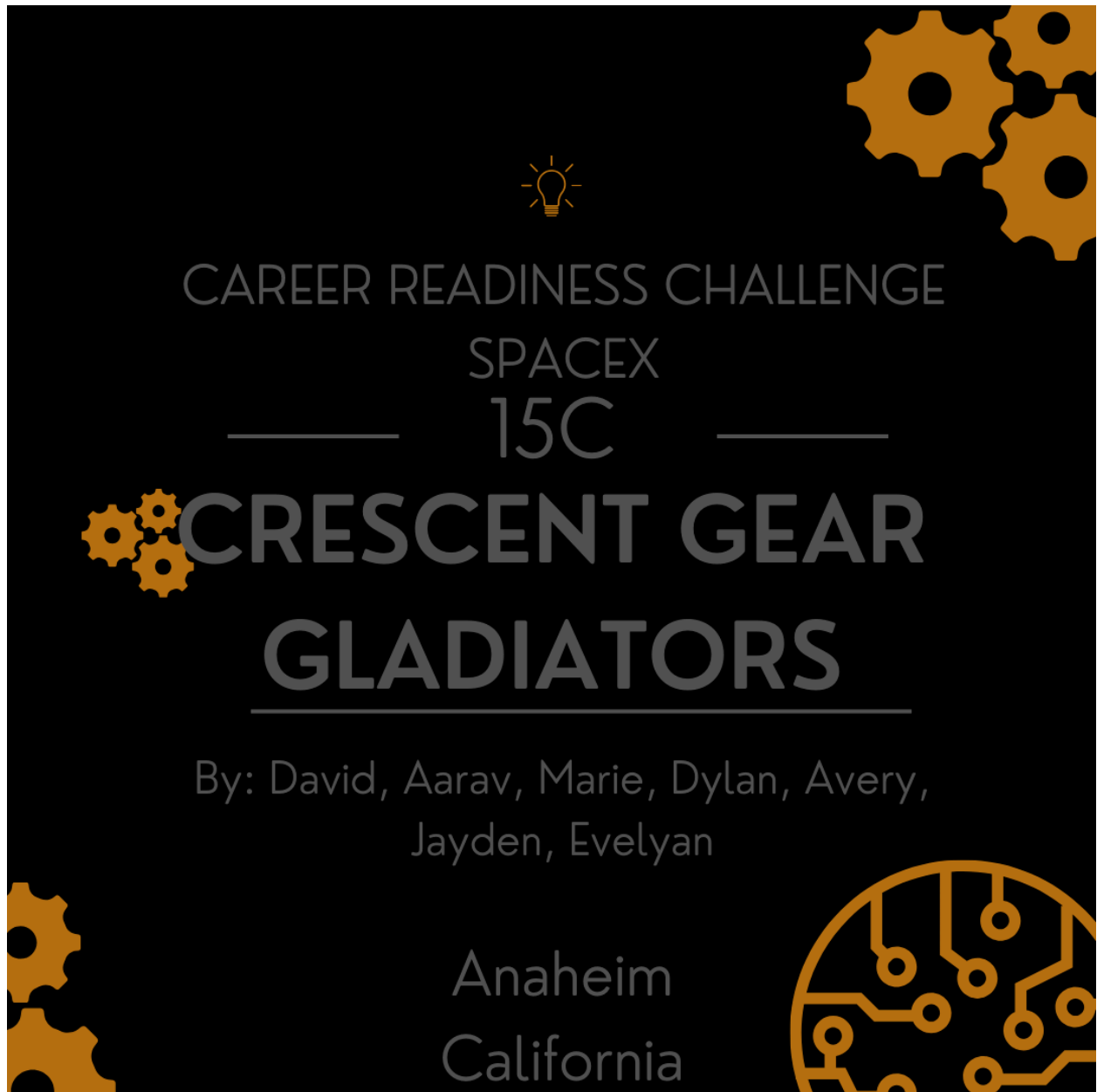


# Career Readiness Challenge

**SPACEX**

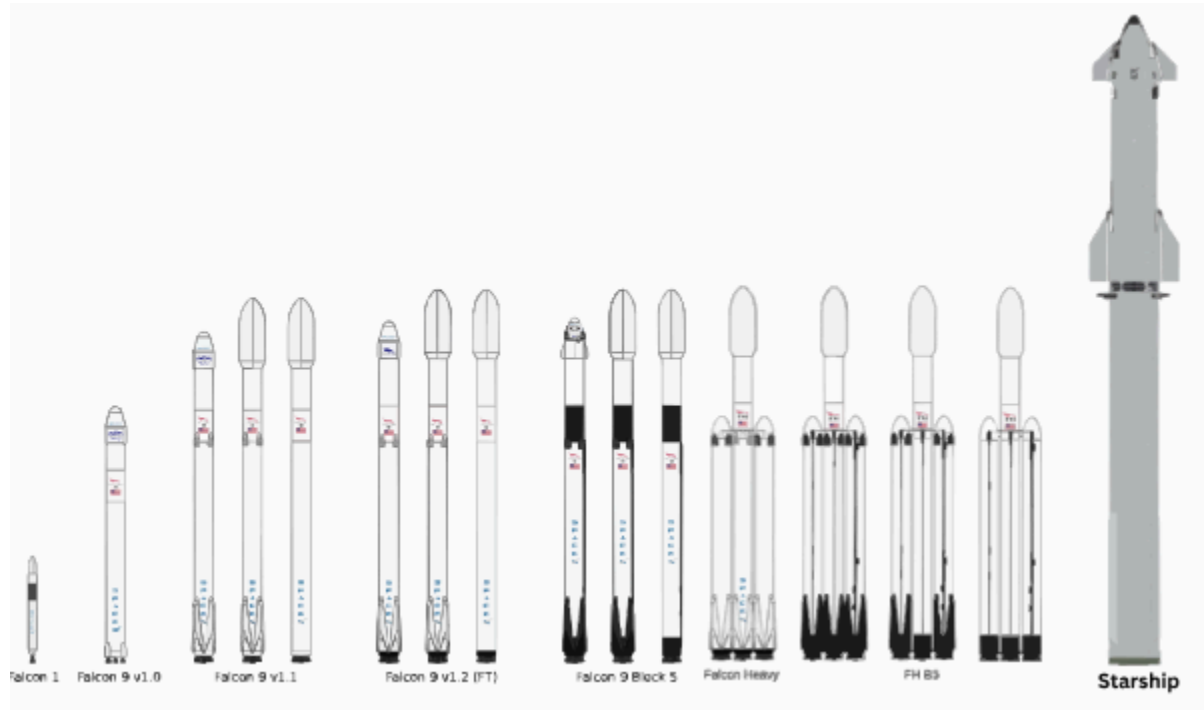
By The Members of 15C Crescent Gear Gladiators -  
David, Marie, Aarav, Avery, Dylan, Evelyn, and Jayden  
Anaheim C.A.



# All about SpaceX

SpaceX is an aerospace company. It was founded in 2002 by an entrepreneur named Elon Musk and Tom Muller. SpaceX started to make more affordable rockets and to promote space exploration. Their goal was to make spaceflight affordable and to colonize Mars.

This diagram shows spacecrafts that SpaceX built.



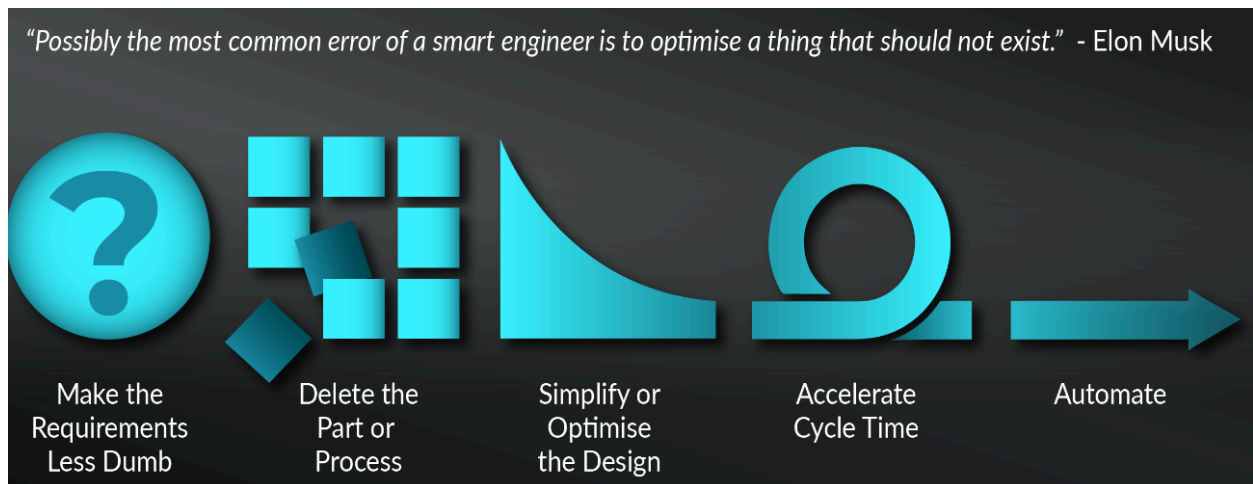
# How We Use the Engineering Design Process and How It is Different & Similar To SpaceX

Elon Musk (founder of SpaceX) has his own five step process that is like the Engineering Design Process. The first step of his process is to make the requirements less dull. Elon Musk says, "The requirements are always dull; it doesn't matter who gives them to you."

It is particularly dangerous when they come from an intelligent person, as you may not question them enough."

The second step of his process is to delete the part or process. Elon Musk says, "If parts are not being added back into the design at least 10% of the time, (it means that) not enough parts are being deleted." The third step is to simplify and optimize the design. "Possibly the most common error of a smart engineer is to optimize a thing that should not exist."

The fourth step is to accelerate the cycle time. Musk embraces the drive to go faster but warns against pointing your efforts in the wrong direction, saying "if you're digging your grave, don't dig faster." He seems to recommend an accelerated agile approach, but only after the first three steps of his process are satisfied to ensure that you're moving faster in the right direction. The fourth step of his process is to automate. Musk says that he is against automating before the previous steps are made.



Our team, 15C, uses the Engineering Design Process. The first step of the Engineering Design Process is to ask. This means to identify the question of the problem you are trying to solve. For example, when we were building our robot, we asked ourselves how to build an efficient robot that has the ability to score as many points as possible.

The second step of the Engineering Design Process is to explain. In this step, you need to plan or draft your ideas. When we were using this step to help us with our robot, we wrote ideas for mechanisms and ideas of how we want our robot to look like. After

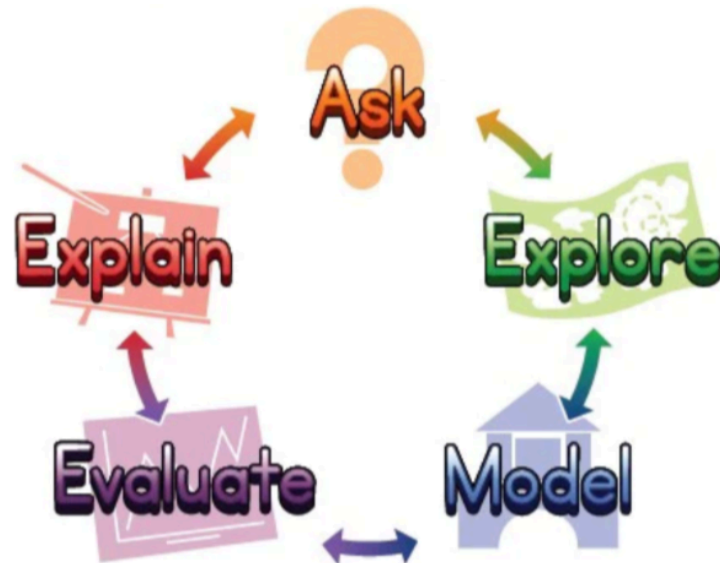
this, we started drawing a blueprint of our robot and the mechanisms we wanted to attach to it.

The third step of the Engineering Design Process is to model. During this step, you need to create a prototype, or model, of your idea that you chose. When we were using this step, we started building our robot.

The fourth step in the Engineering Design Process is to evaluate. In this step, you can start testing your prototype. See how it works, and try to improve your prototype. Then, start building the actual model. When we were using this step to build our robot, we started improving our prototype and tested it. We found some things wrong with it, so we had the opportunity to improve it.

The fifth and final step in the Engineering Design Process is to explain. In this step, you can present your idea and show how it works. When we were using this step, we presented our idea to our fellow teams in Crescent Elementary for feedback. We also presented our findings in our Engineering notebook.

There are similarities and differences between how our team uses the engineering design process and how SpaceX uses their own process. A similarity between our design processes is that they both are used to achieve a certain goal. A difference between them is that they have different steps to get to a certain goal.



# How Participation in the VEX Robotics Program Prepares Students for a Future Career

Vex IQ helps us by teaching us how to use the engineering design process and applying that to building and testing on robots. In Vex we learn how to cope with stressful situations, leadership scenarios, and teamwork collaboration. Especially in driving or programming, we are needed to make quick decisions in the heat of the moment. This decision can make the difference between twenty points to seventy-five points. In SpaceX the command center needs to make quick decisions to alter the rocket's course. This decision could mean the death of the spacecraft and its pilots, or a success. Our team has levels of leadership, Captain, co-captain and many different jobs like notebook manager, builder, designer, programmer, and drivers. Vex iq prepares us by teaching us leadership skills, and to follow through on tasks. In any career you must be able to follow instructions from your boss and get your tasks done in a certain amount of time. Lastly, robotics teaches us to collaborate with others on our team. On our robotics team there are seven members, so we need to communicate with each other in order to accomplish our goals. During a build meeting, the captain will assign us all different tasks. For example, 3 of us would build the outtake, while 3 of us would improve the drivetrain. And one person would record the meeting in the notebook. In SpaceX there are a lot of levels of executives in Space X, so they need to communicate between levels in order to make the company successful.



## Why We Chose SpaceX

We chose SpaceX for our online challenge because we thought it would be useful to learn about a program that designs and builds reusable rockets and spacecraft. We expected to learn a lot and it helps us with our future careers. Learning about SpaceX helped us understand how a professional company works, and how to use different processes to help us get to a certain goal.

