**STEAM Day 2018: Session Descriptions and List of Supplies Needed**

**33 activities**

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| **Activity Name** | **Facilitator** | **Session Description** | **All Supplies Needed** | **Supplies To Be Ordered/**  **Purchased** |
| Morning Meeting Activity: | Each Homeroom Classroom |  |  | ??We will determine this soon and pick up materials from Hannaford - I believe it will be plastic cups, string, and rubber bands |
| Building Triangular pyramids | Danielle Petralia | Do you love puzzles? Don’t be a square, build triangular pyramid sculptures!! | * Hot glue sticks * Hot glue guns * Print out of Triangular pyramids(copies made) | * Large hot glue sticks * Colored computer paper - multicolored (1 pkg of 100-200 sheets) |
| Coding - Students should bring their computers | Nora Varhue | Do you like mysteries? Help us crack the code!  \*She may alter this description | 1 chromebook per student | No purchase of materials needed. |
| Soldering Lesson | Bob Stone  Neal Camp | In this session you will have a chance to try your hand at soldering! Soldering is a process in which two or more items (usually metal) are joined together by melting and putting a filler metal (**solder**) into the joint, the filler metal having a lower melting point than the adjoining metal. | Bob will get materials needed - $25 | Bob will get materials needed - $25 |
| Kaleidoscope design | Elizabeth Kielty  Katie Rose | Come and make your own kaleidoscopes! Don’t know what that is? It is a toy consisting of a tube containing mirrors and pieces of colored glass or paper, whose reflections produce changing patterns that are visible through an eyehole when the tube is rotated. | * paper towel rolls * rulers * multi colored translucent beads * tape * glue * hot glue gun * clear plastic fruit boxes * markers * scissors * Mirror paper * empty cereal boxes * Computer paper for decorating the outside of the tube | * Multi Colored translucent beads * Scotch tape * Large hot glue sticks * Mirror paper |
| Paper Textiles | Sandra Baker  Jill Dawson | Greetings from your boring paper. We’re about to spice things up! Make your own light up greeting cards or a fancy notebook! | * copper tape * scrapbook paper * leds, batteries * Markers | * Copper tape * Scrapbook paper * LED batteries |
| Rockets | Dan Airoldi | This fun-filled activity is a blast with Mr. Airoldi! 5,4,3,2,1...Design, build, and blast off! | No materials needed | No purchase of materials needed. |
| Roller coasters | Alison Levy | Do you squeal like a little girl when you ride the rides at an amusement park? Create a ride for a marble and get your G forces on. | * 7-8 rolls of masking tape * Pipe insulation * 7-8 marbles * Paper towel rolls * pool noodles | * 8 rolls of masking tape |
| Megastructures | Karen Nee  Karen Day | Trying to create the largest structure using rolled up newspaper. Create a stellated icosahedron. | * Newspaper * Round toothpicks * Masking tape * Meter sticks (if needed) * scissors | * Round toothpicks * 6 rolls of masking tape |
| Hot Air Balloons | Heather Dunn | Come build and launch your own hot air balloon out of tissue paper! | * Glue sticks (7-8) * 20 x 30 tissue paper - 120 sheets * Coleman camp stove and fuel * Matches * #10 can from the kitchen | * Glue sticks * 20x30 tissue paper - 120 sheets |
| Water Bottle Rockets | Elizabeth Ploof and  Andy Masenas | 5,4,3,2,1 Blast off! Build water rockets out of plastic bottles. | * Different size plastic bottles * Rocket launcher * Construction Paper * Card Stock * Glue Gun and Glue Sticks * Masking Tape * Rulers * Scissors | * Card stock * Construction paper * Large hot glue sticks * 4 rolls of masking tape |
| Jelly-belly-ology | Lindsay Falby | Eat Candy. Enough Said!  In this session you will use a dichotomous key to determine flavors of jelly beans. Dichotomous keys are used in Biology for classifying plants and animals. | * 20 Ziploc bags * 1 container of jelly beans - Costco * Worksheet and copies made * Pencils | * 1 pkg of ziploc bags |
| Yikes! It’s Alive! | Mary Viglotti  Deb Lafaille | Come find out about the magic of baking with yeast and make a loaf of "Cinnamon Swirl Bread" to take home. | $25 for pans, flour, and yeast - will use science Hannafords card | Mary will purchase materials when needed. |
| Rubber Band Cars | David Mendenhall | Gas prices getting you down? Build a car powered by elastic bands! | * Compact discs (40-50) * Paper towel rolls * Wrapping paper tubes * Rubber bands * Rulers * Scissors * Wooden skewers * Corrugated cardboard * Straws * Paper clips * Hot glue and glue guns (small glue sticks) * Styrofoam * Sponge * Box cutters * Masking tape or duct tape * Computer paper | * Large hot glue sticks * Kitchen sponges * 1 roll of duct tape * 2-3 rolls of masking tape |
| Sugaring! | Phil Young | Come and learn the art of making maple syrup! | No materials needed | No purchase of materials needed. |
| Zipline | Amanda Lamb | Using string, construct a zipline and see how fast an object can go. | For Tower of Hanoi:   * 4 markers * 4 rulers * 3 sets of circular foam or wood pieces that are 6 different sizes and alternating colors (~1in diameter up to ~4in diameter)   For Zipline:   * chipboard (from a cereal box or back of a notepad) * 50 small paper cups (i.e., 3-ounce) * Ping-Pong ball * 25 plastic straws * 5 pairs of scissors * 1 single-hole hole punch * smooth line (e.g., fishing line or unwaxed dental floss) - I can bring in my fishing line again unless you can think of a better type? * 25 flat washers (~1in diameter) * 3 rolls of blue painters tape | * 3 sets of circular foam pieces cut to different sizes. * 50 small paper cups * Fishing line * 25 flat washers * 3 rolls of blue painters tape |
| Microscope Exploration | Nancy Kenyon  Carol Fay | .Step into the world that cannot be seen with the naked eye. Discover the secrets the mouth of an insect holds, view the “arteries and veins” of a plant. Learn the basics of microscopy including how to use a microscope and how to create quality slides of both wet and dry ingredients. | * Battery operated microscopes * I will contact a florist and get flowers, * i would like some water from fish tanks * some of Chuck’s skin. * Pet hair maybe??? |  |
| Science Jeopardy! | Jess Psaros | Now entering the studio are today’s contestants. Test your knowledge in this battle of science brains. | * Online ‘board game’ with science questions AND answer key | No purchase of materials needed. |
| Guided Nature Walk | Greg Mernick  Chris Caposella  Keith Bouchard | A one hour guided tour around the school trails. | * Snow shoes? * Field Guides in Ziplocks * Binoculars | No purchase of materials needed. |
| Boat Races | Julie Edwards | On your mark, get set, float! Come build and race boats using fans and gutters. | * Collected materials that Julie has * Large container of aluminum foil * Box fan * 2 long gutters | No purchase of materials needed. |
| DNA Extraction | Therese Schroeder  Ann Berno Browing | DNA carries our genetic information that makes us who we are. Come and learn how to extract the DNA from fruit! | * heavy duty ziploc bags * 40 strawberries * salt * Suave shampoo, detergent needs to contain EDTA * cheesecloth * funnel * 50mL vial / test tubes * glass rods, * inoculating loop, or popsicle stick * ethanol * ice cooler | * Heavy duty ziploc bags * 40 strawberries * Salt * Suave shampoo * Cheesecloth * Popsicle sticks * Ethanol * Ice cooler |
| La Tour Eiffel | Heather Lockwood | Make your own model of the Eiffel Tower using popsicle sticks, toothpicks, and creativity while you learn about this famous Parisian monument. | * Popsicle Sticks * toothpicks * Styrofoam * Elmer's Glue | * 400-500 popsicle sticks * Elmer’s glue |
| Robotics | Kristen Johnson | Meet with members and mentors of the Essex High School Robotics Club! They will bring some of their robots to share, demonstrate and challenge you to see the possibilities and opportunities of both the club and robotics. |  | No purchase of materials needed. |
| Escape room | Anthony Jannetti | *"Sir Isaac Newton has decided to use his laws of motion against us to trap us in 8th grade science...unless we can solve his puzzles and use his clues and our knowledge of forces and motion to unlock the Breakout box."* Assembly your team! You and an unfortunate group of scientists have been locked in a room with only 45 minutes of oxygen. Team up with your fellow scientists, and solve the puzzles to escape your "prison" to share your newfound knowledge that will help save the world! | * No materials needed and he can take 20 students per session. | No purchase of materials needed. |
| Bridge Building | Lindsey Halman | Experience what it is to be an engineer. Your team will build a bridge to the specifications and then see them perform their function through a fun competition. Winning teams from each session will have the opportunity to attend the VT Bridge Building Competition in April at VTC. | * Wooden Popsicle sticks (~11.5 cm long, ~1 cm wide, ~0.2cm thick). * White all-purpose glue. Elmer’s or equivalent. * Wooden toothpicks (non-colored). * Dental Floss | * Elmer’s glue * Toothpicks (multiple boxes) * Popsicle sticks - many! * Dental floss |
| Geometric Art | Michelle Badji | Geometric Design: Create intricate and elaborate mathematical designs from just a compass and straightedge! We'll start with individual shape patterns and work our way towards tiled patterns. Prepare to be amazed at what you can create. | Compasses | * Compasses |
| Barbie Bungee Jump | Eric Biederbeck | Barbie is an adventure seeker to the max. She loves the thrill of death defying activities. She believes the adrenaline rush makes her hair more lustrous and her waistline thinner; so she will pay big bucks to the company which gives her the most thrilling bungee ride. In the back of her mind though, she wants to be sure that she's really safe. You are going to create a bungee line for Barbie that will give her the most thrilling, yet *SAFE,* fall. | I could use a couple of bags of rubber bands like the ones that Staples sells (I think they are 500 counts) | * 2-3 bags of rubber bands (500 count) |
| Biomechanics of Olympic Style Weightlifting | Chris Polakowski | The weightlifting session will be the physics that go into skillful lifting. Students will first see videos and hear a presentation on World Class Lifters. How they use the science of levers of the body to make the movement more efficient. Students will then practice what they heard and saw, with video analysis of their own lifting. | No materials needed | No purchase of materials needed. |
| Airdrop packages  Boston science kit | Laurie LaPlant | how can you make sure an aid drop package can protect its contents? Following the Engineer Design Process, we will make up mock aid drop packages, consider how to best drop them safely, be sure they can be seen and communicate what is in them. We will then be testing our packages to assess our designs. | * string * tape * small cardboard boxes about 4"x4"x2" (I can get at dollar store) * water balloons * flat marbles or small stones (have some at home) * craft foam sheets * 3 oz size paper cups * plastic grocery bags * sandwich size bags * twist ties * coffee stirrers, 7" plastic * paper plates, 8" diameter * construction paper * pipe cleaners * craft sticks * pompoms * index cards | * Water balloons * Craft foam sheets * 3 ounce size paper cups * Sandwich size ziplic bags * Twist ties * Plastic coffee stirrers (7”) * Paper plates (8” diameter) * Construction paper * Pipe cleaners * Craft sticks * Pom poms * Index cards * Small cardboard boxes (From dollar store) |
| Origami | Laura Pratt  Andrew Kasprisin | In this session you will be testing your skills with the Japanese art of folding paper into decorative shapes and figures**.** | * Origami plans/book * Origami paper | * Origami paper and maybe book? |
| IBM engineers | Curt Guenther  Brian Conroy |  |  | No purchase of materials needed. |
| CSI Forensics | Danielle Liguori  Lynn Zinger | **Someone has broken into the Museum of Natural History and stolen the skeleton of the Tyrannosaurus Rex! Yep--ALL of it! It's up to you and a crack team of crime scene investigators to examine the evidence and interrogate the suspects to find out whodunnit... and return Rita T Rex to her rightful home!** | * Red Nail Polish * Ruler * Water * Rubbing Alcohol * Coffee Filters * Four Different Black Pens * Paper Cups * Straws * Tape * Cocoa Powder * Clean Blush Brush * Microscope * Five Red Fabric Samples (two identical) * One Bleached Hair (with dark root) * Note Cards * Instruction Printouts * Chromebooks (for the instructional video options) * Four Closeable Manila Envelopes | * Coffee filters * Paper cups * Cocoa powder |
| Geocaching | John Synnott | Do you like treasure hunts? Geocaching is an outdoor recreational activity, in which participants use a Global Positioning System (GPS) receiver or mobile device and other navigational techniques to locate hide and seek containers, called "geocaches" or "caches", at specific locations marked by coordinates all over the world. | * Compasses |  |
| Intro to ArcGIS Online | Dana Cummings | If you love looking at maps, find yourself wondering where things are and why they are there, or are interested in a powerful digital tool to visualize and interpret data in ways that reveal patterns and relationships, come find out what you can do with ArcGIS online.  GIS is used in business, all levels and types of government, social sciences, natural sciences, emergency response, and more. The average salary for entry-level GIS analysts was over $40,000 in 2014!  Student Survey <https://tinyurl.com/gisems> | Student Chromebooks |  |
| OTHER |  |  |  | * Small glue sticks * 30 2-pocket folders |

**Materials to request from staff members:**

* Paper towel and toilet paper rolls
* Thin and thick cardboard
* 1 liter, 20 oz, and 2 liter bottles
* Plastic fruit containers
* Old CD’s
* Styrofoam
* Styrofoam meat trays
* Wrapping paper rolls

**Items we have in the building:**

* Rulers
* Hot glue guns
* Hot glue sticks
* Markers
* Scissors
* Computer paper
* Pipe insulation
* Marbles
* Round toothpicks?
* Meter sticks
* Rubber bands
* Straws
* Paper clips
* Box cutters
* Ping pong balls
* Single hole punch
* Box fan (2)
* 2 long gutters (Dan A. has these)
* Camping stove
* Matches

**Leftover materials from last year:**

* 1 full box of newspaper
* 2 costco size rolls of aluminum foil
* 24 small glue sticks (not for glue guns)
* Garbage bag full of assorted size plastic bottles
* Garbage bag full of pool noodles
* 8 sheets of mirror paper
* 1 box of transparency film
* 29 CD’s
* 9 rolls of masking tape
* 4 bags of large rubber bands
* 2 bags of smaller-medium sized rubber bands
* 26 small paper cups
* 2 packages of small toothpicks
* 4 sponges (some cut into strips or smaller pieces)
* 13 boxes of paper clips
* 3 packages of bamboo skewers (roughly 300)