STEAM Activities
Available at the Library

Bubblology Kit - Steve Spangler - 7 experiments

1) How to make a solution & how it works discussion.
2) Bubble blower test - comparing different solutions.
3) Do it yourself bubble blower - comparing different blowers - experiment with catching with a bare hand.
4) Bouncing bubbles - can you successfully catch a bubble? Using the glove(s) included, try to blow and catch bubbles. How it works discussion.
5) Strong bubbles - choose several landing surfaces. Predict if it will pop or not upon landing, discuss your observations.
6) Square bubbles - lead a discussion on why bubbles are round and how to change their shape.
7) Other bubble shapes - part of square bubble experiment
8) Bubble shape prints - create prints using bubbles - measure bubble sizes using the rings on the paper. Add color to the bubble solution to create a picture from the popped bubbles.

Electricity Kit - Steve Spangler - 7 experiments

1) Energy Stick - human conductors; create a human circuit
2) In Search of Conductors - using various objects, test whether the object can be a conductor. Further testing - use a bowl of water.
3) Make a conductor tester - lead an insulator or conductor challenge.
4) Build an electron bridge
5) Static electricity - balloons and static tube
6) Static electricity - Push or pull - move/roll aluminum can with charged balloon.
7) Static electricity - Amazing levitating loop and how it works discussion.

Newton's Science Kit - Steve Spangler - 5 experiments

1) Falling Hex Nut - nut at rest on card on an empty bottle, flick card to get hex nut to drop in and discussion on how it works.
2) Inertia Ring Drop
3) Spinning penny in a balloon - centripetal force experiment and discussion on how it works.
4) Stop and Go pendulum - sympathetic motion and how it works.
5) Newton's Beads - potential energy to kinetic energy and how it works.

Water Science - Steve Spangler - 8 experiments

1) A Penny for your thoughts - a discussion on cohesion and surface tension. How many water drops will fit on a penny? Which side holds more water? How it works discussion.
2) Floating water - air pressure and water pressure and how it works.
3) Mysterious water suspension jar - lead a discussion on cohesion, adhesion, surface tension and air pressure.
4) Gravity defying water - cohesion and adhesion and how it works.
5) Water gel - from a liquid to a solid, super absorbent polymers and how it works.
6) Baby diaper dissection - learn the water absorbing secret of diapers.
7) Vanishing water - water gel trick.
8) Find the water challenge - using water gel in one of 3 cups - fun magic type experience

Invisible Science - Steve Spangler - 8 experiments

1) Building a home for bacteria
2) Searching for bacteria
3) Sneak a peek at the growing bacteria - lead a ‘what do you think’ discussion.
4) Glowing germs - reveal how well you wash your hands and lead a ‘what do you think’ discussion.
5) Glowing germ lotion (need at minimum 30 minutes for this one) - discuss how germs are transferred to various objects and lead a ‘what do you think’ discussion.
6) Petri Dish Pudding (one week after starting growth - steps 1-3) - using the forms provided make observations of the growth from the initial samples.
7) Reading the invisible - invisible ink and black light experiment.
8) Stepping up to science fair (3 to 4 week process) - determine whether plain water, soap and hot water or disinfecting wipes are most effective in home cleaning.

Amazing Science - Steve Spangler - 6 experiments

1) Big eyes and upside down fun - magnify and invert print with a test tube and water and lead a discussion on how it works.
2) Cross-color mixing - turn 3 colors into 6 with science of color mixing and lead a discussion on how it works.
3) Lava tube bubbling blob - combine oil and water into a bubbling liquid that looks like lava and lead a discussion on how it works
4) Bubbling colors - color mixing activity.
5) Paper rainbow - absorption and color mixing and lead a discussion on how it works.
6) Rainbow bubbling tubes - density, miscibility, and color mixing discussion.

Sound Science

1) How does Sound Move? In this experiment kids will “see” sound as it moves through a thick medium of water.
2) There’s a Drum in My Ear? In this experiment kids will learn how our ears hear by making a replica of an eardrum.
3) Make It Louder! In this experiment kids will learn how sound is amplified.
4) Transmit Sound through String – In this experiment we can show how sound travels through a medium.
5) Sound Sandwich. In this experiment kids learn about sound and vibration and they experiment with how pitch changes.
6) Sound Tubes. Using the tubes at different lengths, we continue to talk about sound, pitch and the differences air pressure makes.

Magnetic Science – 33 Experiments & Games (42 pieces)

1) Magnets, Iron and Poles – 14 activities
2) Compass – 2 activities. You must have noticed how a compass needle moves, and sometimes dance wildly, when a magnet gets close to it. The compass needle is a very sensitive indicator of magnetic force
3) Magnetic Force and Magnetic Fields – 8 activities. Iron powder is used to make a magnet’s force visible, since the power accumulates wherever the magnetic force is strongest.
4) Electromagnetism – 4 activities. Do electric current and magnets have something in common?
5) Games with Magnets – 4 activities. You can take advantage of magnetic effects to play some fun games. A little patience, speed, or skill may be needed.

Stomp Rockets – 4 launch assemblies

1) Instructions on building rockets, with templates – lead a discussion on propulsion and basic engineering design. Test several variations of rockets and nose cones to determine which will fly best. *all ages*

https://www.jpl.nasa.gov/edu/teach/activity/stomp-rockets/

Tornado Tube

1) **Create a Tornado in a Bottle that provides a close-up look at a tornado vortex and** introduces students to kinetic energy and potential energy.

Chemical Reactions - Mento's Geyser Experiment

1) Study a MENTOS to discover reasons for a soda geyser. There are thousands of tiny pits (nucleation sites) on the candy's surface that lead to large amounts of CO2 bubbles being developed when the candy hits the soda.

Kit 1 Space – 4 experiments

1) Investigating the Insides (STARnet)

   Investigate the composition of unseen materials, using a variety of tools, as an analogy to how scientists discover clues about the interiors of planets using spacecraft.
   Activity Time – 40 minutes
   Appropriate for mixed age groups from 5 years and up.

2) Taking Earth's Temperature (STARnet)

   Participants are introduced to a type of energy, infrared radiation, which we can't see with our eyes but we can feel as heat. Then, they explore their outdoor environment using an infrared thermometer to measure the temperatures of concrete, asphalt, grass, and bare soil. Participants consider how the temperatures of different surfaces might have an influence on a global scale.

3) Light & Color: Exploring Visible Light

   This activity introduces learners to the visible-light spectrum and color mixing. Learners explore visible light be observing it with diffraction grating glasses to see how it can be broken up into its component colors (red, orange, yellow, green, blue, and violet).

4) Star Formation

   The space between stars, planets, and other large objects is not empty – it contains gas and dust. Stars are born when huge amounts of gas and dust clump together. The more gas and dust that clump together, the higher the new star's mass. NASA Scientists use telescopes to learn more about how stars form.

Kit 2 Space – 4 experiments

1) Nebula Spin Art

   A nebula is a large cloud of gas and dust in space that can be created by a dying star. Nebulas are responsible for mixing up and spreading out elements in space. NASA scientists can assign colors in nebula images to represent different elements and other characteristics we can't see with our eyes

2) Life Cycle of a Star - Bookmark

   The NASA/James Webb Space Telescope Life Cycle bookmark will model the life cycle of a massive star using beads to represent a star's development.

3) Star Constellation Craft (2 options)

   Learning Objective - To create and identify star constellations.

4) Star View Finder

   Learning Objective - To create and see a star constellation.