

Robotics

Module Activity Sheet

Name _____ Block _____

Enter Date example: Oct. 25

Session # 1

Module Guide Score = _____ / 10 Date Completed _____
Exploring Robots Activity Date Completed _____
Assessment Answers Completed in Packet (Pg. 2)... Date Completed _____
Review Game (Bloop or Critter Cross Played) Date Completed _____

Session # 2

RCA 's Score = _____ / 30 Date Completed _____
Operating SAM Manually Activity Date Completed _____
Vocabulary Page Completed in Packet (Pg. 5)..... Date Completed _____

Session # 3

RCA's Score = _____ / 30 Date Completed _____
Programming SAM Activity Date Completed _____
Assessment Answers Completed in Packet (Pg. 3)... Date Completed _____
Technical Writing Page Completed in Packet(Pg. 6) Date Completed _____

Session # 4

RCA's Score = _____ / 30 Date Completed _____
Cartesian Navigation (XYZ)Activity Date Completed _____
Career Sheet Page Completed in Packet (Pg. 7)..... Date Completed _____

Session # 5

RCA's Score = _____ / 30 Date Completed _____
Gripper / SAM Assembly Activity Date Completed _____
Word Search Page Completed in Packet (Pg. 8) Date Completed _____

Session # 6

Rooster Challenge Activity Date Completed _____
Assessment Answers Completed in Packet (Pg. 4)... Date Completed _____
Test Review Page Completed in Packet (Pg. 9)..... Date Completed _____

Session # 7

Post Test Score = _____ / 100 % ... Date Completed _____
Remote Manipulation with TV Activity..... Date Completed _____
I Have Inspected My Packet – It is Complete..... Date Completed _____

Robots

Assessment Worksheet for Session 1

Instructions: On the session day indicated above, please write the answers to the assessment questions.

If you need more room to write a response – use the back of this page.

Session 1 – Exploring Robots

1. **Explain** the power rating of a servo.

2. **Provide a reason** why robots are more efficient than human workers at repetitive jobs.

3. **Draw** a sketch, which correctly identifies the x-, y-, and z-axes used in the Cartesian coordinate system.

4. **Give two examples** of a repetitive job that a robot could perform.

Robots

Assessment Worksheet for Session 6

Instructions: On the session day indicated above, please write the answers to the assessment questions.

If you need more room to write a response – use the back of this page.

Session 6 – Rooster Challenge

1. **Was** rooster easy or difficult to use? **Why?**

2. **Why** is it important to properly trim the control levers before using Rooster?

3. **Identify** (list) the different control axes of the *Rooster*.

4. **Describe** a situation where it would be advantageous for a remote robot to replace a human worker.

Robotics

Vocabulary Worksheet

Please write a definition for each vocabulary term.

1. Automation-

2. Actuator-

3. Control box-

4. LOGO-

5. Program (robots)-

6. Roll-

7. Sensor-

8. Transformer-

9. Working envelope-

10. End effectors-

11. Robot-

12. Pitch-

13. Binary system-

14. Cybernetics-

15. Gears-

Technical Writing

1. **Locate the book “*The Way Things Work*” and select any topic of interest to you. Read the section you selected. In the provided space below, describe / summarize what you have learned about your selected topic in complete sentences. If your writing does not fill the entire section, select a second topic to complete your writing assignment.**

***** To get full credit your writing should fill all the lines *****

Topic Title _____ Page # _____

2. **Now, select another section of this book or any other book at your module. Read a section of interest to you. In the provided space below, describe / summarize what you have read about your selected topic in complete sentences. If your writing does not fill the entire section below, select a second topic to complete your writing assignment.**

***** To get full credit your writing should fill all the lines *****

Book Name / Topic Title _____ Page # _____

Robotics Career Investigation

From the ***Occupational Outlook Handbook*** –Look up the career that is assigned to your module topic. Using the information in the book answer the following question about the assigned career. The career for your module is:

Actuaries and is on Page 103

1. **Nature of the work** (What does the occupation do?):
 - A.
 - B.
2. **Working conditions** (Ex. inside / outside, clean / dirty, safe / hazardous etc.):
3. **Training or education needed, other qualifications required, and possible advancements / promotions:**
4. **Job Outlook** (In the future, what is the demand / forecast for this job):
5. **Earnings** (What is the average salary / income for this career):
6. **Related occupations** (What other occupations are part of the selected topic):
 - A.
 - B.
7. **Sources of additional information** (Sites, agencies or references to provide more information on your selected occupation):
 - A.
 - B.

Robotics WordSearch

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

Find the following hidden words:

**automation, axis, cartesian, effector, programming, remote,
 repetitive, pendant, envelope, labor, robot, gripper, arm, wrist,
 shoulder, assembly, speed, accuracy, laser, rooster, sam**

ROBOTS

Test Review

Circle the correct answers while playing the Review Game at the beginning of Session # 6.

1. Which term is best described as a computer-controlled machine programmable to do different kinds of work?
 - A. mechanically inclined
 - B. remote antenna
 - C. automatic
 - D. robot

2. What is the function of a robot gripper?
 - A. A person uses it to control the robot's movement.
 - B. It rotates right and left.
 - C. It grabs and holds objects.
 - D. It keeps the robot from slipping.

3. What term is defined as the point where one part of a robot is fixed to another part of the robot?
 - A. stationary base
 - B. hand
 - C. joint
 - D. knuckle

4. Which of the following can robots relieve humans from doing?
 - A. working with high -tech computers
 - B. thinking
 - C. completing hazardous jobs
 - D. working with other humans

5. What does the word "robot" mean?
 - A. machine
 - B. mechanical man
 - C. automatic
 - D. labor or slave

6. What is a sensor?
 - A. hand of a robot
 - B. input device used to measure or detect something
 - C. computer program
 - D. remote antenna

7. What is one great advantage robots have over other automatic machines?
 - A. They can be programmed.
 - B. They are made of metal.
 - C. They are modern.
 - D. They last a long time.

8. What are computers and robots with artificial intelligence able to do that other computers and robots can't do?
 - A. be reprogrammed
 - B. learn from experience
 - C. be controlled from far away
 - D. calculate great quantities of numbers very quickly

9. What is the robotic arm envelope?
 - A. the area in which the arm can reach
 - B. ~~the angle the arm can rotate~~
 - C. the angle the arm can extend
 - D. the center of gravity of the arm

10. Robots have allowed manufacturers to make products with what two features?
 - A. higher quality, reduced price
 - B. higher quality, reduced quantity
 - C. larger quantities, reduced package size
 - D. higher quality, reduced weight