



## Results by Standard

# 2023-2024 Technical Skills Assessment Precision Machining

Legend (%)		
0-50%	51-75%	76-100%

Assessment: Precision Machining	% Correct	% Correct	% Correct	% Correct
Number tested: 6	20-21	21-22	22-23	23-24
<b>CONTENT STANDARD 1.0: PERFORM FUNDAMENTAL MACHINING SKILLS</b>	72.49%	68.37%	53.49%	61.11%
<b>Performance Standard 1.1: Comply with safe and efficient work practices</b>	81.48%	64.29%	63.33%	66.67%
1.1.4 Operate lab equipment according to safety guidelines	88.89%	64.29%	66.67%	83.33%
1.1.13 Identify and wear appropriate clothing for lab/shop activities.	77.78%	50.00%	73.33%	66.67%
1.1.15 Locate and interpret material safety data sheets (MSDS).	77.78%	78.57%	50.00%	50.00%
<b>Performance Standard 1.3: Perform job related mathematical calculations</b>	80.00%	72.86%	56.67%	70.00%
1.3.1 Accurately perform job related decimal and fraction calculations.	77.78%	100.00%	70.00%	83.33%
1.3.2 Solve job-related problems using basic geometry.	88.89%	78.57%	60.00%	83.33%
1.3.3 Accurately measure a work piece and compare measurements with blueprint specifications	88.89%	78.57%	73.33%	83.33%
1.3.4 Calculate the amount of material to be removed to obtain correct limits for secondary operations	77.78%	57.14%	46.67%	50.00%
1.3.6 Convert measurements from English to metric and from metric to English units.	66.67%	50.00%	33.33%	50.00%
<b>Performance Standard 1.4: Read, interpret and sketch blueprints</b>	80.00%	77.14%	61.33%	70.00%
1.4.1 Interpret line types	55.56%	57.14%	23.33%	33.33%
1.4.2 Read and interpret title blocks	88.89%	50.00%	63.33%	66.67%
1.4.4 Read and interpret nomenclature	77.78%	92.86%	63.33%	83.33%
1.4.5 Make shop sketches	88.89%	100.00%	86.67%	83.33%
1.4.6 Read and interpret blueprints, including geometric dimensioning and tolerancing	88.89%	85.71%	70.00%	83.33%
<b>Performance Standard 1.5: Demonstrate proficiency in machine planning</b>	66.67%	71.43%	43.33%	58.33%
1.5.1 Identify proper order of operations.	88.89%	78.57%	60.00%	83.33%
1.5.4 Select proper tooling.	44.44%	64.29%	26.67%	33.33%
<b>Performance Standard 1.6: Perform measuring operations</b>	57.41%	58.33%	42.78%	44.44%
1.6.1 Read and measure with steel rules and calipers.	0.00%	7.14%	13.33%	33.33%
1.6.2 Read and measure with micrometers.	94.44%	75.00%	55.00%	50.00%
1.6.3 Read and measure with Vernier tools.	55.56%	71.43%	50.00%	33.33%
1.6.4 Read and measure with dial indicators.	88.89%	92.86%	73.33%	83.33%

Assessment: Precision Machining Number tested: 6	% Correct 20-21	% Correct 21-22	% Correct 22-23	% Correct 23-24
1.6.5 Measure using a surface plate.	11.11%	28.57%	10.00%	16.67%
<b>CONTENT STANDARD 2.0: PERFORM BENCH WORK SKILLS</b>	66.67%	76.98%	77.04%	75.93%
<b>Performance Standard 2.1: Identify proper hand tools, usage, and application</b>	88.89%	100.00%	93.33%	83.33%
2.1.1 Use proper hammer types.	88.89%	100.00%	93.33%	83.33%
<b>Performance Standard 2.7: Deburr workpieces</b>	50.00%	73.21%	65.83%	70.83%
2.7.1 Select proper deburring tool.	22.22%	78.57%	70.00%	83.33%
2.7.3 Demonstrate how to sharpen machinist scrapers.	66.67%	71.43%	60.00%	50.00%
2.7.4 Deburr work pieces to required tolerances.	55.56%	71.43%	66.67%	75.00%
<b>Performance Standard 2.8: Use appropriate inspection gages</b>	77.78%	75.00%	84.17%	79.17%
<b>CONTENT STANDARD 3.0: SETUP AND OPERATE POWER SAWS</b>	55.56%	64.29%	33.33%	83.33%
<b>Performance Standard 3.1: Comply with safe and efficient work practices</b>	55.56%	64.29%	33.33%	83.33%
3.1.2 Identify hazardous components of saws.	55.56%	64.29%	33.33%	83.33%
<b>CONTENT STANDARD 4.0: SETUP AND OPERATE PEDESTAL GRINDERS</b>	88.89%	92.86%	80.00%	83.33%
<b>Performance Standard 4.1: Comply with safe and efficient work practices</b>	88.89%	92.86%	80.00%	83.33%
4.1.1 Demonstrate the operation of pedestal grinders safety devices.	88.89%	92.86%	80.00%	83.33%
<b>CONTENT STANDARD 5.0: HAND-SHARPEN CUTTING TOOLS</b>	77.78%	78.57%	73.33%	66.67%
<b>Performance Standard 5.1: Comply with safe and efficient work practices</b>	77.78%	78.57%	73.33%	66.67%
5.1.1 Demonstrate knowledge of safety by completing a written safety test.	77.78%	78.57%	73.33%	66.67%
<b>CONTENT STANDARD 6.0: SETUP AND OPERATE LATHES</b>	79.11%	73.71%	70.13%	70.67%
<b>Performance Standard 6.1: Comply with safe and efficient work practices</b>	100.00%	100.00%	80.00%	83.33%
6.1.5 Explain the proper housekeeping and tool hazards	100.00%	100.00%	80.00%	83.33%
<b>Performance Standard 6.4: Secure tools, tool holders, and fixtures or attachments</b>	88.89%	90.48%	95.56%	83.33%
6.4.1 Describe the proper selection of tool holding devices.	100.00%	92.86%	96.67%	83.33%
6.4.2 Describe the use of tool holders, fixtures and attachments.	88.89%	85.71%	100.00%	83.33%
6.4.3 Describe the mounting of tool bits.	77.78%	92.86%	90.00%	83.33%
<b>Performance Standard 6.5: Select and set feeds and speeds</b>	86.11%	58.93%	66.67%	70.83%
6.5.1 Locate, speed and feed chart on each machine.	85.19%	57.14%	67.78%	77.78%
6.5.2 List spindle speed formula and calculate appropriate RPM.	88.89%	64.29%	63.33%	50.00%
<b>Performance Standard 6.6: Setup lathes and face work pieces held in chucks</b>	97.22%	80.36%	75.00%	70.83%
6.6.2 Calculate cutting speeds and feeds for facing operations.	100.00%	35.71%	33.33%	66.67%
6.6.3 Describe the procedures for facing.	96.30%	95.24%	88.89%	72.22%
<b>Performance Standard 6.7: Rough-cut and finish-cut with lathes</b>	80.56%	87.50%	75.83%	75.00%
6.7.1 Calculate the correct speeds and feeds for the appropriate operation.	72.22%	82.14%	63.33%	66.67%
6.7.3 Define and make trial cuts.	88.89%	85.71%	83.33%	83.33%

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<b>Number tested: 6</b>	<b>20-21</b>	<b>21-22</b>	<b>22-23</b>	<b>23-24</b>
6.7.4 Using appropriate measuring tools, measure work piece.	88.89%	100.00%	93.33%	83.33%
<b>Performance Standard 6.14: Counter bore holes with lathes</b>	44.44%	57.14%	43.33%	66.67%
6.14.4 Counter bore a hole in a work piece.	44.44%	57.14%	43.33%	66.67%
<b>Performance Standard 6.15: Bores holes with lathes</b>	83.33%	92.86%	80.00%	75.00%
6.15.2 Select the correct tool and tool holder for boring holes.	83.33%	92.86%	80.00%	75.00%
<b>Performance Standard 6.17: Cut external threads with lathes</b>	62.96%	52.38%	50.00%	66.67%
6.17.1 Describe the procedures for cutting external threads.	83.33%	67.86%	58.33%	75.00%
6.17.8 Determine compound off-set angle (right or left hand threads).	22.22%	21.43%	33.33%	50.00%
<b>Performance Standard 6.19: Cut internal threads with lathes</b>	51.85%	54.76%	54.44%	50.00%
6.19.1 Describe the procedures for cutting internal threads.	66.67%	64.29%	53.33%	50.00%
6.19.2 Explain the use of appropriate inspection gages.	55.56%	78.57%	73.33%	66.67%
6.19.8 Determine compound off-set angle (right or left hand threads).	33.33%	21.43%	36.67%	33.33%
<b>CONTENT STANDARD 7.0: SETUP AND OPERATE MILLING MACHINES</b>	76.90%	78.20%	58.16%	68.42%
<b>Performance Standard 7.1: Comply with safe and efficient work practices</b>	44.44%	35.71%	16.67%	50.00%
7.1.4 Operate lab equipment according to safety guidelines.	44.44%	35.71%	16.67%	50.00%
<b>Performance Standard 7.2: Identify the parts of the horizontal and vertical milling machine and know their function</b>	81.48%	88.10%	64.44%	66.67%
7.2.1 Describe the function of major parts.	81.48%	88.10%	64.44%	66.67%
<b>Performance Standard 7.4: True up the head and align milling machine fixtures</b>	72.22%	75.00%	50.00%	50.00%
7.4.1 Explain the safety precautions/procedures in alignment of heads.	66.67%	78.57%	56.67%	66.67%
7.4.5 Align a head of a milling machine.	77.78%	71.43%	43.33%	33.33%
<b>Performance Standard 7.5: Select and set feeds and speeds for milling work</b>	84.44%	87.14%	60.00%	66.67%
7.5.1 List the correct cutting speed and feed for various materials.	83.33%	85.71%	60.00%	75.00%
7.5.2 Set correct feeds and speeds on a milling machine for various materials.	85.19%	88.10%	60.00%	61.11%
<b>Performance Standard 7.6: Square up work pieces with a table vise</b>	70.37%	73.81%	46.67%	55.56%
7.6.2 Describe the procedures for setting-up and machining a work piece parallel and square.	70.37%	73.81%	46.67%	55.56%
<b>Performance Standard 7.7: Perform end milling</b>	72.22%	80.36%	65.83%	83.33%
7.7.2 Describe the procedures for setting up and end milling a flat surface.	66.67%	76.19%	58.89%	83.33%
7.7.3 Identify the correct cutting fluids for milling.	88.89%	92.86%	86.67%	83.33%
<b>Performance Standard 7.8: Perform fly-cutting operations</b>	85.19%	76.19%	46.67%	72.22%
7.8.2 Explain the purpose of fly-cutters.	77.78%	85.71%	36.67%	66.67%
7.8.3 Calculate speeds, feeds, and determine depth of cut for fly-cutting surfaces.	88.89%	78.57%	50.00%	66.67%
7.8.4 Describe the procedures for fly-cutting surfaces.	88.89%	64.29%	53.33%	83.33%
<b>Performance Standard 7.9: Drill holes with a milling machine</b>	80.56%	69.64%	61.67%	66.67%

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7.9.1 Describe the procedures for using milling machine dials for accurate table positioning.	100.00%	100.00%	93.33%	83.33%
7.9.4 Calculate the correct speed and feed.	66.67%	42.86%	41.67%	50.00%
7.9.5 Drill holes in a work piece to specified tolerances using a milling machine.	88.89%	92.86%	70.00%	83.33%
<b>Performance Standard 7.10: Perform reaming operations</b>	85.19%	80.95%	73.33%	66.67%
7.10.1 Explain the uses of centerdrills, drills, and reamers.	100.00%	100.00%	83.33%	83.33%
7.10.2 Calculate proper speeds and feeds for centerdrilling, drilling, and reaming operations.	88.89%	100.00%	76.67%	66.67%
7.10.3 Describe the procedures for centerdrilling, drilling, and reaming on a milling machine.	66.67%	42.86%	60.00%	50.00%
<b>Performance Standard 7.12: Bore holes with milling machines</b>	70.37%	90.48%	58.89%	72.22%
7.12.1 Explain the procedures for accurately adjusting a boring head.	61.11%	85.71%	45.00%	66.67%
7.12.2 Calculate speeds and feeds for boring operations.	88.89%	100.00%	86.67%	83.33%
<b>Performance Standard 7.18: Use an edge finder and wiggler</b>	88.89%	82.14%	68.33%	75.00%
7.18.1 Explain the correct care and use of an edge finder or wiggler.	100.00%	82.14%	73.33%	83.33%
7.18.2 Describe the procedures for touching off with an edge finder and a wiggler.	77.78%	92.86%	66.67%	83.33%
7.18.3 Locate the center of a work piece after locating it with a wiggler or edge finder.	77.78%	71.43%	60.00%	50.00%
<b>Performance Standard 7.19: Position a table</b>	55.56%	64.29%	46.67%	72.22%
7.19.3 Describe the procedures for keeping backlash out of lead screws.	50.00%	60.71%	43.33%	75.00%
7.19.5 Describe the procedures for drilling equally spaced holes.	66.67%	71.43%	53.33%	66.67%
<b>CONTENT STANDARD 8.0: SETUP AND OPERATE DRILL PRESSES</b>	63.89%	71.43%	59.17%	66.67%
<b>Performance Standard 8.1: Comply with safe and efficient work practices</b>	55.56%	78.57%	73.33%	66.67%
8.1.1 Demonstrate knowledge of safety by completing a written safety test.	55.56%	78.57%	73.33%	66.67%
<b>Performance Standard 8.3: Center drill, drill and ream a hole in a work piece</b>	66.67%	69.05%	54.44%	66.67%
8.3.1 Describe the procedures for center drilling and drilling holes.	61.11%	64.29%	51.67%	75.00%
8.3.2 Describe the procedures for reaming holes.	77.78%	78.57%	60.00%	50.00%