



## Results by Standard

# 2021-2022 Technical Skills Assessment Precision Machining

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

Assessment: Precision Machining Number tested: 14	% Correct 17-18	% Correct 18-19	% Correct 20-21	% Correct 21-22
<b>CONTENT STANDARD 1.0: PERFORM FUNDAMENTAL MACHINING SKILLS</b>	70.18%	66.23%	72.49%	68.37%
<b>Performance Standard 1.1: Comply with safe and efficient work practices</b>	82.46%	81.82%	81.48%	64.29%
1.1.4 Operate lab equipment according to safety guidelines	89.47%	90.91%	88.89%	64.29%
1.1.13 Identify and wear appropriate clothing for lab/shop activities.	89.47%	100.00%	77.78%	50.00%
1.1.15 Locate and interpret material safety data sheets (MSDS).	68.42%	54.55%	77.78%	78.57%
<b>Performance Standard 1.3: Perform job related mathematical calculations</b>	63.16%	63.64%	80.00%	72.86%
1.3.1 Accurately perform job related decimal and fraction calculations.	100.00%	90.91%	77.78%	100.00%
1.3.2 Solve job-related problems using basic geometry.	73.68%	72.73%	88.89%	78.57%
1.3.3 Accurately measure a work piece and compare measurements with blueprint specifications.	78.95%	72.73%	88.89%	78.57%
1.3.4 Calculate the amount of material to be removed to obtain correct limits for secondary operations.	5.26%	54.55%	77.78%	57.14%
1.3.6 Convert measurements from English to metric and from metric to English units.	57.89%	27.27%	66.67%	50.00%
<b>Performance Standard 1.4: Read, interpret and sketch blueprints</b>	66.32%	70.91%	80.00%	77.14%
1.4.1 Interpret line types	10.53%	27.27%	55.56%	57.14%
1.4.2 Read and interpret title blocks	52.63%	63.64%	88.89%	50.00%
1.4.4 Read and interpret nomenclature	73.68%	81.82%	77.78%	92.86%
1.4.5 Make shop sketches	94.74%	100.00%	88.89%	100.00%
1.4.6 Read and interpret blueprints, including geometric dimensioning and tolerancing	100.00%	81.82%	88.89%	85.71%
<b>Performance Standard 1.5: Demonstrate proficiency in machine planning</b>	81.58%	72.73%	66.67%	71.43%
1.5.1 Identify proper order of operations.	94.74%	100.00%	88.89%	78.57%
1.5.4 Select proper tooling.	68.42%	45.45%	44.44%	64.29%
<b>Performance Standard 1.6: Perform measuring operations</b>	69.30%	54.55%	57.41%	58.33%
1.6.1 Read and measure with steel rules and calipers.	42.11%	27.27%	0.00%	7.14%
1.6.2 Read and measure with micrometers.	89.47%	81.82%	94.44%	75.00%

Assessment: Precision Machining Number tested: 14	% Correct 17-18	% Correct 18-19	% Correct 20-21	% Correct 21-22
1.6.3 Read and measure with Vernier tools.	63.16%	45.45%	55.56%	71.43%
1.6.4 Read and measure with dial indicators.	94.74%	72.73%	88.89%	92.86%
1.6.5 Measure using a surface plate.	36.84%	18.18%	11.11%	28.57%
<b>CONTENT STANDARD 2.0: PERFORM BENCH WORK SKILLS</b>	74.27%	76.22%	66.67%	76.98%
<b>Performance Standard 2.1: Identify proper hand tools, usage, and application</b>	78.95%	100.00%	88.89%	100.00%
2.1.1 Use proper hammer types.	78.95%	100.00%	88.89%	100.00%
<b>Performance Standard 2.7: Deburr workpieces</b>	72.37%	68.18%	50.00%	73.21%
2.7.1 Select proper deburring tool.	63.16%	54.55%	22.22%	78.57%
2.7.3 Demonstrate how to sharpen machinist scrapers.	73.68%	72.73%	66.67%	71.43%
2.7.4 Deburr work pieces to required tolerances.	76.32%	72.73%	55.56%	71.43%
<b>Performance Standard 2.8: Use appropriate inspection gages</b>	75.00%	86.36%	77.78%	75.00%
<b>CONTENT STANDARD 3.0: SETUP AND OPERATE POWER SAWS</b>	36.84%	72.73%	55.56%	64.29%
<b>Performance Standard 3.1: Comply with safe and efficient work practices</b>	36.84%	72.73%	55.56%	64.29%
3.1.2 Identify hazardous components of saws.	36.84%	72.73%	55.56%	64.29%
<b>CONTENT STANDARD 4.0: SETUP AND OPERATE PEDESTAL GRINDERS</b>	94.74%	90.91%	88.89%	92.86%
<b>Performance Standard 4.1: Comply with safe and efficient work practices</b>	94.74%	90.91%	88.89%	92.86%
4.1.1 Demonstrate the operation of pedestal grinders safety devices.	94.74%	90.91%	88.89%	92.86%
<b>CONTENT STANDARD 5.0: HAND-SHARPEN CUTTING TOOLS</b>	63.16%	90.91%	77.78%	78.57%
<b>Performance Standard 5.1: Comply with safe and efficient work practices</b>	63.16%	90.91%	77.78%	78.57%
5.1.1 Demonstrate knowledge of safety by completing a written safety test.	63.16%	90.91%	77.78%	78.57%
<b>CONTENT STANDARD 6.0: SETUP AND OPERATE LATHES</b>	81.26%	79.27%	79.11%	73.71%
<b>Performance Standard 6.1: Comply with safe and efficient work practices</b>	100.00%	100.00%	100.00%	100.00%
6.1.5 Explain the proper housekeeping and tool hazards	100.00%	100.00%	100.00%	100.00%
<b>Performance Standard 6.4: Secure tools, tool holders, and fixtures or attachments</b>	98.25%	93.94%	88.89%	90.48%
6.4.1 Describe the proper selection of tool holding devices.	100.00%	100.00%	100.00%	92.86%
6.4.2 Describe the use of tool holders, fixtures and attachments.	94.74%	90.91%	88.89%	85.71%
6.4.3 Describe the mounting of tool bits.	100.00%	90.91%	77.78%	92.86%
<b>Performance Standard 6.5: Select and set feeds and speeds</b>	88.16%	72.73%	86.11%	58.93%
6.5.1 Locate, speed and feed chart on each machine.	94.74%	72.73%	85.19%	57.14%
6.5.2 List spindle speed formula and calculate appropriate RPM.	68.42%	72.73%	88.89%	64.29%
<b>Performance Standard 6.6: Setup lathes and face work pieces held in chucks</b>	88.16%	86.36%	97.22%	80.36%
6.6.2 Calculate cutting speeds and feeds for facing operations.	63.16%	72.73%	100.00%	35.71%
6.6.3 Describe the procedures for facing.	96.49%	90.91%	96.30%	95.24%
<b>Performance Standard 6.7: Rough-cut and finish-cut with lathes</b>	86.84%	88.64%	80.56%	87.50%

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<b>Number tested: 14</b>	<b>17-18</b>	<b>18-19</b>	<b>20-21</b>	<b>21-22</b>
6.7.1 Calculate the correct speeds and feeds for the appropriate operation.	81.58%	86.36%	72.22%	82.14%
6.7.3 Define and make trial cuts.	84.21%	81.82%	88.89%	85.71%
6.7.4 Using appropriate measuring tools, measure work piece.	100.00%	100.00%	88.89%	100.00%
<b>Performance Standard 6.14: Counter bore holes with lathes</b>	42.11%	18.18%	44.44%	57.14%
6.14.4 Counter bore a hole in a work piece.	42.11%	18.18%	44.44%	57.14%
<b>Performance Standard 6.15: Bores holes with lathes</b>	73.68%	81.82%	83.33%	92.86%
6.15.2 Select the correct tool and tool holder for boring holes.	73.68%	81.82%	83.33%	92.86%
<b>Performance Standard 6.17: Cut external threads with lathes</b>	68.42%	75.76%	62.96%	52.38%
6.17.1 Describe the procedures for cutting external threads.	84.21%	81.82%	83.33%	67.86%
6.17.8 Determine compound off-set angle (right or left hand threads).	36.84%	63.64%	22.22%	21.43%
<b>Performance Standard 6.19: Cut internal threads with lathes</b>	63.16%	66.67%	51.85%	54.76%
6.19.1 Describe the procedures for cutting internal threads.	68.42%	54.55%	66.67%	64.29%
6.19.2 Explain the use of appropriate inspection gages.	89.47%	90.91%	55.56%	78.57%
6.19.8 Determine compound off-set angle (right or left hand threads).	31.58%	54.55%	33.33%	21.43%
<b>CONTENT STANDARD 7.0: SETUP AND OPERATE MILLING MACHINES</b>	75.07%	78.47%	76.90%	78.20%
<b>Performance Standard 7.1: Comply with safe and efficient work practices</b>	42.11%	72.73%	44.44%	35.71%
7.1.4 Operate lab equipment according to safety guidelines.	42.11%	72.73%	44.44%	35.71%
<b>Performance Standard 7.2: Identify the parts of the horizontal and vertical milling machine and know their function</b>	89.47%	75.76%	81.48%	88.10%
7.2.1 Describe the function of major parts.	89.47%	75.76%	81.48%	88.10%
<b>Performance Standard 7.4: True up the head and align milling machine fixtures</b>	71.93%	77.27%	72.22%	75.00%
7.4.1 Explain the safety precautions/procedures in alignment of heads.	100.00%	90.91%	66.67%	78.57%
7.4.5 Align a head of a milling machine.	57.89%	63.64%	77.78%	71.43%
<b>Performance Standard 7.5: Select and set feeds and speeds for milling work</b>	68.42%	80.00%	84.44%	87.14%
7.5.1 List the correct cutting speed and feed for various materials.	76.32%	68.18%	83.33%	85.71%
7.5.2 Set correct feeds and speeds on a milling machine for various materials.	60.53%	87.88%	85.19%	88.10%
<b>Performance Standard 7.6: Square up work pieces with a table vise</b>	59.65%	78.79%	70.37%	73.81%
7.6.2 Describe the procedures for setting-up and machining a work piece parallel and square.	59.65%	78.79%	70.37%	73.81%
<b>Performance Standard 7.7: Perform end milling</b>	89.47%	88.64%	72.22%	80.36%
7.7.2 Describe the procedures for setting up and end milling a flat surface.	89.47%	87.88%	66.67%	76.19%
7.7.3 Identify the correct cutting fluids for milling.	89.47%	90.91%	88.89%	92.86%
<b>Performance Standard 7.8: Perform fly-cutting operations</b>	66.67%	63.64%	85.19%	76.19%
7.8.2 Explain the purpose of fly-cutters.	89.47%	72.73%	77.78%	85.71%
7.8.3 Calculate speeds, feeds, and determine depth of cut for fly-cutting surfaces.	52.63%	54.55%	88.89%	78.57%

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<b>Number tested: 14</b>	<b>17-18</b>	<b>18-19</b>	<b>20-21</b>	<b>21-22</b>
7.8.4 Describe the procedures for fly-cutting surfaces.	57.89%	63.64%	88.89%	64.29%
<b>Performance Standard 7.9: Drill holes with a milling machine</b>	67.11%	70.45%	80.56%	69.64%
7.9.1 Describe the procedures for using milling machine dials for accurate table positioning.	89.47%	100.00%	100.00%	100.00%
7.9.4 Calculate the correct speed and feed.	47.37%	45.45%	66.67%	42.86%
7.9.5 Drill holes in a work piece to specified tolerances using a milling machine.	84.21%	90.91%	88.89%	92.86%
<b>Performance Standard 7.10: Perform reaming operations</b>	84.21%	81.82%	85.19%	80.95%
7.10.1 Explain the uses of centerdrills, drills, and reamers.	100.00%	100.00%	100.00%	100.00%
7.10.2 Calculate proper speeds and feeds for centerdrilling, drilling, and reaming operations.	84.21%	100.00%	88.89%	100.00%
7.10.3 Describe the procedures for centerdrilling, drilling, and reaming on a milling machine.	68.42%	45.45%	66.67%	42.86%
<b>Performance Standard 7.12: Bore holes with milling machines</b>	87.72%	84.85%	70.37%	90.48%
7.12.1 Explain the procedures for accurately adjusting a boring head.	86.84%	81.82%	61.11%	85.71%
7.12.2 Calculate speeds and feeds for boring operations.	89.47%	90.91%	88.89%	100.00%
<b>Performance Standard 7.18: Use an edge finder and wiggler</b>	88.16%	90.91%	88.89%	82.14%
7.18.1 Explain the correct care and use of an edge finder or wiggler.	89.47%	86.36%	100.00%	82.14%
7.18.2 Describe the procedures for touching off with an edge finder and a wiggler.	89.47%	100.00%	77.78%	92.86%
7.18.3 Locate the center of a work piece after locating it with a wiggler or edge finder.	84.21%	90.91%	77.78%	71.43%
<b>Performance Standard 7.19: Position a table</b>	59.65%	66.67%	55.56%	64.29%
7.19.3 Describe the procedures for keeping backlash out of lead screws.	57.89%	68.18%	50.00%	60.71%
7.19.5 Describe the procedures for drilling equally spaced holes.	63.16%	63.64%	66.67%	71.43%
<b>CONTENT STANDARD 8.0: SETUP AND OPERATE DRILL PRESSES</b>	53.95%	63.64%	63.89%	71.43%
<b>Performance Standard 8.1: Comply with safe and efficient work practices</b>	63.16%	72.73%	55.56%	78.57%
8.1.1 Demonstrate knowledge of safety by completing a written safety test.	63.16%	72.73%	55.56%	78.57%
<b>Performance Standard 8.3: Center drill, drill and ream a hole in a work piece</b>	50.88%	60.61%	66.67%	69.05%
8.3.1 Describe the procedures for center drilling and drilling holes.	50.00%	59.09%	61.11%	64.29%
8.3.2 Describe the procedures for reaming holes.	52.63%	63.64%	77.78%	78.57%