STEAM Festival”.

There will be a variety of hands-on demonstrations and activities of various scientific & engineering principles. You are to study some of these, sketch how the demonstrations work, and write a few brief sentences discussing the scientific and/or engineering principles at work in the demonstrations.

You must choose 2 different demonstrations.

You are to choose one demonstration from two different categories.

For each demo sketch a figure showing how the apparatus was set-up. Label the figure with important pieces of equipment. For many demos you should draw both a before and an after picture.

In a few sentences, explain the scientific concepts or engineering demonstrated (see the next page for a template).

|  |  |  |
| --- | --- | --- |
| **Group 1**:**Computer Science**  | * Coding with Ozobots- Smallest robot that is capable of being coded to make games and solve challenging puzzles to open the locked box. (Booth 22)
* Design and write code to make a webpage (Booth 19)
* Experiment with Robots, dismantle a computer and put back together (Booth 19)
 | * Friday Only
* Friday and Saturday
* Friday and Saturday
 |
| **Group 2**:**Environmental Science** | * NatureTrack will provide the materials and seed to make "Bee Feed Seed" packets. (Booth 10)
* Agua Pura hands on watershed model (Booth 9)
* Water filtration demonstration; field testing equipment; environmental engineering information-Upper Elementary

(Booth 25) | * Friday Only
* Friday Only
* Friday Only
 |
| **Group 3**: **Life Science** | * Touch Tanks & ROV Demonstration- with Cabrillo High (Booth 24)
* Look at pond water and Elodea under the microscope (Booth 15)
* Interactive Marine Aquaria- with UCSB (Booth 6)
 | * Friday Only
* Friday (maybe Saturday)
* Saturday Only
 |
| **Group 4:****Mathematics** | * Hands-on Math Activities (Booth 3)
 | * Friday and Saturday
 |
| **Group 5:****Earth Science** | * Rock Separation and Earth Science (Booth 2)
 | * Friday Only
 |
| **Group 6:****Art** | * We will use ink pens to do a calligraphy hands on demonstration (Booth 6)
* Art Activities- Los Berros (Booth 4)
 | * Friday Only
* Friday and Saturday
 |
| **Group 6:****Technology** | * Robotics, Arduino, Invention, Design Thinking, Graphics (Booth 20)
* Robotics and information on the YMCA robotics club and how we integrate STEAM in our afterschool programs (Booth 26)
* 3D printing, Robots, littleBits. T-shirts, paper circuits, Dremel tools, Arduino boards and more. Some to look at, some to do! (Booth 27)
* Demonstration of a FIRST Robotics Robot by local FIRST World Championship competition team (Booth 42)
* Hot hand test & others with Vernier probes (Booth 22)
 | * Friday Only
* Friday and Saturday
* Friday and Saturday
* Saturday Only
* Saturday Only
 |
| **Group 7**: **Physical Science** | * Make Slime (Booth 7)
* Launch model rockets, do space trivia, have patch making for younger kids (Booth 34)
* Demonstration and hands on activity of Elephant Toothpaste (Booth 40)
* Make a levitating orb, check out magnets with circuit boards; find out what things can spin. (Booths 16-18)
* Learn to throw different types of baseball pitches and the science behind them Upper Elementary (Booth 36 or 38)
* Local ocean dive shop provides gear and dive classes - Make a Cartesian diver (Booth 13)
* Hit target with Trebuchet (Booth 33)
* Demonstrate the effects of friction with transportation via air, land and water (Booth 5)
* Light and sound waves activities based on the NGSS for First Grade. (Booth 11)
* Multi colored glowing & bouncing eggs Upper Elementary (Booth 8)
* Chili pepper in a bowl with water & Cloud in a bottle Upper Elementary (Booth 10)
* Make ice cream in a bag (Booth 24)
 | * Friday Only
* Friday Only
* Friday Only
* Friday Only
* Friday Only
* Friday (maybe Saturday)
* Friday (maybe Saturday)
* Friday and Saturday
* Friday and Saturday
* Saturday Only
* Saturday Only
* Saturday Only
 |
| **Group 9:****Engineering** | * Rockets (Booth 1)
* Make a paper rocket then launch outside on a pneumatic air launcher (Booth 35)
* Build a simple circuit using a lithium battery, copper tape, and LED light. (Booth 12)
* Promotion of annual Summer Reading Program "Reading by Design,”. Sign-up for library cards and build with LEGOs. (Booth 14)
* Design, Electronics, Robotics, and Manufacturing with plenty of hands-on activities for engineers of all ages. (Booth 21)
* Design and Launch Rockets (Booth 34)
* Design, build and fly an Air Rocket (Booth 35)
 | * Friday Only
* Friday Only
* Friday and Saturday
* Friday and Saturday
* Friday and Saturday
* Saturday Only
* Saturday Only
 |

Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student School: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Demonstration Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Sketch of Presentation**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | BEFORE |  | AFTER |  |
|  |

Explanation of Scientific Concept or Engineering:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student School: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Demonstration Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Sketch of Presentation**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | BEFORE |  | AFTER |  |
|  |

Explanation of Scientific Concept or Engineering:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_