DEFENSE ACQUISITION UNIVERSITY

CMQ 142 - Basic Measuring

141014

Course Learning/Performance Objectives followed by its enabling learning objectives on separate lines if specified.

1	Identify the importance of dimensional measurement in Quality Assurance.
	Identify standards in measurement.
	Identify the requirements for tool traceability in measurement.
	Define gaging and measuring.
	Identify QAS role in gaging and inspection.
2	Given measurement standards, recognize the considerations taken to acquire precise measurements.
	Recognize accuracy, precision, repeatability, and reproducibility in measurement.
	Recognize the variables that affect the accuracy of measurements.
	Identify the role of calibration in measurement.
	Identify calibration methods and techniques.
	Identify each type of calibration system.
	Identify correct calibration intervals.
	Indicate the characteristics of an optimal calibration environment.
	Identify the role of sensitivity in measurement.
	Identify the reference surface.
	Identify the measured surface.
	Identify general guidelines for handling measurement tools safely.
	Identify general guidelines for caring for measurement tools.
3	Given a scenario involving measurements, demonstrate the use of truncation, rounding, and conversion rules.
	Apply truncation rules for positive and negative numbers.
	Apply rounding rules for positive and negative numbers.
	Apply the measurement conversion procedure for metric and English units.
4	Recognize the appropriate situation for using hand tools.
	Identify the types and uses for steel rules.
	Identify the types and uses for protractors.
	Identify the types and uses for calipers.
	Identify the types and uses for micrometers.
	Identify the types and uses for tapered parallels.
	Identify the types and uses for surface plates.
	Identify the types and uses for surface plate gages.
	Identify the types and uses for gage blocks.
	Identify the types and uses for gage pins.
	Identify the types and uses for feeler gages.
	Identify the types and uses for dial depth gages.
5	Recognize the appropriate situation for using hand tools for measuring circularity.
	Identify the types and uses for bore gages.
	Identify the types and uses for radius gages.
	Identify the types and uses for small hole gages.
	Identify the types and uses for telescoping gages.
6	Recognize the appropriate situation for using go or no-go hand tools.
	Define attribute gages.
	Identify the types and uses for plug gages.
	Identify the types and uses for ring gages.
7	Recognize the appropriate situation for using equipment for uncommon measuring conditions.
	Identify the types and uses for surface finish measurement tools.
	Identify the types and uses for torque wrenches.
8	Recognize how to use a mechanical comparator to take a measurement.

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	Identify the types and uses for mechanical comparators.
	Recognize the procedure for using mechanical comparators.
9	Recognize how to use a cable tension meter to take a measurement.
	Identify the types and uses for cable tension meters.
	Recognize the procedure for using cable tension meters.
10	Recognize how to use the three-wire method to take a measurement.
	Identify the uses for the three-wire method.
	Recognize the procedure for using the three-wire method.
11	Recognize how to use a thread gage to take a measurement.
	Identify the types and uses for thread gages.
	Recognize the procedure for using thread gages.
12	Recognize how to use a centerline gage to take a measurement.
	Identify the types and uses for centerline gages.
	Recognize the procedure for using centerline gages.
13	Recognize how to use a snap gage to take a measurement.
	Identify the types and uses for snap gages.
	Recognize the procedure for using snap gages.
14	Recognize how to use a pneumatic comparator to take a measurement.
	Identify the types and uses for pneumatic comparators.
	Recognize the procedure for using pneumatic comparators.
15	Recognize how to use an optical comparator to take a measurement.
	Identify the types and uses for optical comparators.
	Recognize the procedure for using optical comparators.
16	Recognize how to use a coordinate measuring machine to take a measurement.
	Identify the types and uses for Coordinate Measuring Machines (CMMs).
	Recognize the procedure for using CMMs.
17	Recognize how to use a durometer to take a measurement.
	Identify the types and uses for a durometer.
	Recognize the procedure for using durometers.
	Recognize the procedure for Brinell Hardness Testing.
	Recognize the procedure for Rockwell Hardness Testing.
18	Given a description of a measurement activity, identify the types of measurement errors.
	Recognize an observational measurement error.
	Recognize a manipulative measurement error.
	Recognize a bias measurement error.
	Recognize gage errors.
	Recognize a part measurement error.
19	Given a scenario describing measuring conditions, select the best-suited measurement tool.
	Select a measurement tool based on the 10-to-1 rule.
	Indicate the considerations taken when choosing a measurement tool.