CNC Milling										
I. ***Apply basic machining skills per industry standards as set forth by the SkillsUSA technical committee***										
Tasks Instructions:										
Each number to the right refers to a single student/candidate (1-10). Place a check (√) in the respective column for the appropriate student/candidate number (1-10) if the skills listed below are observed as stated. Leave blank if not observed. Student/candidate will only get credit for the skills they have demonstrated.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Demonstrate basic math skills essential to CNC machining										
Identify and use measuring tools that are basic to CNC machining										
Interpret and apply information from prints and drawings										
Measure part to nearest +/- .001"										
Demonstrate safe working practices on machines										
Use various precision measuring tools (i.e., micrometers, calipers, radius gages)										
Use correct filling techniques and appropriate technology										
Define and calculate speed and feed rates (SFPM, CCS, IPM, IPR)										
Demonstrate knowledge of cutting tools, clamping devices and materials										
Perform mathematical calculations that enable the solving of complex trigonometric, geometric and algebraic problems applicable to CNC machining processes										
Safety and infection control are adhered to during all aspects of this task.										
The student completed task within the time limited.										
Points earned										
Total possible points (12)										

II. Demonstrate knowledge of CNC programming per industry standards as set forth by the SkillsUSA technical committee										
Tasks Instructions:										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Manually write and verify the CNC program without the use of CAM software according to print specifications, dimensions and tolerances (competitor had the opportunity to edit any program errors on the machine)										
Display complete knowledge of DIN/ISO Programming (G and M codes)										
Apply the correct use of cutter compensation (G41/G42)										
Demonstrate knowledge of incremental and absolute positioning										
Demonstrate knowledge of coordinate system										
Determine proper machining sequences from work piece drawing										
Adjust speeds and feed as needed										
Safety and infection control are adhered to during all aspects of this task.										
The student completed task within the time limited.										
Points earned										
Total possible points (9)										
III. Set up a CNC machine per industry standards as set forth by the SkillsUSA technical committee										
Tasks Instructions:										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Set up machine and establish work piece zero reference point for machining the part										
Select and mount necessary tools from the provided tool list										

Establish tool length offsets and enter them into the CNC machine control										
Enter any necessary tool corrections (i.e. cutter radius compensations) into the CNC machine control										
Safety and infection control are adhered to during all aspects of this task.										
The student completed task within the time limited.										
Points earned										
Total possible points (6)										
IV. Perform mathematical calculations as needed for calculating speeds, feeds, program coordinates, angles, radii and tangent points										
Tasks Instructions:										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Calculate CNC speeds and feeds										
Calculate programming coordinates from the drawing										
Calculate angles, radii and tangent points										
Safety and infection control are adhered to during all aspects of this task.										
The student completed task within the time limited.										
Points earned										
Total possible points (5)										
V. Communicate and demonstrate an understanding of al symbols on a blueprint										
Tasks Instructions:										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Read and interpret technical blueprints										

Understand all symbols on technical blueprints, such as geometric tolerances, surface-finish symbols, corner-break symbols, etc.										
Safety and infection control are adhered to during all aspects of this task.										
The student completed task within the time limited.										
Points earned										
Total possible points (4)										
VI. Inspect work per industry standards as set forth by the SkillsUSA technical committee										
Tasks Instructions:										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Inspect for conformity to print (shape and feature of part to drawing)										
Inspect for broken edges										
Inspect for damage to part (clamp marks, scratches)										
Safety and infection control are adhered to during all aspects of this task.										
The student completed task within the time limited.										
Points earned										
Total possible points (5)										
Total points earned for all sections (A)										
Total possible points for all sections (B) 41										
Student/candidate score (divide A/B)										