

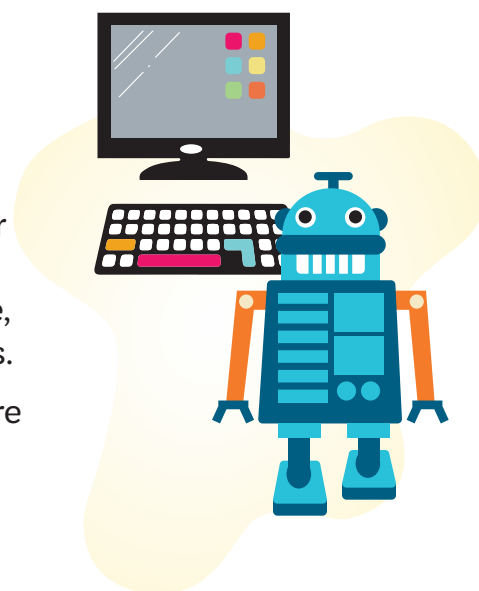
## STEM Career Exploration 2

# STEM Field Sheets

## STEM FIELD: COMPUTER SCIENCE

Change the World with a Career in Computer Science:

- **Build devices:** **Computer hardware engineers** design computer parts, such as keyboards and memory chips. They stay on top of what's new in tech to make sure the new device, like a phone, tablet, or computer, can run the latest apps and other programs.
- **Design robots:** **Roboticians** build robots that can do jobs that are too hard, dangerous, or boring for humans.
- **Solve cybercrimes:** **Digital forensics experts** search for digital clues to keep us, our computers, and all of our data (that's information!) safe.
- **Keep data safe:** **Cryptographers** write code, or instructions, to encrypt sensitive data. This keeps the data safe from hackers and provides privacy for people and businesses.



### Can you complete the challenge?

1. Use the code below to encrypt a message in Morse Code.
2. Exchange your message with another Junior and decrypt her message!

A • —	H • • • •	O — — —	V • • • —
B — • • •	I • •	P • — — •	W • — —
C — • — •	J • — — —	Q — — • —	X — • • —
D — • •	K — • —	R • — •	Y — • — —
E •	L • — • •	S • • •	Z — — • •
F • • — •	M — —	T —	
G — — •	N — •	U • • —	

**STEM Career Exploration 2****STEM Field Sheets****STEM FIELD: CREATIVE TECHNOLOGY & DESIGN****Change the World with a Career in Creative Technology & Design:**

- **Code apps, websites, or video games:** **Programmers** write code to design things that are both useful and fun: from creating an app, website or video game to animating a movie or TV show.
- **Create digital designs:** Tons of jobs use technology to bring an idea to life! **Architects** use computer software to sketch building plans. **Entertainment engineers** create museum exhibits that light up and respond to the viewer.
- **Design clothing and products:** **Industrial designers** might use a 3D printer to build a new pair of sneakers. **Fashion designers** might use sensors to create clothing styles that react to changes in weather and body temperature.
- **Create sound effects:** **Sound producers** build the noises you hear in movies, TV shows, and video games. They use computers and other technology to record the sounds before careful mixing them to fit the project.

**Can you complete the challenge?**

You're creating a new artwork made out of stained glass that can light up!

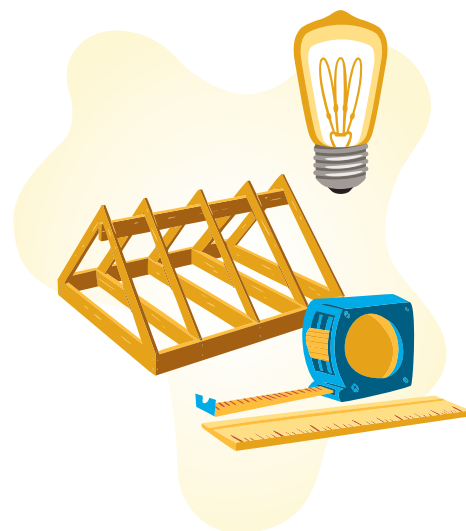
*For the challenge:*

1. Create a design with different shapes to fit into a rectangular window.
2. Measure how much wiring you'll need to outline the shapes.

**STEM Career Exploration 2****STEM Field Sheets****STEM FIELD: ENGINEERING**

Change the World with a Career in Engineering:

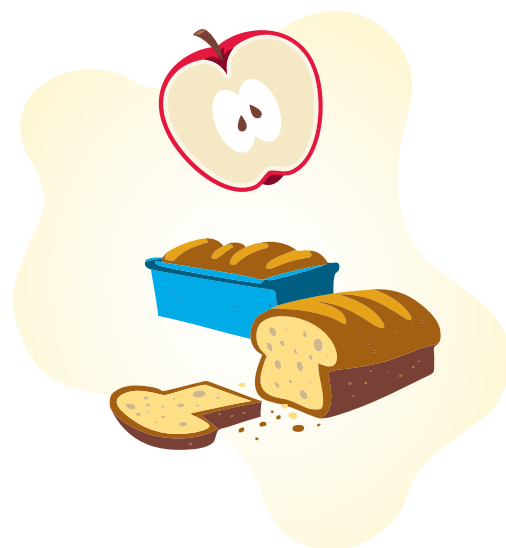
- **Engineer our world:** **Engineers** have jobs in every kind of field! They help to build solutions to problems big and small.
- **Understand our world:** **Chemical engineers** work in chemistry, physics, and biology to design new foods, medicines, and materials.
- **Build our world:** **Civil engineers** design infrastructure like bridges, water systems, and roads.
- **Power our world:** **Electrical engineers** build electronics like motors and sensors.
- **Invent our world:** **Mechanical engineers** create all types of machines, from batteries to refrigerators.

**Can you complete the challenge?**

Use the materials at your station to build a bridge that can reach across two chairs.

**STEM Career Exploration 2****STEM Field Sheets****STEM FIELD: FOOD & AGRICULTURE****Change the World with a Career in Food & Agriculture:**

- **Cook and bake:** Chefs and bakers have the important job of making food that's delicious! A **baker** makes tasty food using algorithms (recipes!) and the science of mixing different ingredients together. **Research chefs** create and test new recipes and menus for places like restaurants and hotels.
- **Farm in a city:** **Urban farmers** create green space in vacant lots, backyards, and even rooftops to create gardens and farms in city settings.
- **Design new recipes:** **Food scientists** create new flavors and food combinations to make a new dish or product to be made in a factory.
- **Grow more food:** **Agricultural engineers** find new ways for farmers to grow food and feed more people, like using drones or vertical farming.

**Can you complete the challenge?**

We have five basic tastes: sweet, sour, salty, bitter, and umami. Umami is a kind of savory flavor.

Can you identify which food at the station goes into each category?

## STEM Career Exploration 2

# STEM Field Sheets

### STEM FIELD: HEALTH & WELLNESS

Change the World with a Career in Health & Wellness:

- **Help others to be healthy:** You might first think of a **doctor** or **nurse**, but there are tons of jobs in medicine! For example, a **sports conditioning specialist** trains athletes to be game-ready and stay safe on and off the field.
- **Practice a specialty:** Medical professionals work in all different fields of medicine. For example, **cardiologists** are doctors that focus on the heart, and **neurosurgeons** are surgeons who work with the brain.
- **Cure diseases:** **Medical scientists** conduct research to investigate how to treat and prevent people from getting sick.
- **Invent medical devices:** **Biomedical engineers** solve health care problems by designing things like prosthetics and artificial organs.



#### Can you complete the challenge?

How many times does your heart beat in a minute?

Find out by:

1. Placing two fingers between the bone and the tendon over your radial artery, located on the thumb side of your wrist.
2. Counting the number of beats in 15 seconds once you feel your pulse.
3. Multiplying this number by 4 to calculate your beats per minute.

If you're having a hard time finding your pulse, try doing some jumping jacks first!

**STEM Career Exploration Badge****STEM Field Sheets****STEM FIELD: NATURE & THE ENVIRONMENT**

Change the World with a Career in Nature & the Environment:

- **Care for animals:** Some people have jobs that focus on helping animals—a **veterinarian** treats household animals like cats and dogs, a **zoologist** studies bigger animals like elephants, and a **marine biologist** looks at aquatic animals like fish and dolphins.
- **Study earth and climate:** **Meteorologists** predict weather and study how it affects the earth and people. **Environmental scientists** look at how problems like pollution affect nature and human health.
- **Explore the universe:** **Aerospace engineers** are experts on flight and help astronauts travel to space. They build aircrafts, spacecrafts, satellites, missiles, and defense systems.
- **Protect nature:** **Conservation scientists** are experts on how best to use land without hurting the soil and water. They work at parks and forests to help communities have enough water, minerals, trees, and other resources for today and tomorrow.

**Can you complete the challenge?**

Scientists and others that work in nature sometimes create field maps as part of their field notes. Field notes help them record data and remember what they observed.

*For this challenge:*

1. Create a quick field map of the meeting room.
2. Write down any observations, questions, or things you notice.