

Meet Inventor **Nate Ball**

by Rachel Young

Today I'm visiting my friend Nate Ball. He's going to tell me all about inventing.



Click: Hi, Nate. It's so cool that you're an inventor. How long have you been one?

Nate: Always! When I was a kid, I built my own creations with Legos, blocks, wood scraps, old bike parts, whatever I could find. And my dad would give me old electronics equipment to play with. Taking stuff apart gave me ideas for how to make new things.

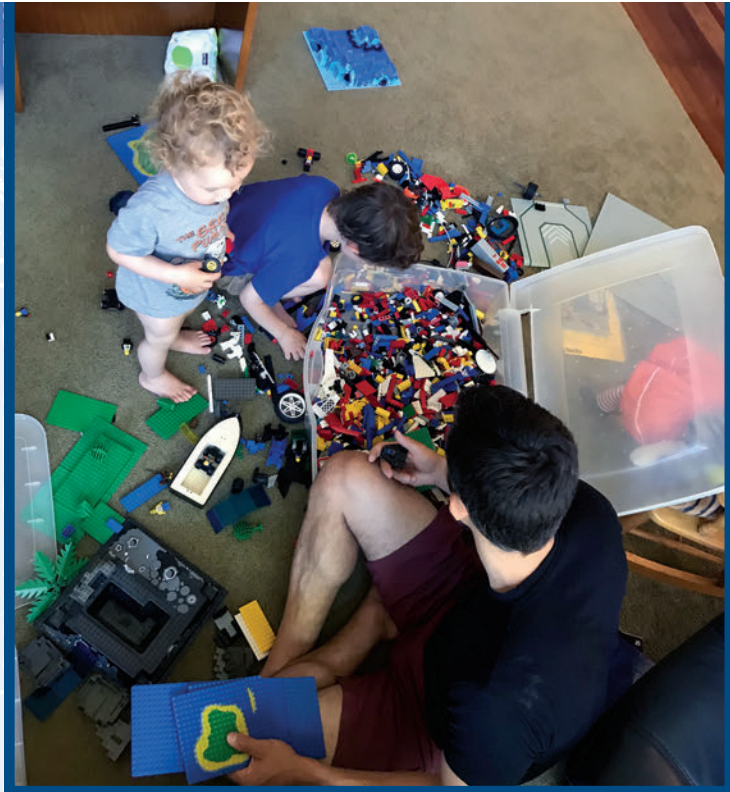
Nate had lots of ideas for stuff to build when he was a kid—a bottle rocket launcher, a land sailboat, and a pedal car with a seat for his little sister!

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Click: I like blocks and Legos too, Nate! But sometimes the stuff I build doesn't work the way I thought it would.

Nate: That happens to me all the time, Click. Inventing is about problem solving. You have to try, fail, fix it, and try again—over and over again.



Click: What was one of your failures?

Nate: When I was a kid, I wanted to make a go-kart, but I didn't know how. I built one that steered like a Lego car. But what worked for a little Lego car didn't work for a big go-kart. When I drove down our steep driveway, I couldn't steer and I crashed!

Grown-up Nate still likes to build with Legos. But now his sons Calvin and Leo help.

The first go-kart Nate built crashed when he tried driving it.

Click: Yikes!

Nate: But I kept trying and eventually I figured out how to use ropes to pull the wheels left and right.



Nate built this kayak from someone else's plans. Building from plans helped him learn how to design things better.



Click: That's not at all like a Lego car.

Nate: Your first try at an invention almost never works the way

you thought it would. But it does help you know what *not* to do.

Click: Then what?

Nate: You have to look at the big problem—why isn't this working?—and break it up into smaller problems. You solve those small problems one by one until your invention works!

Click: So, inventing is solving problems?

Nate: It sure is. The best inventions solve problems, big or small.

And, look, it floated!



Click: What's a problem you solved?

Nate: My friends and I invented the Atlas Powered Ascender to help rescue workers lift people out of caves and other tight places. It used to take a whole team of people hours to do the job. Now one or two people can do it in a much shorter time.



Nate's Atlas Powered Ascender lifts people up—fast. He and his friends invented it for search and rescue teams. But you never know how an invention will be used. Now people use it to fix power lines on high towers too.

Click: Your head must be full of ideas. How do you have so many?

Nate: It helps me to move my body before I sit down to create and invent. I started pole vaulting when I was a kid, and I discovered that my brain worked best after I practiced.

Click: I don't pole vault, but I do like to jump and play.

Nate: That'll work! Doing something creative can help too. I love to play the piano. It's a lot like inventing. You have to practice hard, combine old ideas with new ideas, and share your ideas with other people.



Go, Nate!





Click: Jane and I make up silly songs to sing. Will that help with inventing?

Nate: Of course! You don't have to be a pole vaulter or a piano player like me. Anything active or creative will help you be a better inventor.

Click: What do you do when you get an idea?

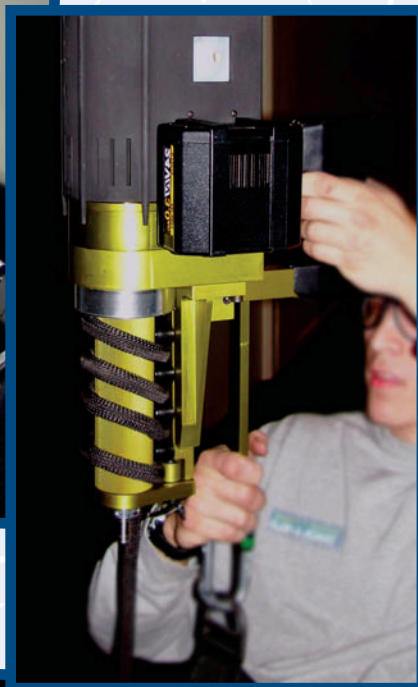
Nate: First, I like to get the idea out of my head and on to paper. I make a sketch and label the parts and draw arrows to show how the parts are supposed to move.

Click: How does that help?

Nate: As soon as I start drawing, I'm problem solving. Putting an idea on paper helps me see how I might have to change something to make it work.

Nate uses a computer to draw some ideas. Here's one of the pictures he and his friends made of their powered ascender invention.





Click: But how does it get from paper to the real thing?

Nate: The first step is to build something called a prototype. It's a sample or model of your invention. For something big, like a rocket ship, you build a small prototype. Then you test the prototype to see if your idea works. Usually it doesn't. Sometimes I go through dozens of prototypes before I'm ready to build the real thing.

Click: Wow! Inventing is a lot of work.

Nate: It is, but it feels amazing to see your invention help people. And to see people invent new uses for your invention.



When Nate and his friends had a sketch they liked, they built a prototype of the powered ascender and tested it.



Nate keeps working to make his inventions better. Look how high he can go with the powered ascender now!

Click: I want to be an inventor too! Here's my sketch for a back scratcher that also holds a radio, a plate of cheese, and a

Click magazine. I can have my favorite

magazine, snack, and song all at once. Plus get my back scratched! Can you help me make it, Nate?

Nate: I'd love to, Click. I have some Legos right here. How about if we start with a prototype? I'll just measure you first to see how big we should make it.

Click: Thanks, Nate!

