

Putting the amazing, fun, and powerful world of Science, Technology, Engineering & Math (STEM) in the hands of kids.



# Newsletter

## Weird but True

All parts of the human body can be replaced by machinery, except the brain.

## STEM Links: Alexa's Picks

[MinuteEarth: The Biggest Organism on Earth](#)

[The Brain Scoop: Spiders: The First Web Developers](#)

**Brain Teaser:** Add only one symbol to the Roman numeral nine to change it to an even number.

**IX**

**Previous answer:** white - it's a polar bear at the north pole

"Any sufficiently advanced technology is equivalent to magic."

- Arthur C. Clarke

## Using a Digital Microscope

By Alexa (age 9, )



I just got a [microscope](#)! It's super cool.

The microscope that we have looks like a cylinder with a round back and a light in the front. It comes with a stand and a ruler. It also has a magnification indicator. Unlike traditional microscopes, our digital microscope doesn't have an eyepiece.

The microscope works a few different ways. You can plug it into a PC or use its wifi to connect with an electronic device like an iPad.

With a digital microscope, you can look at and magnify different things. You can even take pictures and video! We have seen a dragonfly wing, a butterfly wing, a ladybug, coins (a penny and a quarter), a baby tooth that I just lost, and a beetle (it was hairy!).

I think that you should get a digital microscope so that you can see really cool stuff up close.



[Editor's Note: There are less and more expensive digital microscopes available. [This one](#) had good reviews and the features we wanted.]

#### Details:

- **Cost:** ~\$170
- **Magnifications:** 10x-200x, adjustable focus and magnifications
- **Video Format:** Motion JPEG 720P HD (1280x720)
- **Picture Format & Resolution:** JPEG 1280x720
- **Compatibility:** iPhone/iPad (iOS 5.1 or later) via Wi-Fi, Android Smart Phone/Tablet via Wi-Fi, PC (Windows-XP (SP2), Win7, Win8) via USB
- **Battery Life:** ~100 minutes

## FIRST LEGO League

"FIRST is more than robots. The robots are a vehicle for students to learn important life skills. They leave, even after the first season, with a vision, with confidence, and with a sense that they can create their own future." - Dean Kamen, Founder of FIRST

After our daughter's teammate chose the last programmed sequence, their LEGO MINDSTORMS robot rolled itself across the tabletop playing field, dropped down its arm, and began to push the car along the rail. Their little robot successfully pushed the car all the way across for the first time. Completing this last task propelled their robot performance to the top 5 at their first FIRST LEGO League (FLL) competition! The entire team went wild knowing they had worked together to make this happen.

FLL is an alliance between FIRST and the LEGO Group where 9 to 14-year-old kids in grades 4 to 8 have "tons of fun while they learn to apply science, technology, engineering, and math concepts (STEM), plus a big dose of imagination, to solve a problem". The program is built around core values focusing on teamwork, fun, friendly competition, learning, and what they call Gracious Professionalism® and Coopertition®. For this year's TRASH TREK, our older daughter and her teammates on their middle school's robotics club designed their LEGO MINDSTORMS robot to complete missions on a trash and recycling-themed table-top obstacle course. They also researched and presented their ideas for

composting food from their school cafeteria as a solution to an everyday trash problem.

All of the parents on our team were so impressed with the FLL program and how it brought out the best in our kids. There were 36 teams at the competition representing middle schools, public libraries, Girl Scout Troops, and independently organized groups of kids that want to have fun with robotics. In addition to FLL, there's an FLL Jr. for 6 to 9-year-old kids as well FIRST Tech Challenge for students in grades 7 to 12 and FIRST Robotics for high school students.

### Details:

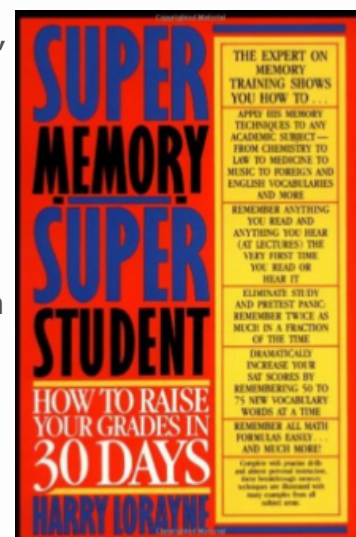
- **Skills:** Fine motor, curiosity, determination, teamwork
- **Preparation:** None, in fact their website says "no experience required"
- **Cost:** As part of our daughter's school's robotics club it was free for her. There are [rules and associated costs to start a FIRST LEGO League team](#) which includes 2 coaches, a 4x8 playing field table, internet access, a Field Setup Kit, registration, and a LEGO MINDSTORMS robot set.
- **Time & Energy:** Our middle school's robotics club meets once a week for an hour which is what the FLL recommends from September to March.
- **Contact Info:** FIRST LEGO League's [website](#) explains their philosophy, challenge for the season, impact of the organization, and how to get started.

## Super Memory

By Erika (age 12, )

If I asked you to memorize a list of 10 random things in order, such as pig, couch, vase, chicken, pillow, hill, knife, book, ribbon, and lamp, would you be able to do it? You might be able to remember it today, but what about later? What about a week from now? Or maybe two? Would you still be able to remember those objects? Luck for you, Harry Lorayne wrote a book, [Super Memory Super Student](#), with many memorization techniques to memorize license plates, US presidents, math formulas, and other things that you can never quite grasp.

One technique is to link concepts with images that are very bizarre and very interesting. For example, you can link the pig and the couch by having a giant pig sit on and crush a neon yellow couch with pink spots. If that is normal for you, then you should come up with an image that is even crazier. Go from one crazy image to another, until you can remember them. If you think of a giant ribbon entrapping a screaming lamp, then you should be able



to say "oh, it goes from a ribbon to a lamp."



If you need to memorize numbers then you can learn the peg system. In this system, each number has a certain sound connected to it. The number 0 stands for "S", "Z", and soft "C" as in citadel. The sounds of "T" and "D" are 1, and "N" is 2. The "M" sound is 3, and "R" is 4. The number 5 is "L", and 6 is "J", "Ch", and "Sh". 7 has the sounds of "K" and hard "C" like cake. "F" and "V" sounds are 8, and the sound "P" and "B" are used as a 9. Once you know the numbers and what sound you replace them with, you can come up with words for certain numbers before memorizing important things like your flight number. My flight number was 6267. 62 is chain and 67 is chick so I just had to think of a chick with a big metal chain around it (i.e. a gangsta chick).

These aren't the only methods for memorization, though. There are many more included in Lorayne's book. He includes pictures and diagrams on memorizing math and science formulas, presidents in order, the periodic table, and much more. I just used his techniques to memorize the first 50 digits of pi! If these peaked your interest go read his book to find out more.

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