Help Wanted Family Activity

Sixty years ago, the human race could only imagine spaceflight. But in the last 55 years, our imagination and innovation have sent men to the moon, rovers to other planets, and space probes beyond our solar system.

Astronauts and cosmonauts have lived on space stations not just for a few months, but for a year or more. Although we tend to hear the most about these astronauts, or sometimes the Orion spacecraft development team, fewer than 600 people have ever actually been to space. What most people do not hear about is the thousands of people from hundreds of career fields required to get a single mission off the ground.

We have recently investigated the challenges and rewards of space exploration. In this activity you can explore exciting career options in the field of aerospace! Here’s how!

1. Take the Space Exploration Career Survey.
2. Launch into the specific career information, checking off all descriptions that match your education goals, interests, abilities, and personality.
3. Count the number of boxes you check to see which careers may be right for you!

As we continue to push the frontiers of space exploration, we need more than astronauts. We need engineers to design spacecraft, manufacturing and assembly experts to build it, and researchers and scientists to further our understanding of our species, our planet and its place in the solar system. It is today’s students who will accomplish these future goals.

Sources
Space Exploration Career Survey

Education
Which of the following subjects have you taken or do you plan to take in high school?
- Algebra
- Biology
- Calculus
- English
- Geometry
- Physics
- Chemistry
- Engineering
- Statistics
- Trigonometry

After high school, do you plan to earn (or have you earned):
- Bachelor’s degree
- Master’s degree
- M.D.
- PhD

Interests & Abilities
I am:
- Able to communicate with peers and the general public both orally and in writing.
- Able to formulate mathematical models.
- Able to formulate, plan and conduct experimental trials, and analyze findings.
- Able to see how a system should work and how changes in one part may affect others in the future.
- Able to synthesize general concepts from details.
- Able to use the scientific method to explore topics and solve problems.
- Good at building things and hands-on work.
- Good at finding a problem, considering all angles of the problem and possible solutions, and finalizing and implementing the solution.
- Good at listening to others.
- Interested in how things are made and why materials act the way they do.
- Interested in taking things apart and putting them back together.
- Interested in how things work.
Personality Type

Which of the following descriptions suits you best?

Realistic- You enjoy working with practical issues that may have hands-on solutions. You may prefer to work alone. Working with plants, animals, and real-world materials (wood, tools, masonry), and working in the outdoors appeals to you.

Investigative- You like to figure out the answers to problems and enjoy searching for an understanding of how the world works. You would rather work with the theoretical "thought problems" than engage in the hands-on aspect of the job.

Artistic- You value the creative parts of a job that do not require you to follow a set of rules or instructions. It is the artistic side of a task—acting, music, art, and design—that most appeals to you.

Social- You like working with other people, either as a team leader or a team member, more than working with machines or information. You have particular skills at teaching, giving advice, or helping others.

Enterprising- You do not shy away from the challenge of starting up and carrying out a new business project. You do not think about things; you just act! You enjoy leadership positions in which you have the chance to make decisions and take risks.

Conventional- You prefer work that has set procedures, rules, and routines. You have a strong interest in working with information and details, rather than generalizing and working with "big picture" ideas. You do not mind being a member of a team, rather than the leader.

Personality Traits

Which of the following describes you?

Adaptable
Analytic thinker
Cooperative
Creative
Detail-oriented
Flexible
Good communicator

Independent
Innovative
Persistent
Risk-taker
Self-motivated
Work well with others
CAREER FAST FACTS: AEROSPACE ENGINEER

Aerospace engineers may also be called....
Design Engineer, Flight Test Engineer, Systems Engineer, Flight Test Engineer, Systems Engineer

What does an aerospace engineer do?
Without aerospace engineers, there would be no space exploration! Aerospace engineers are responsible for the design and construction of spacecraft and launch vehicles. Aerospace engineers are also responsible for conducting testing to make sure that the prototype works as designed, and for making any necessary modifications.

Aerospace Engineers need the following educational background. Check all that interests you:
- High school and college subjects: Math (trigonometry, calculus), Science (physics, chemistry), Computer programming, Engineering (fluid dynamics, aerodynamics, thermodynamics, propulsion, mechanical)
- Bachelor’s degree in aerospace engineering or related field; Master’s Degree usually preferred

What INTERESTS and ABILITIES do aerospace engineers possess?
- Able to communicate with peers and the general public both orally and in writing
- Able to formulate mathematical models, plan and conduct experimental trials, and analyze findings
- Good at finding a problem, considering all angles of the problem and possible solutions, and finalizing and implementing the solution
- Like to take things apart and put them back together
- Interested in how things work

What are some PERSONALITY traits of aerospace engineers?
- Realistic, investigative
- Adaptable
- Analytic thinkers
- Detail-oriented
- Flexible
- Risk-taker

Average Salary
$105,380/year

Count the boxes you checked above.

I match with _____ of 2 Educational Background characteristics of aerospace engineers.

I match with ___ of 5 Interests and Abilities of aerospace engineers.

I match with ____ of 6 Personality traits of aerospace engineers.
CAREER FAST FACTS: BIOMEDICAL SCIENTIST/RESEARCHER

Biomedical scientists may also be called....
Biologist, Chemist, Biochemist, Physician

What does a biomedical scientist do?
Biomedical scientists and researchers apply principles of life science to medicine. Biomedical scientists work to understand how the human body works and how we can overcome injury, disease, or other health issues. They often use experimental data and clinical trials to conduct their research.

Biomedical scientists need the following educational background. Check all that interests you:
- High school and college subjects: Math (trigonometry, calculus), Science (biology, chemistry, anatomy & physiology), Computer Science/Programming
- Bachelor’s degree in biology, chemistry or related field. PhD in related field and/or M.D. preferred.

What INTERESTS and ABILITIES do biomedical scientists possess?
- Able to communicate with peers and the general public both orally and in writing
- Able to synthesize general concepts from details
- Able to use the scientific method to explore topics and solve problems
- Good at finding a problem, considering all angles of the problem and possible solutions, and finalizing and implementing the solution

What are some PERSONALITY types and traits of biomedical scientists?
- Investigative, realistic, artistic
- Analytic thinkers
- Detail-oriented
- Good communicators
- Persistent
- Self-motivated

Average Salary
$ 80,000/year

Count the boxes you checked above.
I match with _____ of 2 Educational Background characteristics of biomedical scientists.
I match with ____ of 4 Interests and Abilities of biomedical scientists.
I match with ____ of 6 Personality traits of biomedical scientists.
CAREER FAST FACTS: COMPUTER SCIENTIST/SOFTWARE DEVELOPER

Software developers may also be called....
Application Integration Engineer, Programmer Analyst, Software Engineer

What does a software developer do?
Software engineers design, create, and troubleshoot all of the computer applications and software needed to run a spacecraft, a mission control system, or the analytic programs needed for research. Software engineers work with other engineers and designers to make sure that their products are compatible with all aspects of the mission.

Software developers need the following educational background. Check all that interests you:
High school and college subjects: Math (algebra, geometry, calculus, statistics), Science (physics), Computer programming, Electronics
Bachelor’s degree in Computer Science, Computer Engineering, Information Science, or related field

What INTERESTS and ABILITIES do software developers possess?
Able to communicate with peers and the general public both orally and in writing.
Able to see how a system should work and how changes in one part may affect others in the future
Good at listening to others
Skilled at finding a problem and developing a solution

What are some PERSONALITY types and traits of software developers?
Investigative, realistic, conventional
Adaptable, flexible
Analytic thinkers
Detail-oriented
Innovative, creative
Work well with others

Count the boxes you checked above.
I match with ____ of 2 Educational Background characteristics of software developers.
I match with ____ of 4 Interests and Abilities of software developers.
I match with ____ of 6 Personality traits of software developers.

Average Salary $95,000/year
CAREER FAST FACTS: MATERIAL SCIENCE ENGINEER

Material science engineers may also be called....
Material Engineer, Process Engineer, Metallurgist, Test Engineer

What does a material science engineer do?
Material science engineers investigate the material and create new machinery and methods used to manufacture material that must meet specific design and performance specifications. Material science engineers also discover new uses for existing material.

Material science engineers need the following educational background. Check all that interests you:
- High school and college subjects: Math (algebra, trigonometry, calculus), Science (biology, chemistry, physics), Computer Programming
- Bachelor’s degree in material science and engineering or in a related engineering field

What INTERESTS and ABILITIES do material science engineers possess?
- Able to communicate with peers and the general public both orally and in writing
- Able to formulate plan and conduct experimental trials, and analyze findings
- Good at finding a problem, considering all angles of the problem and possible solutions, and finalizing and implementing the solution
- Interested in how things are made and why materials act the way they do

What are some PERSONALITY types and traits of material science engineers?
- Investigative, Realistic, Enterprising
- Adaptable, flexible
- Analytic thinkers
- Detail-oriented
- Innovative
- Self-motivated

Average Salary
$ 88,000/year

Count the boxes you checked above.
I match with _____ of 2 Educational Background characteristics of material science engineers.
I match with _____ of 4 Interests and Abilities of material science engineers.
I match with _____ of 6 Personality traits of material science engineers.
CAREER FAST FACTS: MECHANICAL ENGINEER

Mechanical engineers may also be called....
Design Engineer, Mechanical Engineer, Process Engineer, Product Engineer

What does a mechanical engineer do?
Mechanical engineers design, construct, and test mechanical equipment -- such as tools, engines, and machines. They oversee the installation, operation, and repair of equipment and devices. Mechanical engineers may also visit worksites when equipment requires modification.

Mechanical Engineers need the following educational background. Check all that interests you:
- High school and college subjects: Math (trigonometry, calculus); Science (biology, chemistry, physics); Engineering and Design
- Bachelor’s degree in mechanical engineering or mechanical engineering technology

What INTERESTS and ABILITIES do mechanical engineers possess?
- Able to formulate, plan, and conduct experimental trials, and analyze findings
- Able to synthesize general concepts from details
- Enjoy building things, hands-on work
- Good at finding a problem, considering all angles of the problem and possible solutions, and finalizing and implementing the solution

What are some PERSONALITY types and traits of mechanical engineers?
- Investigative, realistic, conventional
- Analytic thinkers
- Cooperative
- Detail-oriented
- Independent
- Innovative

Average Salary
$ 83,000/year

Count the boxes you checked above.
I match with _____ of 2 Educational Background characteristics of mechanical engineers.
I match with ____ of 4 Interests and Abilities of mechanical engineers.
I match with ____ of 6 Personality traits of mechanical engineers.