

mechanical



nuclear



systems



I Want to Be an Engineer!



software

electrical



aerospace



Welcome!

If you're like most kids, you've probably never thought much about engineers and what they do (unless, of course, your mom or dad is an engineer). But you might have second thoughts once you learn a little more about engineering.

That's because engineers have had something to do with pretty much everything around you—from the building where you go to school; to the house where you live, to the clothes you wear, and the food you eat; to the things you do for fun.

And fun is what this brochure is all about. As you work through the puzzles, games and activities on these pages, you'll find out more about some of the world's most creative people. They are the different types of engineers who work for Lockheed Martin, one of the leading systems and technology companies in the world.

Lockheed Martin engineers work on exciting projects ranging from airplanes to spacecraft and the vehicles that launch them. Throughout this brochure, you'll get a chance to meet some of those engineers up close and personal.



It's a Fact!

Engineers don't just work on serious things like skyscrapers and space shuttles. They work on fun stuff, too. An engineer designed the snowboard—and the rides at Disney World. And an engineer with degrees in both mechanical and nuclear engineering “accidentally” invented the very cool Super Soaker® squirt gun!

Science + Math + Great Ideas = Engineering

Engineers are curious, process-oriented, creative people who use their knowledge of science and math to solve problems, make things work better and turn ideas into reality.

Mechanical engineers design and develop pretty much everything that you would think of as a machine—from toasters to fighter jets. They work on things we rely on every day like heating and cooling systems, and cool things like the Mars Rover and microrobots for medical or military use.

Let's pretend to be a mechanical engineer and design a car. Here's what you'll need:

- A piece of cardboard (the back of a note pad works well)
- A piece of plain white 8½ x 11 paper
- Three non-bendable plastic drinking straws
- Four Life Savers® candies
- Scissors with a pointed nose
- Transparent tape

1. Cut the cardboard in half to make a rectangle that is about 5½ x 8½ inches.
2. Tape two straws to the bottom of the cardboard, centered front and back near the 5½-inch edges.
3. Carefully poke a hole in the middle of the cardboard toward the 5½-inch edge with the point of the scissors and stick the end of the third straw into the hole (see diagram above).
4. Cut a triangular "sail" out of the white paper and tape it to the straw "mast."



5. Slide a Life Saver® on each end of both straws. (These are the wheels.)
6. Blow on the sail to make your car move.

Now experiment by positioning the sail in different ways to see what happens. How far can you make your car go?

An engineer wouldn't stop now—this is just when things get interesting. An engineer would experiment to see how to make the car better. So...try some experiments. For example: What if you used something else for wheels (wooden thread spools or CDs, for example)? What if the sail were a different size or shape, or made out of a different material? The possibilities are limited only by your imagination!

It's a Fact!

Cool suits, which kept Apollo astronauts comfortable during moon walks, are today worn by race car drivers, nuclear reactor technicians, people with multiple sclerosis, and kids with genetic disorders.



Meet Arwen Davé, a graduate of Rensselaer Polytechnic Institute who works for Lockheed Martin in Moffett Field, California. Arwen is a mechanical engineer. She helped figure out how to levitate moon dust! She also helped a group of Girl Scouts get their space badges.

Sky High...and Beyond!



If it flies—or even if it moves fast (like a high-speed train or even a golf ball)—chances are an aerospace engineer had something to do with it.

Do you remember learning about the NASA mission that put two rovers on Mars just a few years ago? An aerospace engineer worked on that project!

Test your flight knowledge with this puzzle. The words relate to aerospace engineering.

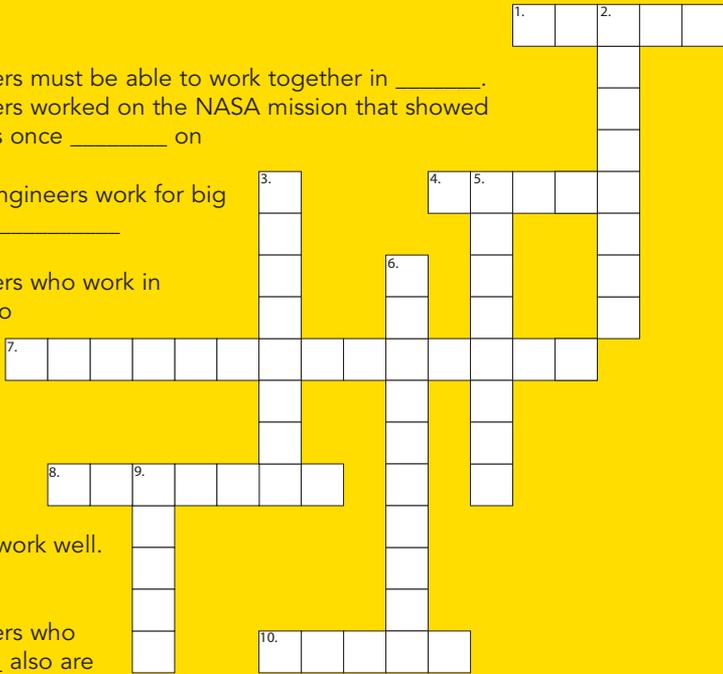
Clues

Across

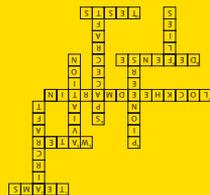
- Aerospace engineers must be able to work together in _____.
- Aerospace engineers worked on the NASA mission that showed scientists there was once _____ on Mars.
- Some aerospace engineers work for big companies like _____.
- Aerospace engineers who work in _____ help to keep our world safe.
- Aerospace engineers don't just design things; they also conduct _____ to make sure their designs work well.

Down

- Aerospace engineers who work with _____ also are known as aeronautical engineers.
- Today's aerospace engineering has its roots in the work of aviation _____ like Orville and Wilbur Wright.
- _____ is another word for flight.
- Aerospace engineers who work with _____ also are known as astronautical engineers.
- If it _____, an aerospace engineer probably had something to do with it.



Answer key:



Meet Jerome Socha, a University of Minnesota graduate who works for Lockheed Martin in Fort Worth, Texas. Jerome is an aerospace engineer. He says he used to see airplanes flying overhead and think to himself that he wanted to build those one day.

What's Your LQ?



In addition to being very creative and generating lots of new ideas, engineers also need to understand how things fit together logically. That's especially true when it comes to both systems and software engineers. They typically deal with making sure everything works together as they design new things to make our lives easier and better.

Try this pattern challenge to check your LQ (logic quotient). (OK, just pretend there *is* such a thing.) Write the numbers and draw the shapes that would logically come next for each of the following sequences (hint—look for the patterns of shapes and numbers on each line, then decide what should come next):

1.

16

14

12

10

8

6

2.

2

3

5

9

17

33

3.

30

29

27

24

20

15

4.

10

12

11

13

12

14

Now, make some of your own pattern challenges and test your friends or family members!

Answer key:

1.

4

2

 (subtract 2)
2.

65

129

 (multiply by 2 and subtract 1)
3.

9

2

 (subtract 1, subtract 2, subtract 3, etc.)
4.

13

15

 (add 2 and then subtract 1)

Meet Kerry Timmons, a graduate of the University of Colorado who works for Lockheed Martin in Littleton, Colorado. Kerry is a systems engineer. She decided to become an engineer after she attended a Women in Engineering Day at the university.



In Their Own Words...

Lockheed Martin engineers talk about
some cool parts of their jobs:

"I've simulated a torpedo hit and seen the first flights of an entirely new aircraft."

—Jerome Socha, aerospace engineer

"I was aboard the USS San Juan, a nuclear submarine, on its commissioning voyage to San Juan, Puerto Rico."

—James Evans, systems engineer

"I helped figure out how to levitate moon dust."

—Arwen Davé, mechanical engineer

"I run programs on two of the world's three fastest computers."

—Thomas Laub, nuclear engineer

"I get to work with robots."

—Shelia Salinas,
software engineer

"I flew with the U.S. Coast Guard on law enforcement missions off the Florida coast."

—Cheryl Kotan, systems engineer

It's a
Fact! *



Education pays off.
Consider this:

- The estimated lifetime earnings of someone with a high school diploma—\$1.2 million
- The estimated lifetime earnings of someone with an associate degree—\$1.6 million
- The estimated lifetime earnings of someone with a bachelor's degree—\$2.1 million
- The estimated lifetime earnings of someone with a master's degree—\$2.5 million

*From www.learndoeearn.org

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We never forget who we're working for®



**ENGINEERS
IN THE CLASSROOM**

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