Through live webinars with NASA engineers, exploring the Launch Pad, and building your own robot, complete this worksheet to demonstrate your knowledge of robotics. This worksheet will not be turned in and for your own use to demonstrate knowledge of robots.

**SAFETY**

What are likely hazards you may encounter while working with robots?
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What should you do to anticipate, mitigate and prevent, and respond to these hazards listed above?
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Describe the appropriate safety gear and clothing that should be used when working with robotics.
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List first aid and prevention for the types of injuries below that could occur while participating in robotics activities and competitions.

**Cuts** –
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**Eye Injuries** –
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**Chemical Burns** –
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**Heat Burns** –
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**ROBOTICS INDUSTRY**

List the kinds of things robots can do.
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How are robots best used today?
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List the similarities and differences between remote-control vehicles, telerobots, and autonomous robots.

**Similarities** –
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**Differences** –
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List three different methods that robots can use to move themselves other than wheels or tracks and describe when it would be appropriate to use each method.

1. _______________________________________________________________
   __________________________________________________________________

2. _______________________________________________________________
   __________________________________________________________________

3. _______________________________________________________________
   __________________________________________________________________

Choose three of the five major fields of robotics below and describe their importance to robotics development.

Human-robot interface  Mobility  Manipulation  Programming  Sensors

Field #1 = ___________________________________________________________
           __________________________________________________________________
           __________________________________________________________________
           __________________________________________________________________

Field #2 = ___________________________________________________________
           __________________________________________________________________
           __________________________________________________________________

Field #3 = ___________________________________________________________
           __________________________________________________________________
ROBOTICS MERIT BADGE (CONTINUED)

BUILD A ROBOT

• **Choose a task** for the robot or robotic subsystem that you plan to build. Include sensor feedback and programming in the task.

• **Design your robot.** The robot design should use sensors and programming and have at least 2 degrees of freedom.

• **Build a robot** or robotic subsystem of your original design to accomplish the task you chose. Then do one of the following:
  1. Program your robot to perform the task you chose for your robot.
  2. Prepare a flowchart of the desired steps to program your robot for accomplishing the task.

• **Test your robot** and record the results. Take photos of your robot to show!

Take notes on what occurs when building and testing your robot below.

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ROBOTICS MERIT BADGE (CONTINUED)

How well did your robot accomplish the task?
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What are improvements you would make?
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_________________________________________________________________

What did you learn from building and testing a robot?
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_________________________________________________________________

COMPETITIONS

Learn about three youth robotics competitions, including the type of competition, time commitment, age of the participants, and how many teams are involved.

**Competition #1 = _________________________________________________**
- Type of competition = _____________________________________________
- Time commitment = _______________________________________________
- Age of participants = _____________________________________________
- How many teams are involved = _____________________________________

**Competition #2 = _________________________________________________**
- Type of competition = _____________________________________________
- Time commitment = _______________________________________________
- Age of participants = _____________________________________________
- How many teams are involved = _____________________________________

**Competition #3 = _________________________________________________**
- Type of competition = _____________________________________________
- Time commitment = _______________________________________________
- Age of participants = _____________________________________________
- How many teams are involved = _____________________________________
List three career opportunities in robotics.

1. ________________________________________________________________
2. ________________________________________________________________
3. ________________________________________________________________

Pick one of the above and learn about the education, training, and experience required for this profession.

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Why does this career in robotics interest you?

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