Hamilton-Juniors lab-off-site learning packet day 5

Instructor___Mark Hamilton_____   **Date**_____

Program/Class_____AEM JR_____

Instructional Objective(s):

Materials:
White board

Method of Instruction:
Research

Activities:
Read through handouts, watch videos and do activities
Answer the questions provided

Closure:
Answer questions on the last page

Assessment:
Answer sheets will be collected and is worth _____ points

Name_____

Introduction to CNC code

A Word & a Block

A NC word is a series of characters arranged in a specified order that provides a specific command to the machine. A word consists of an address (discussed later) followed by numbers and/or symbols. Here are some examples - but not all - of the typical words:

CNC Word and example	Description
F as in F12.0	Feed rate (as in 12.0 inches per minute)
G as in G1	Tool movement (as in linear interpolation while under feed control)
M as in M6	Miscellaneous function (as in tool change command)
N as in N100	Block sequence number (as in block number 100)
R as in R.25	Arc radius (as in 0.25 radius)
S as in S1250	Spindle speed (as in 1250 RPM)
T as in T3	Selection of tool (as in use tool number 3)
X as in X2.5	X-axis coordinate. (as in 2.5 inches in the X direction)
Y as in Y4.75	Y-axis coordinate. (as in 4.75 inches in the Y direction)

A Block:

A block is a series of words that defines a single instruction. It is like a sentence in a set of instructions that tells the machine what to do. A block can be a single word or a combination of words. A block is terminated by an <u>end of block</u> character (EOB). In some instances the EOB is visible and in some instances it is not. Some examples of blocks are provided below without a visible EOB:

The CNC machines in the Maplewood lab will either end a block with a semi colon or nothing at all. The first four examples us nothing at all and the last example uses a semicolon to end the block of information.

N89 M30 (two word block)

N11 T01 M06 (three word block)

N05 G80 G90 G17 (four word block)

N9 G01 X3.0 Y1.7 F40 (five word block)

Here is an examples of a block that show an EOB:

N400 G0 X0.2; (three word block with ";" used as an EOB)

Questions: (each question is worth 5 points)

1. What does an NC word provide to the machine?

2. What does a word consist of?

3. What does the letter F control in a word?

4. What command does a G1 give to the machine?

5. What command does an M6 give to the machine?

6. What would S1250 command the machine to do?

7. What does the word T3 command the machine to do?

8. What does the letter X used in a word control on the machine?

9. What does the letter Y used in a word control on the machine?

10. What does the letter N in a word display in a CNC program?

11. What is a block?

12. How many words does it take to make up a block?

13. What is an EOB?

14. What does an EOB look like on the machines in the Maplewood lab?