





Challong

Eyes to the Skies: December 14th Super Moon

A very rare occurrence happens in our skies this year - three Super Moons in one year! Mark your calendars because the third Super Moon of 2016 will appear on December 14th.

The term 'Super Moon' is used to describe a moon that is both a Full Moon and a moon that is in its closest approach to Earth along its elliptical orbit. The combination of these two things results in the largest moon as seen from Earth. A super moon can be as much as 14% bigger and 30% brighter than a normal full moon.

The full moon on November 14th was the closest full moon of 2016 and also the closest full moon so far in the 21st century. A full moon won't come that close to Earth again until November 25, 2034!



Sometimes we see low-hanging moons in the sky that appear very large. This is called a "moon illusion". This is an optical illusion that occurs when the moon is near the horizon and is viewed through trees or other objects in the foreground. These are not super moons, but still beautiful no less.



Give to the Max Day 2016 a Huge Success—Thank You!!

Thank you to everyone who supported Challenger Learning Center of Minnesota on November 17th for Give to the Max Day!

In just our first year participating, we raised over \$3,300 towards our mission. We are truly humbled to be part of your giving and we thank you for the incredible display of community support!

Challenger Learning Center of Minnesota

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STEM Inspired Holiday Gift Guide

Top STEM Gifts for 2016... (in our opinion!)

We at the Challenger Learning Center of Minnesota have spent many hours watching kids play with these incredible toys and can highly recommend any of them for your science-loving boy or girl. Prices range from \$10 to \$100 and are listed in no particular order as they all rank pretty high on our list!

• Sprk or Sprk+ by Sphero http://www.sphero.com/sprk-plus

- SPRK+ is far more than just a robot it's an app-enabled ball that gives your child hours of fun! Your child will learn programming, complete activities, and get inspired through connected play and coding. Parents can set up obstacle courses in their living room and have your child program the ball to roll, turn, bounce, change colors or whatever else it takes to make it through the maze! We've seen children as young as 6 years old have fun with this toy.
- Parents just download the app to their smartphone or tablet-device and the child learns to code through easy visual block-based coding. The robot comes with a charging station and additional accessories are available.



• Sprk is the older version selling for about \$70 compared to the newer version, Sprk+, selling at about \$100 on Amazon.

• Squishy Circuits <u>https://squishycircuits.com</u>

- Invented right here in the Twin Cities at the University of St. Thomas, Squishy Circuits use conductive and insulating play dough to teach the basics of electrical circuits in a fun, easy and hands-on way. You can buy the conductive play dough or make your own from the easy recipe right on their website. The child's creations come to life as they light them up with LEDs, make noises with buzzers, or spin with the motor. You can buy the whole kit or just the pieces you need.
- They have a lite kit for \$10, a standard kit for \$30 and a deluxe kit for \$60 or individual components starting at \$4.
- To the right are some pictures of Squishy Circuits in action at one of our events—even adults were having fun with it!



Best Kept Secret—Marbles the Brain Store at the Mall of America! Located on the 2nd floor near Nordstrom.



STEM Inspired Holiday Gift Guide

• Da Vinci's Catapult with BrainDrops

http://www.marblesthebrainstore.com/da-vincis-catapult-with-braindrops.htm

- We found this incredible toy at Marbles, The Brain Store at the Mall of America. This build-it-yourself catapult is a working re-creation of Da Vinci's 15th Century catapult. It takes less than an hour to build and it can catapult a braindrop or a small object over 12 feet!
- Braindrops might be the best part of this gift.
 When immersed in water, they will grow up to 100 times their original size! And the best part—they can be reused repeatedly.
- The catapult is \$24.99 and a tube of braindrops is \$9.99.
- For more options, they have similar build-it-yourself kits as well –such as the Rubber Band Launcher and Hydraulic Robotic Arm.
- Rubik's Race
 - If your child enjoys playing with a Rubik's cube, then they are sure to love this game! Rubik's Race is a fast paced, brain game for two players. Players shake the scrambler to create a pattern, then the challenge is to match your tiles to that pattern. Sold at Target for about \$20.

• Steve Spangler Science Club Membership

https://www.stevespanglerscience.com/club/

- Science every month!! Inspire your young scientist with home-delivered monthly science experiments from Steve Spangler Science. The experiments are fun and easy to follow, making science fun for your child.
- All subscriptions are for ages 7 to 14 and range from \$9.99 \$29.99. The 'STEMSnack' is \$9.99 for one experiment per month, the STEMIab is \$19.99 for up to 5 experiments per month or the STEMdeluxe is \$29.99 for up to 10 experiments per month. Read up on what level works best for your family and your budget.
- Steve Spangler is a TV personality, science teacher and best-selling author who finds the most creative ways to make science fun. His science videos on YouTube have more than 200 million views, and his books and online experiments are widely used by parents and educators to inspire students in STEM subjects.



How Can You Help?

- > Visit our website for more information and contact us to learn how you can get involved.
- > Sign up for an individual or Family Membership, or consider a donation
 - information on the website:
 <u>www.challengermn.org</u> /membership.html
- > Help us get the word out!



LEARNING CENTER Minnesota

"Learn from yesterday, live for today, hope for tomorrow. The important thing is not to stop questioning." -Albert Einstein





Family Science Experiment: Hovercraft!

Balloon + CD + Bottle Cap = Hovercraft?

Every parent knows that kids get excited when balloons are brought out! This experiment kicks it up a notch combining all the normal fun of balloons with some other household items to create a hovercraft! Here is what we'll need:



- Scrap DVD or CD
- Hot Glue GunScissors
- Medium—Large Size Balloon
 Water Bottle Cap
- Scissors
 Thumb Tack or Push
- Pin
- Toilet Paper tube (optional)
- Building your hovercraft:
- Step 1: Lay the disc label side DOWN on a flat surface.
- Step 2: Place the Bottle Cap upright onto the center of the disc. Carefully apply a bead of Hot Glue all the way around the parameter of the cap to seal and attach it to the disc. A good seal here is important!



- Step 3: Using the push pin or tack, carefully punch about 15 small holes spread around the top of the cap as seen to the right.
- Step 4: Using the scissors, cut the toilet paper tube in half. Then cut a slit down the length of it so we can pry open our new shorter tube a bit. There will be 4 sharp corners so use the scissors to round those a bit to prevent popping our balloon.



• Build Complete!

Using your hovercraft:

- Your hovercraft will work best on really smooth surfaces like a table or counter top.
- With your disc flat on the surface, inflate your balloon and carefully try to stretch the end of the balloon around the bottle cap. If you've built your hovercraft properly you should be able to press

down on the disc to keep air from escaping while the balloon is attached.

- If you balloon has a longer neck you can use the collar we made in Step 4 to hold your balloon upright on top of the hovercraft.
- With the balloon still inflated, gently slide your craft slowly across the surface. It should continue to float and coast



across your surface as long as the balloon is inflated. Like a real hovercraft, ours uses a bed of air under the disc to slide without friction across a surface! Try experimenting with the number of holes punched in the top of your cap—Does it hover better with more holes? **Enjoy your hovercraft!**



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