



# AUTOMATION & ROBOTICS "BBBBBB"

V6.0 "GRADE SHEET"

NAME: \_\_\_\_\_  
Partner: \_\_\_\_\_  
Period: \_\_\_\_\_  
Rotation #: \_\_\_\_\_

MODULE GRADE: WORKBOOK \_\_\_\_\_  
POST TEST \_\_\_\_\_ } MODULE AVERAGE= \_\_\_\_\_

AUTOMATION & ROBOTICS "WORKSHEET" TOTAL= \_\_\_\_\_

DAILY LAB PERFORMANCE: \_\_\_\_\_  
(If you are absent, write ABS on the line for the day you miss and **DISCUSS** what you need to make up with the teacher) LAB PERFORMANCE TOTAL= \_\_\_\_\_

**Extra Credit**—Discuss this with the instructor before beginning!!!

WORD SEARCH \_\_\_\_\_(5) CHALLENGES \_\_\_\_\_(5)  
MODULE REPORT \_\_\_\_\_(5) Make your own "Program" (discuss with teacher first) \_\_\_\_\_  
MODULE NOTES \_\_\_\_\_(0-10)

TOTAL EXTRA CREDIT= \_\_\_\_\_  
BONUS POINTS \*\*\* = \_\_\_\_\_

## AUTOMATION & ROBOTICS WORKSHEET "BBBBBB"

**LESSON 1** - Write the extremes of the ARMDROID 1000 on the back and have the teacher check them. **Answers:** \_\_\_\_\_  
**USING THE ROBOT.** Show & discuss your answer from lesson 1 (back of worksheet). **T.I.:** \_\_\_\_\_

**LESSON 2** –Write the steps in deleting and inserting a point. (See the information posted at your module.)  
Write the steps in “deleting” and “inserting” a point on the back. **Answers:** \_\_\_\_\_  
**If you don't finish Lesson 2 Activity #2, just make sure you know how to store points and run the program before moving on to Lesson 3.**

**LESSON 3** – Answers to the questions on the back of this page. **Answers:** \_\_\_\_\_(5)  
Show your instructor the program you worked on in this lesson. **T.I.:** \_\_\_\_\_(5)

**LESSON 4** -Write two reasons why you change speeds on the back. **Answers:** \_\_\_\_\_  
**Environmental Impacts**—Write notes from video clips. **Env. Impacts Paper:** \_\_\_\_\_(5)

**LESSON 5** - Define synchronization as it relates to ROBOTS on the back. **Answers:** \_\_\_\_\_(5)  
Show the “Finishing Block Program” to the instructor. **T.I.:** \_\_\_\_\_

**LESSON 6** - Skip “A Complete Automated System” until after lesson 7 has been completed. **Do this after lesson 7 for regular credit and teacher's initials.** **T.I.:** \_\_\_\_\_

**LESSON 7**- Explain what “Justifying a Robotics System” means on the back. **Answers:** \_\_\_\_\_(5)  
**Career Guidance Report**- Write your report in your Journal. **C.G. Journal:** \_\_\_\_\_(10)  
**Study Guide**--Turn in **STUDY GUIDE:** \_\_\_\_\_(5)

**Worksheet Total:** \_\_\_\_\_

# **ANSWERS CONTINUED FROM WORKSHEET (page 1)**

**Lesson 1:** "Using the Robot": \_\_\_\_\_

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**Lesson 2:** "Deleting a Point": \_\_\_\_\_

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**Lesson 2:** "Inserting a Point": \_\_\_\_\_

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**Lesson 3** – Did your program hit the obstacle (before editing)? Yes or No (circle one)

Why is it necessary to avoid obstacles: \_\_\_\_\_

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**Lesson 4:** "Write two reasons why you change speeds:" 1) \_\_\_\_\_,

2) \_\_\_\_\_.

**Lesson 5:** "Define synchronization as it relates to ROBOTS": \_\_\_\_\_

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**Lesson 7:** "Explain what "Justifying a Robotics System" means?": \_\_\_\_\_

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# Automation & Robotics “BBBBBB”

## Study Guide V6.0

Circle the correct answers to these questions as you come upon them during your next seven lessons. This study guide can then be used as a resource for your final test!

1. Module Introduction is the machine control or operation of equipment used in a process.  
*automation - robotics - application - mobilization*
2. Module Introduction is the study of the design, theory, and application of robots.  
*Mechanics - Automation - Manufacturing - Robotics*
3. The Industrial Revolution started in the mid-late Lesson 1-A Brief History of Robotics century.  
*18<sup>th</sup> - 20<sup>th</sup> - 17<sup>th</sup> - 16<sup>th</sup>*
4. The Industrial Revolution took hold in North America Lesson 1-A Brief History of Robotics (Hot Word “Industrial Revolution”.  
*after the American Revolution - in the Mid-1800s - the Civil War - in the early 1700s*
5. The Industrial Revolution started in Lesson 1-A Brief History of Robotics (Hot Word “Industrial Revolution”.  
*America - Asia - Africa - England*
6. A natural ancestor to Lab Volt Robot Arm is the Lesson 1-A Brief History of Robotics, a hand device developed by Seiko.  
*manipulator - ENIAC - Unimate - Gog*
7. The invention of the transistor by Lesson 1-A Brief History of Robotics greatly reduced the size of electronic equipment.  
*Bell Laboratories - Seiko - Henry Ford - Eckert and Mauchly*
8. In 1801, one of the first machines programmed with punched paper tape was (the) Lesson 1-A Brief History of Robotics.  
*assembly line - ENIAC - Scribe - automatic weaving loom*
9. Lesson 1-A Brief History of Robotics innovated the assembly line.  
*George Devol - Henry Ford - Seiko - John Mauchly*
10. Lesson 1-A Brief History of Robotics was the first example of a programmable robot that brought machine and electronics technologies together.  
*Unimate - ENIAC - Magog - R2D2*
11. Lesson 1-Here’s the Armdroid motors, used to control the joints on your robot arm, generate movement in short, measured bursts.  
*Progressive - Regressive - Stepper - Hydraulic*
12. Lesson 1- Lesson Review, achieved with robots, plays a major role in the manufacturing industry.  
*Just-in-time inventory - Improved customer service - Automation - Manual ineptitude*
13. Lesson 2-Reading Assignment (p. 185) is an application that a robot can perform.  
*Spray-painting - Industrial editing - Decision-making - Administration*
14. Robots Lesson 2- A Robotic System understand anything they do.  
*do not think or - are programmed to - always - try to*

15. The robot arm is operated electronically from the Lesson 2-A Robotic System Video.  
**voltmeter - dashboard - controller - monitor**
16. The robot is an excellent tool for use in an automated industrial environment because of its ability to perform tasks that are Lesson 2- A Robotic System Video.  
**too skilled - too expensive - highly repetitive or boring - regenerative**
17. The robot arm must be moved to a home position called the Lesson 2- Playing with Blocks (step 5) before you run any program.  
**start point - calibration point - reference tag - default position**
18. You can operate Lab Volt Robot arm with the keys on the Teach Pendant from the Lesson 2- Getting with the program menu. **Main - Points - Teach - Initialize**
19. The maximum distance a robot can move in all directions is its Lesson 2- Getting with the Program.  
**territory - realm - work envelope - home ground**
20. The 1-A Brief History of Robotics created water-powered clocks and statues in 3000 B.C.  
**Greeks -- Romans -- Egyptians -- Phoenicians**
21. The 2-A Robotics System capabilities of programmed robots allow change and make the robot adaptable.  
**re-do -- editing -- replacement -- learning**
22. Robots are most productive when they do 2-Review & 6-Some Pluses and Minuses jobs  
**repetitive -- decision intensive -- specialized -- highly skilled**
23. Setting a starting point is called 2-Playing with Blocks & 2-Review.  
**realization -- initialization -- recapitulation -- stabilization**
24. An advantage of computer-controlled, industrial robots is that they can be 6-Review to do different jobs.  
**rebuilt -- reprogrammed -- manually controlled -- rewired**
25. ??? is the manner, style, or method in which something is done.  
**Application -- Mode -- Initialization -- Alignment**
26. A 2- A Robotics System Playing with Blocks is used to program some robots.  
**monitor -- controller -- voltmeter -- magnet**
27. Hard Automation refers to 2-A Robotics System & 6-Video.  
**difficult tasks -- heavy machinery -- big robots -- heavy metal products**
28. Automation and robotics have increased the demand for 7- Lesson Review.  
**engineers -- chemists -- assembly line workers -- biologists**
29. Training as a (or an) 7-Video is excellent preparation for entering the field of robotics.  
**biologist -- historian -- programmer -- auto mechanic**
30. A knowledge of 7-Review is necessary for a career in automation and robotics.  
**philosophy -- computers -- consumerism -- liberal arts**

# AUTOMATION & ROBOTICS

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

ARM

ARMROID

AUTOMATION

BASE

BLOCK

CANISTER

CYLINDER

ELBOW

ENGINEER

ENVELOPE

FOREARM

GRIPPER

JUSTIFYING

MENU

MOTOR

PROGRAM

SHOULDER

SPEED

STEPPER

SYNCHRONIZATION

UPPERARM

WRIST

# **EXTREMES OF THE ARMDROID 1000**

From the Base to the Shoulder: it can rotate about 180 degrees from the wood by the computer to the green panel on the side.

From the Shoulder to the Upper Arm: it can go straight up and down 90 degrees (which is straight out).

From the Upper Arm to the Forearm: it can go straight out and down 90 degrees.

From the Forearm to the Grippers: it can go straight out and down 90 degrees.

The wrist can go 180 degrees around.