

These activities and questions have been designed for you to have engaging discussions with your student about the STEM jobs they are encountering in their Learning Blade schoolwork. Here is an overview of what is included in this.



**Table Talk:** These are questions you can ask your student without having any background knowledge in STEM. These will be easy conversation starters.



**Dig Deeper:** These are questions with suggested links to learn more about different STEM careers to explore with your student.



**Home Lab:** This is an easy, hands-on activity to do with your STEM student.

## What Has Your Student Been Learning?

Your friend Simon has a rare congenital heart defect. It is so rare that the doctors are still not sure what to do about it. Along the journey students will need to determine what tools (heart repair, organ transplants, air ambulance, medical technology, and body imaging) and teammates/experts (doctors, nurses, therapists, biologist, paramedic, and biomedical engineer) are needed to assist **in saving Simon's life**.

## TABLE TALK

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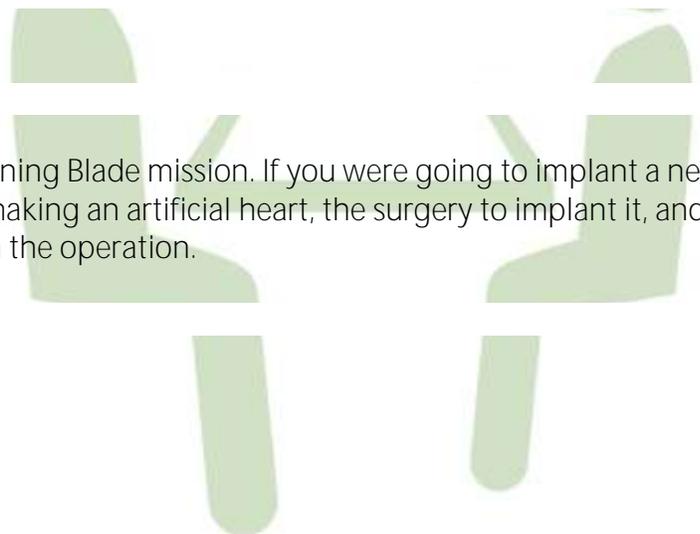
Starter Question:

Medical surgery involves more than just a doctor. Think about all the careers that were involved in engineering the tools, devices and medical supplies used, think about the ancillary staff, think about the people who help make a hospital run. How many careers can you come up with? We bet you can reach at least 20.

Give it a try.

Helpful Hint:

Think about the heart surgery mentioned in the Learning Blade mission. If you were going to implant a new heart device, who would be involved? Think about making an artificial heart, the surgery to implant it, and the people who would help the patient recover from the operation.





# #STEM4Parents Heart Surgery

**Dear Parent/Guardian,**

I kindly ask that you fill out and sign this piece of paper so I can provide your student with a completed grade for this #STEM4Parents homework assignment.

I discussed with \_\_\_\_\_ the Heart Surgery Mission in Learning Blade.  
(student name)

\_\_\_\_\_  
Student Signature



\_\_\_\_\_  
Parent/Guardian Name (print)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Parent/Guardian Signature

## DIG DEEPER

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Resources for More Information:

In this section, we provide a series of links and associated questions to DIG DEEPER on individual careers addressed in the Heart Surgery Mission. Feel free to explore these with your STEM student as you model curiosity and lifelong learning.

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Biomedical Engineers apply engineering principles and design to medicine and biology for healthcare purposes. Some things Biomedical Engineers have come up with include artificial organs, artificial limbs, surgical equipment, and much more. These jobs push the medical field further by providing solutions to medical problems. Below is a link to 5 interesting facts about Biomedical Engineering and videos.

<http://healthresearchfunding.org/5-interesting-facts-biomedical-engineering/>

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Have you ever broken a bone and had to have an X-Ray done? X-Rays are just one form of Body Imaging technologies we have today. Some others include Magnetic Resonance Imaging (MRI), CAT scans, Ultrasounds, and many more. Each different type of body imaging has its own uses and display different types of images. For example, and MRI will image organs and soft tissue, but X-Rays will pick up bones, infections, and more. An x-ray is often the first exam doctors use. Look at the different types of body imaging and what images they produce below and discuss what benefits and disadvantages each have.

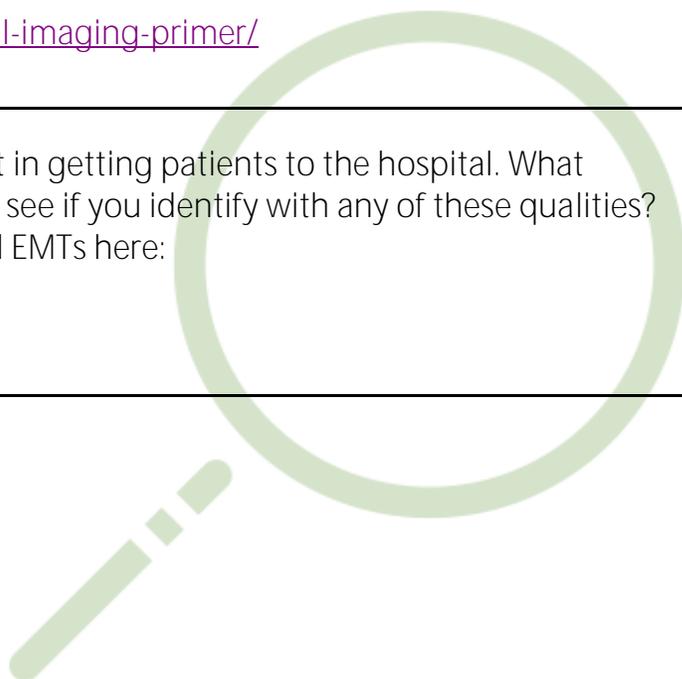
<http://www.medicalimaging.org/about-mita/medical-imaging-primer/>

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Paramedics are trained in emergency care and assist in getting patients to the hospital. What qualities should paramedics possess? Make a list and see if you identify with any of these qualities? Read about the differences between paramedics and EMTs here:

<https://www.cpc.mednet.ucla.edu/>

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Trying your hands at Biomedical Engineering.

Use common household materials to construct a rescue and/or patient transport device that is stable, lightweight, low-cost, portable, and sturdy.

You will be rescuing people that are in an unreachable place by a vehicle, therefore your device should be lightweight and portable.

It should be able to support a simulated small child (such as a large vegetable, fruit, or potato). This project is a prototype so it does not have to be large enough to support a human.

Materials:

- Household Items such as:
- Popsicle sticks
- Plastic bags
- Straws
- Paperclips
- tape
- a vegetable, fruit, or potato
- legos
- etc

