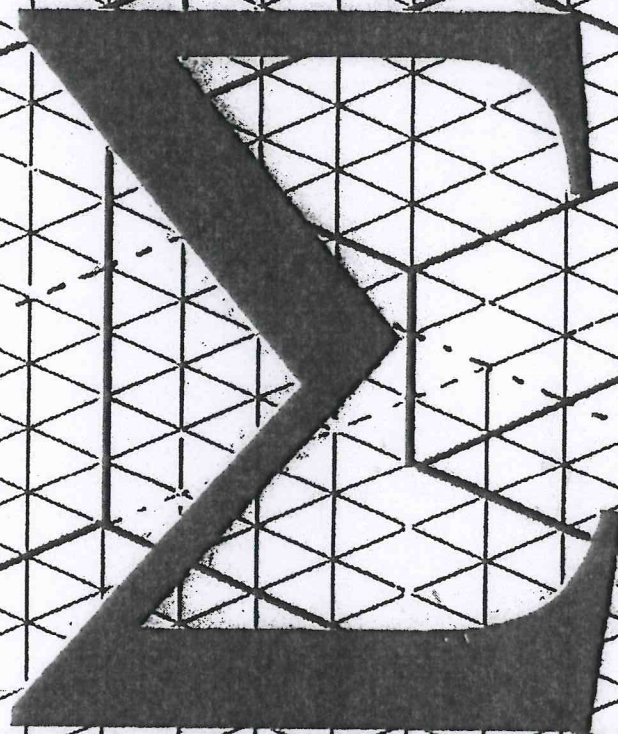
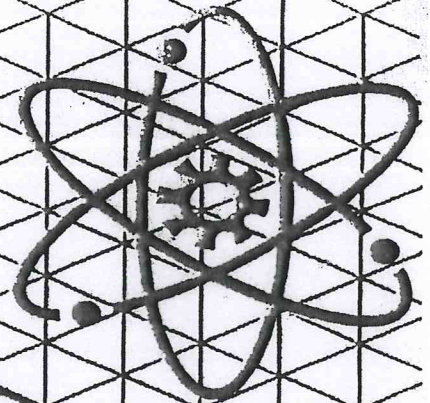


ACTIVITY: MARBLE SORTER PROJECT

Period: \_\_\_\_\_ Date: \_\_\_\_\_

Group: \_\_\_\_\_

Autodesk



AutoCAD

PLTW

Design

Engineering

ESUMS Sketch

Student Name: \_\_\_\_\_

Engineering Courses: Robotics & Automation/Magic of Electrons

## MARBLE SORTER PROJECT

Elements	wgt	5 Points	4 Points	3 Points	2 Points	1-0 Points	ttl
<b>Research</b>	<u>15</u>	Research is documented with appropriate citations. Research shows a variety of resources and is not limited to one or two sources. Example drawing is done and labeled. Content is exceptional	Research is documented on some topics. One or two do not have proper citation information. Example Drawing is done .Research is limited to two or three resources.	Research is randomly completed with little or no documentation of sources. Content needs improvement. Drawing is somewhat done.	There is no research other than what is available from the textbook or lecture notes. No drawing is submitted	There is little or no evidence of research in the notebook. Nothing done at all.	
<b>Design Sketches</b>	<u>20</u>	Sketches by each team member are completed and annotated to show all important information. Heading information is complete and accurate. All designs are unique and are completed in pencil. Entries in the engineering notebook are neat and clearly labeled	sketches are not completed and are missing important information, such as measurements. Some heading information is incomplete or inaccurate. All designs are unique and are completed in pencil.	Sketches are missing more than half of the identification of the components. More than half of the heading information is not complete or is not accurate engineering n/b not done	Sketches are not complete. Heading information is not complete and is not accurate. Sketches are not created with pencil.	There is little or no evidence of sketches in the notebook.	
<b>Decision Making Matrix</b>	<u>20</u>	The decision matrix is complete with all criteria listed and each drawing evaluated. The student can effectively justify the final decision.in his Engineering n/b. sketches are well done	The decision matrix does not evaluate the required number of drawings from the packet. the student can justify the final decision.	The decision matrix criteria are incomplete. The option selected is not clearly justified using the matrix	The decision matrix is missing the 3 criteria and evaluations of drawings. The final project decision cannot be justified using the matrix.	The decision matrix is excessively incomplete or missing. The final project decision cannot be justified using the matrix.	
<b>Prototypes</b>	<u>20</u>	The final product exactly matches the final design. Product is of high quality	A slight difference exists between the final product and the final design.	A significant difference exists between the final product and the final design, but an attempt was made to follow the design.	A significant difference exists between the final product and the final design. No apparent attempt was made to follow the design.	The sorter model is excessively incomplete or is missing.	
<b>Test and Record Results</b>	<u>10</u>	. Students test and evaluate their prototype, make modifications if necessary, and thoroughly document changes. Sections of packet done	Students test and evaluate their prototype and make modifications if necessary, but changes are ocumented.in n/b	Students test and evaluate their prototype and some modifications are completed, but changes are not documented.	Students test and evaluate their prototype, modifications are not completed, and changes are not documented.	Students do not test and evaluate their prototype. Refuse to do the work or lack interest and complain	
<b>Teamwork</b>	<u>5</u>	The student consistently listens to all team members, respects varying opinions, communicates ideas and opinions effectively, and engages in compromise. Student completes their portion of the project on time.	The student generally listens to team members, respects varying opinions, communicates ideas and opinions effectively, and engages in compromise. Student completes their portion of the project on time.	The student does not always effectively listen to team members or show respect for varying opinions. The student does not always communicate ideas and opinions or engage in compromise. Student completes most of their portion of the project on time.	The student does not listen to other team members, does not show respect for varying opinions, and does not effectively communicate ideas and opinions or engage in compromise. Student completes some of their portion of the project on time.	The student shows little to no evidence of communication or cooperation. Student does not complete their portion of the project on time.	
<b>Design Brief</b>	<u>10</u>	Design Brief is completed and includes all required information including client, designer, problem & design statements constraints & deliverables All sections are clearly written. All constraints are listed. Generally, the Design Brief is 100% completed. All five sections completed.	Design brief is 80% completed. NOT all areas completed. Some constraints are listed. Description of each areas completed but not clear.	Design Brief is <60% completed	Design Brief is <50% completed.	Design Brief is < 25% completed. Nothing done at all	

**ACTIVITIES TO DO AT HOME AND AT SCHOOL**

**PROJECT DUE DATE : APRIL 11, 2016**

**LEVEL OF RIGOR = 100% BASE ON CONTENT & PERFORMANCE**

**SCENARIO: OVER THE YEAR YOUR COMPANY HAS MADE SIGNIFICANT GROWTH. THEREFORE YOU HAVE PURCHASED NEW EQUIPMENT AND A LARGER BUILDING. ALSO YOU HAVE GIVEN ALL EMPLOYEE A PERSONAL RAISE PLUS AN ADDITIONAL PERFORMANCE PERCENT RAISE NEW PAYRATE MUST BE CALCULATED AND ENTERED ON THE PAYROLL GRID. WISH YOU LUCK.**

**ON THE BACK OF THE PACKET WRITE A 50 WORD DESRIPTION OF THE DUTIES, SALARY, AND EDUCATIONAL REQUIREMENTS OF A MANUFACTURING ENGINEER. BE BRIEF. USE THE INTERNET FOR THIS. (due 04/11/2016)**

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IN ADDITION TO WHAT IS REQUIRED BELOW, THERE WILL BE **2 PROGRESS REPORTS PER WEEK** UNTIL THE PROJECT IS COMPLETED ON APRIL 11. THESE WILL BE ENTERED INTO POWER SCHOOL. PLEASE DO NOT TRY TO DO ALL IN A DAY OR A WEEK. PACE YOURSELF BY APPLYING THE "TIME MANAGEMENT SKILLS" OR CHUNKING LEARN IN CLASS. I HAVE DONE SOME FOR YOU.

**ON THE SORTING MACHINE PROJECT COMPLETE THE FOLLOWING:**

**ALL BASE PAYS ARE NEW VALUES**

1. WRITE A 4 PARAGRAPH 70 WORD EACH ESSAY ON " HOW CAN A COMMUNITY HELP THE ENVIRONMENT BY RECYCLING USED PRODUCTS BACK INTO THE MANUFACTURING PROCESS OR SYSTEM".(04/01/2016) \_\_\_\_\_
2. COMPLETE POWERPOINT ON PROJECT FOR PRESENTATION TO CLASS. (LAST WEEK OF project) (04/11/2016)\_\_\_\_
3. COMPLETE RESEARCH NOTES (03/20/2016)\_\_\_\_\_
4. COMPLETE DESIGN BRIEF (03/21/2016)\_\_\_\_\_
5. READ RUBRIC (check at all times)\_\_\_\_\_
6. DESIGN , BUILD AND PROGRAM SORTER 04/11/2016 \_\_\_\_\_
7. COMPLETE SECTIONS ON "DEFINE A PROBLEM" PLUS ALL OTHER AREAS OF THE PACKET (03/15-30/2016)\_\_\_\_\_
8. UPDATE PAYROLL BY USING THE NEW BASE PAY AND RAISES AT THE BACK OF THIS PACKET TO CALCULATE THE NEW PAY RATE PER EMPLOYEE. **Please see the page at the back of this packet for pay rate for all employee.**  
(Due on 04/18/2016)\_\_\_\_\_

PLEASE DO ALL CALCULATION ON A SEPARATE PIECE OF PAPER.,,.....SUBMIT THIS.(04/11/2016) \_\_\_\_\_

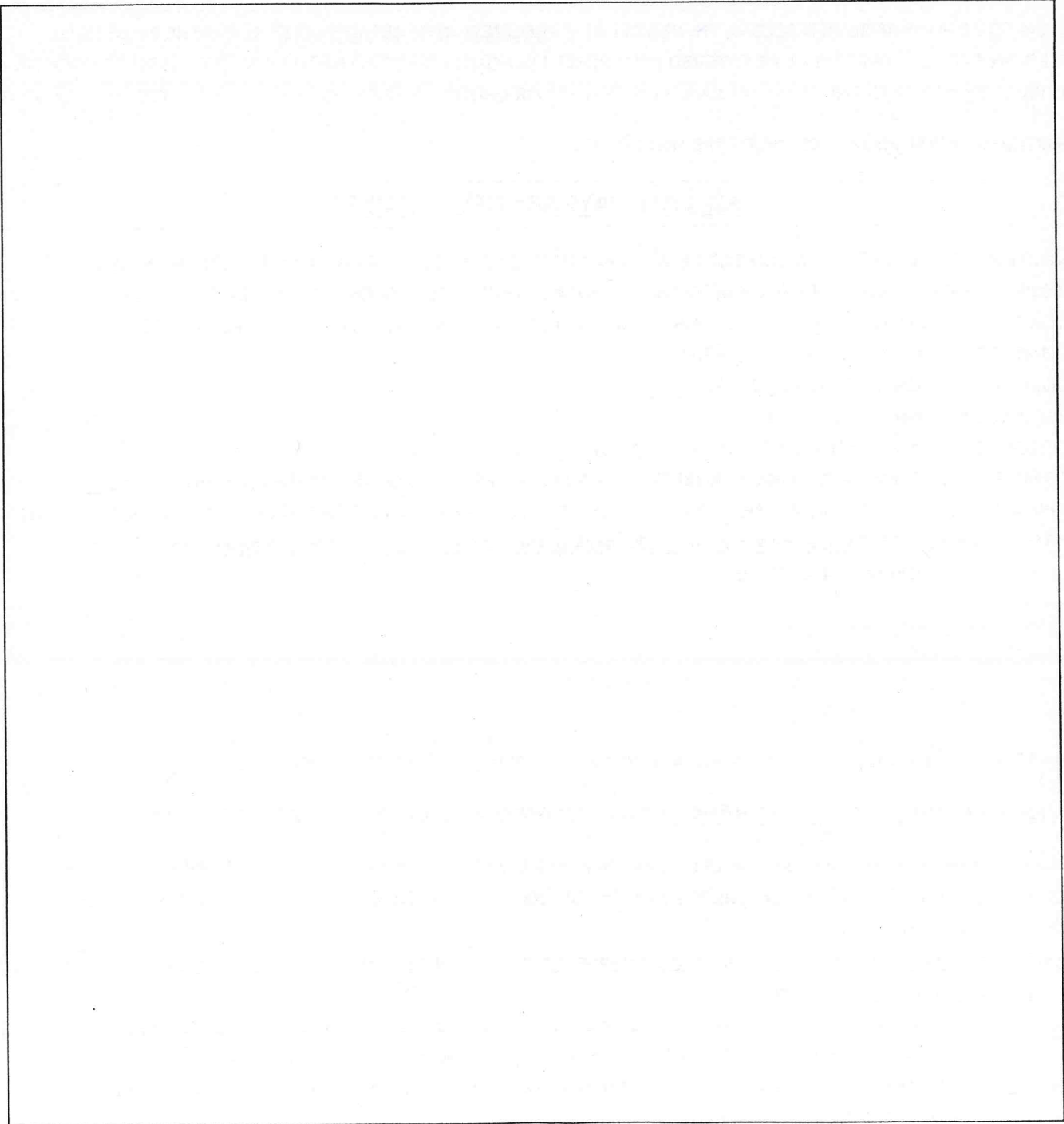
**AFTER YOU HAVE DONE THE CALCULATION PLEASE COMPLETE ALL SECTIONS OF THE PAYROLL GRID.**

- 9 Remember to draw your own idea of the project in your PACKET. Do not consult your **PARTNER** on this. Each member of the group **MUST** draw his/her own. The decision Matrix must be used to select the appropriate design for the prototype **and** the group.

**On the rubric "test and record results" include the following sub titles: Programming, Troubleshooting, data collection and analysis, modification and recording info.**

**Ask your parents for help preparing the payroll grid.....please do not use a calculator if at all possible. All calculations MUST be done on a separate piece of paper; CLEARLY IDENTIFIED , per employee. Staple together if more than one pages. Paper/s must be submitted along with the sorting machine packet. DO NOT STAPLE THESE PAGE/S TO THE PACKET. THESE PAGE/S MUST BE HANDED TO ME DIRECTLY. PER TEACHER'S REQUEST..**

**Computer Programming:** In the space below, draw **THE** program flow chart of the solution to this problem. .



**Conclusion Questions:**

1. Did you use any sensors to solve this problem? Why did you chose that sensor? And which sensor(s)

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2. What is the function of the **BRANCH** function block?

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3. Explain two malfunctions or problems with the solution that your team had to troubleshoot.

A. 

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B. 

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4. Describe in 30 words your responsibility(s) during the building and programming of THE marble sorter project.

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5. Do you think the elevator project is more difficult than the sorter? Defend your choice by writing a 20 word paragraph...

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# SELECT AN APPROACH: MATRIX



- Review brainstormed information and answer any lingering questions.
- Narrow ideas down through a voting process, or by use of a decision matrix.
- Decide on final idea, usually through group consensus.

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## DECISION MATRIX

<u>IDEAS</u>	<u>COST</u>			<u>TOTAL</u>
IDEA #1				
IDEA #2				
IDEA #3				
IDEA #4				
IDEA #5				

4	3	2	1	2	1
BEST			WORST	YES	NO

NAME OF ENGINEER WHOSE PROJECT WAS SELECTED : \_\_\_\_\_

## COMPANY'S EMPLOYEE TIME SHEET

NOTE: SATURDAY PAY RATE PER HOUR= TIME AND ONE HALF      SUNDAY PAY RATE PER HOUR = DOUBLE TIME. 4 HRS. ON SUNDAYS FOR ALL EMPLOYEES. ENGINEERS ARE PAID FOR SATURDAY OR/AND SUNDAY \$250.00 PER DAY. PAY RATE IS BASED ON A 8 HOUR PERIOD  
 STATE TAX= 4%, FEDERAL TAX = 22.5%. SOCIAL SECURITY TAX= 7.5%      ROUND ANSWERS TO THE NEAREST DOLLAR

COMPANY'S NAME : \_\_\_\_\_

WEEK COMMENCING \_\_\_\_\_

EMP. number	PAY RATE	MON.	TUES.	WED.	THURS.	FRI.	SAT.	SUN.	GROSS PAY	FED. TAX	STATE TAX	S.S. TAX
ENG 201												
ENG 202												
ENG 203												
ENG 204												
FW 001												
FW 002												
FW 003												
FW 004												
FW 005												
FW 006												
FW 007												
FW 008												
FW 009												

TOTAL PAYROLL COST \$ \_\_\_\_\_

FORMULA : NET PAY = GROSS PAY-STATE TAX-FEDERAL TAX-S.S. TAX