Correlation of

***Modern Cabinetmaking,* Molzahn, Umstattd, Davis**

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to

Woodwork Career Alliance: 1. Layout

The content of the text and Lab Workbook correlates to Woodwork Career Alliance (WCA) skill standards. The WCA establishes a benchmark to measure and recognize an individual's skills and knowledge. The WCA skill standards help ensure that students are prepared for rigorous industry standards, and provide a pathway for advancement for professional woodworkers.

The WCA skill standards define the minimum requirements for specific woodworking machine operations. Using the WCA skill standards in a wood training program can help you, your students, and your program obtain industry recognition. The Modern Cabinetmaking textbook and Lab Workbook are correlated to the performance standards, helping prepare your students for certification.

Layout Considerations

- Pre-Operation Checklist is a prerequisite for ANY operation.
- Applies to digital and dial calipers (decimal, fractional, and metric) commonly found in the shop.
- Tools are in working condition; capable of being properly zeroed out and will hold calibration.
- Test examples are of appropriate size to be measured using the available tools.
- Process is completed in a timely manner.
- Applies to standard metal, movable head squares commonly found in the shop. Imperial, metric, and dual system squares are all used approximately in the same way.
- Tools are in working condition, capable of being properly verified for accuracy.
- Applies to standard retracting tapes commonly found in the shop. Imperial, metric, and dual system tapes are all used approximately in the same way.

Calipers

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
Pre-Operation Checklist				
1	—	**Performance Standard 1.** Verifies caliper reads "0" when jaws are touching.	Chapter 12	—
1	—	**Performance Standard 2.** Demonstrates understanding of all applicable controls and functions of the caliper(s) to be used for evaluation.	Chapter 12	—
1	—	**Performance Standard 3.** Handles caliper with care and stores properly with jaws not touching each other.	Chapter 12	—
2	—	**Performance Standard 1.** Verifies calibration to a known standard.	Chapter 12	—
2	—	Meets Level 1 performance standard.	—	—
Operation—Measure Thickness				
1	Given material with known thickness dimensions, and a caliper calibrated and ready to measure, record the thickness.	**Performance Standard 1.** Accuracy of answer shall be ± 0.076 mm [0.003"].	Chapter 12	Section Project 5-1
2	Given material with known thickness dimensions, and a caliper slightly out of adjustment (calibration), demonstrate ability to zero out the instrument, and record the thickness.	**Performance Standard 1.** Demonstrates ability to zero out/calibrate the caliper.	Chapter 12	—
2	Given material with known thickness dimensions, and a caliper slightly out of adjustment (calibration), demonstrate ability to zero out the instrument, and record the thickness.	Meets Level 1 performance standard.	—	—

Operation—Measure Depth				
1	Given material machined in any fashion to known depth dimensions, and a caliper calibrated and ready to measure, record the depth of each example.	**Performance Standard 1.** Accuracy of answer shall be ± 0.076 mm [0.003”].	Chapter 12	Section Project 5-1
2	Given material machined in any fashion to known depth dimensions, and a caliper slightly out of adjustment (calibration), demonstrate ability to calibrate the instrument, then record the depth of each example.	**Performance Standard 1.** Demonstrates ability to zero out/calibrate the caliper.	Chapter 12	—
2	Given material machined in any fashion to known depth dimensions, and a caliper slightly out of adjustment (calibration), demonstrate ability to calibrate the instrument, then record the depth of each example.	Meets Level 1 performance standard.	—	—
Operation—Measure Inside Dimension				
1	Given material with known inside dimension, and a caliper calibrated and ready to measure, determine the inside dimension.	**Performance Standard 1.** Accuracy of answer shall be ± 0.076 mm [0.003”].	Chapter 12	—
2	Given material with known inside dimension, and a caliper slightly out of adjustment (calibration), demonstrate ability to calibrate the instrument, then record the inside dimension.	**Performance Standard 1.** Demonstrates ability to zero out/calibrate the caliper.	Chapter 12	—

2	Given material with known inside dimension, and a caliper slightly out of adjustment (calibration), demonstrate ability to calibrate the instrument, then record the inside dimension.	Meets Level 1 performance standard.	—	—
Operation—Measure Center Distance from Edge of Board				
1	Given material with known hole diameters, and a caliper calibrated and ready to measure, record the centerline distance from the hole to the edge of each piece.	**Performance Standard 1.** Accuracy of answer shall be ± 0.076 mm [0.003”].	Chapter 12	Section Project 5-1
2	Given material with known hole diameters, and a caliper slightly out of adjustment (calibration), record the centerline distance from the hole to the edge of each piece.	**Performance Standard 1.** Demonstrates ability to zero out/calibrate the caliper.	Chapter 12	—
2	Given material with known hole diameters, and a caliper slightly out of adjustment (calibration), record the centerline distance from the hole to the edge of each piece.	Meets Level 1 performance standard.	—	—

Combination Square

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
Pre-Operation Checklist				
1	—	**Performance Standard 1.** Verifies blade is working properly and free of debris.	Chapter 12	—
1	—	**Performance Standard 2.** Verifies blade hook appears square and operating properly.	Chapter 12	—

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
1	—	**Performance Standard 3.** Verifies calibration to a known standard.	Chapter 12	—
1	—	**Performance Standard 4.** Handles tape measure with care to maintain accuracy.	Chapter 12	—
2	—	**Performance Standard 1.** Verifies head is square to rule and slides freely.	Chapter 12	—
2	—	**Performance Standard 2.** Ensures square is clean and lubricated and rust free.	Chapter 12	—
2	—	Meets Level 1 performance standard.	—	—
Operation—Verify Material Squareness				
1	Given 3 pieces of material 3/4″ thick, 6″ wide, and at least 12″ long, with the end of one piece cut slightly out of square (about 1/2°) to the long edge, and tool set up and ready to measure and/or calibrate, check the end of each piece of material for squareness; or, given one piece of 12″ panel stock, verify if it is square or out of square.	**Performance Standard 1.** Correctly identifies which piece of material is out of square.	Chapter 12	—
Operation—Layout Material for Perpendicular Cuts				
1	Given material of uniform width and thickness and tool set up and ready to lay out, make marks around a 3/4″ × 4″ S4S (surfaced 4 sides) board (all 4 faces) for a 90° cut.	**Performance Standard 1.** Marks are crisp and easily read.	Chapter 12	—

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
1	Given material of uniform width and thickness and tool set up and ready to lay out, make marks around a 3/4″ × 4″ S4S (surfaced 4 sides) board (all 4 faces) for a 90° cut.	**Performance Standard 2.** No measurable deviation from 90° is apparent.	Chapter 12	—
1	Given material of uniform width and thickness and tool set up and ready to lay out, make marks around a 3/4″ × 4″ S4S (surfaced 4 sides) board (all 4 faces) for a 90° cut.	**Performance Standard 3.** No measurable deviation occurs where lines meet at adjacent planes.	Chapter 12	—
Operation—Layout Material for Angled Cuts				
1	Given material and tool set up and ready to measure and/or calibrate, mark 3/4″ × 4″ by any length stock for a 45° cut across the wide face of stock.	**Performance Standard 1.** Mark is crisp and easily read.	Chapter 12	—
1	Given material and tool set up and ready to measure and/or calibrate, mark 3/4″ × 4″ by any length stock for a 45° cut across the wide face of stock.	**Performance Standard 2.** No measurable deviation from 45° is apparent.	Chapter 12	—
2	Given material, tool and a protractor head, mark 3/4″ × 4″ × any length stock for a specified angle cut across the wide face of stock.	**Performance Standard 1.** Installs protractor head.	Chapter 12	—
2	Given material, tool and a protractor head, mark 3/4″ × 4″ × any length stock for a specified angle cut across the wide face of stock.	**Performance Standard 2.** Adjusts head to within +/– .5°.	Chapter 12	—

Operation—Layout Mortise				
1	Given material and a combination square, lay out a 3/8″ × 2″ mortise, centered on the edge of a piece of milled stock, 1/2″ from the end of the stock.	**Performance Standard 1.** Mark is crisp and easily read.	Chapter 12	Section Project 4-5
1	Given material and a combination square, lay out a 3/8″ × 2″ mortise, centered on the edge of a piece of milled stock, 1/2″ from the end of the stock.	**Performance Standard 2.** Layout is centered on the stock (side to side).	Chapter 12	Section Project 4-5
1	Given material and a combination square, lay out a 3/8″ × 2″ mortise, centered on the edge of a piece of milled stock, 1/2″ from the end of the stock.	**Performance Standard 3.** Lines are accurate to within 0.4 mm (1/64″) [0.015″].	Chapter 12	Section Project 4-5

Tape Measure

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
Pre-Operation Checklist				
1	—	**Performance Standard 1.** Verifies blade is working properly and free of debris.	Chapter 12	—
1	—	**Performance Standard 2.** Verifies blade hook appears square and operating properly.	Chapter 12	—
1	—	**Performance Standard 3.** Verifies calibration to a known standard.	—	—
1	—	**Performance Standard 4.** Handles tape measure with care to maintain accuracy.	Chapter 12	—
2	—	**Performance Standard 1.** Demonstrates ability to correct/calibrate an out-of-standard tape.	—	—
2	—	Meets Level 1 performance standard.	—	—

Operation—Measure Lengths (Imperial)				
1	Given material with a minimum of 5 marks to measure; one each on some multiple of 1/32", 1/16", 1/8", 1/4", and 1/2", with at least 1" separation between each mark, and tape measure calibrated and ready to measure, determine the length of each mark from the end of the board.	**Performance Standard 1.** Records the measurement of each mark.	Chapter 12	—
1	Given material with a minimum of 5 marks to measure; one each on some multiple of 1/32", 1/16", 1/8", 1/4", and 1/2", with at least 1" separation between each mark, and tape measure calibrated and ready to measure, determine the length of each mark from the end of the board.	**Performance Standard 2.** Accuracy of answer shall be within 1/32" [0.031"].	Chapter 12	—
2	Given material with a minimum of 5 marks to measure; one each on some multiple of 1/32", 1/16", 1/8", 1/4", and 1/2", with at least 1" separation between each mark, and tape measure calibrated and ready to measure, determine the length of each mark from the end of the board.	**Performance Standard 1.** Records the measurement of each mark.	Chapter 12	—

2	Given material with a minimum of 5 marks to measure; one each on some multiple of 1/32", 1/16", 1/8", 1/4", and 1/2", with at least 1" separation between each mark, and tape measure calibrated and ready to measure, determine the length of each mark from the end of the board.	**Performance Standard 2.** Accuracy of answer shall be within 1/64" [0.015"].	Chapter 12	—
Operation—Measure Lengths (Metric)				
1	Given material with a minimum of 5 marks to measure; one each on some multiple of 1 mm, 10 mm (1 cm), and 100 mm, with at least 30 mm separation between each mark, and tape measure calibrated and ready to measure, determine the length of each mark from the end of the board.	**Performance Standard 1.** Records the measurement of each mark.	Chapter 12	—
1	Given material with a minimum of 5 marks to measure; one each on some multiple of 1 mm, 10 mm (1 cm), and 100 mm, with at least 30 mm separation between each mark, and tape measure calibrated and ready to measure, determine the length of each mark from the end of the board.	**Performance Standard 2.** Accuracy of answer shall be ±1 mm.	Chapter 12	—

2	Given material with a minimum of 5 marks to measure; one each on some multiple of 1 mm, 10 mm (1 cm), and 100 mm, with at least 30 mm separation between each mark, and tape measure calibrated and ready to measure, determine the length of each mark from the end of the board.	**Performance Standard 1.** Records the measurement of each mark.	Chapter 12	—
2	Given material with a minimum of 5 marks to measure; one each on some multiple of 1 mm, 10 mm (1 cm), and 100 mm, with at least 30 mm separation between each mark, and tape measure calibrated and ready to measure, determine the length of each mark from the end of the board.	**Performance Standard 2.** Accuracy of answer shall be ±0.5 mm.	Chapter 12	—
Operation—Measure Inside Dimension of Opening				
1	Given material and tape set up and ready to measure, determine the size of an inside opening within the range 305 mm to 1219 mm (12″ to 48″).	**Performance Standard 1.** Records the measurement of opening.	Chapter 12	—
1	Given material and tape set up and ready to measure, determine the size of an inside opening within the range 305 mm to 1219 mm (12″ to 48″).	**Performance Standard 2.** Accuracy of answer shall be ±0.8 mm (1/32″) [0.031″].	Chapter 12	—
2	Given material and tape set up and ready to measure, determine the size of an inside opening within the range 305 mm to 2440 mm (12″ to 96″).	**Performance Standard 1.** Records the measurement of opening.	Chapter 12	—

2	Given material and tape set up and ready to measure, determine the size of an inside opening within the range 305 mm to 2440 mm (12″ to 96″).	**Performance Standard 2.** Accuracy of answer shall be ± 0.4 mm (1/64″) [0.015″].	Chapter 12	—
Operation—Distribute Marks Evenly Across a Board				
1	Given material and device set up and ready to lay out, determine the size of a (12″ to 48″) [305 mm to 1219 mm] board, then distribute two 19 mm (3/4″) [0.75″] spaces (such as shelves or dividers) evenly within the length.	**Performance Standard 1.** Each dimension shall have a tolerance of ±0.8 mm (1/32″) [0.031″].	Chapter 12	—
1	Given material and device set up and ready to lay out, determine the size of a (12″ to 48″) [305 mm to 1219 mm] board, then distribute two 19 mm (3/4″) [0.75″] spaces (such as shelves or dividers) evenly within the length.	**Performance Standard 2.** Each space location shall be accurate to a tolerance of ±0.8 mm (1/32″) [0.031″].	Chapter 12	—
2	Given material and device set up and ready to lay out, determine the size of a (12″ to 48″) [305 mm to 1219 mm] board, then distribute four 19 mm (3/4″) [0.75″] spaces (such as shelves or dividers) evenly within the length.	**Performance Standard 1.** Each dimension shall have a tolerance of ±0.4 mm (1/64″) [0.015″].	Chapter 12	—
2	Given material and device set up and ready to lay out, determine the size of a (12″ to 48″) [305 mm to 1219 mm] board, then distribute four 19 mm (3/4″) [0.75″] spaces (such as shelves or dividers) evenly within the length.	**Performance Standard 2.** Each space location shall be accurate to a tolerance of ±0.4 mm (1/64″) [0.015″].	Chapter 12	—