

**Erie County Technical School
Computer Networking Duty/Task List**

This program prepares students for PA High Priority Occupations				Pennsylvania Standards				NOCTI Alignment Test Code 8148		PDE Program of Study Alignment CIP 11.0901
Duty Area and Task #	Content Areas, Course Titles and Task Statements	Course Number	National Skill Standards	Common Core Reading	Common Core Writing	Common Core Mathematics	Career Education & Work	Written Test	Performance Test	
00 - GENERAL SKILLS										
A	WORKPLACE SAFETY AWARENESS	CMN101								
A001	Explain common causes of accidents and injuries in a computer facility.	CMN101	CompTIA A+ HW 5.1-5.2	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	N/A	101
A002	Understand proper personal protective equipment.	CMN101	CompTIA A+ OS 5.1-5.2	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	102
A003	List and identify safety hazard symbols.	CMN101	CompTIA A+ OS 5.1-5.2	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	103
A004	Describe elements of Safety Data Sheets.	CMN101	CompTIA A+ OS 5.1-5.2	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	104
A005	Identify requirements in handling hazardous materials.	CMN101	CompTIA A+ OS 5.1-5.2	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	104
A006	Describe and explain types of fire extinguishers.	CMN101	CompTIA A+ OS 5.1-5.2	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	105
A007	Identify safe procedures when lifting and carrying heavy objects.	CMN101	CompTIA A+ OS 5.1-5.2	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	106
A008	Describe the importance of safety as it relates to environmental issues.	CMN101	CompTIA A+ OS 5.1-5.2	3.5.11-12.F	N/A	N/A	13.2.11.E	X	N/A	107
A009	Identify potential hazards when working with power supplies.	CMN101	CompTIA A+ OS 5.1-5.2	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	108
A010	Identify proper disposal procedures for batteries and display devices.	CMN101	CompTIA A+ OS 5.1-5.2	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	109
A011	Identify proper disposal procedures for chemical solvents.	CMN101	CompTIA A+ OS 5.1-5.2	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	110
A012	Understand how to prevent electrostatic discharge conditions.	CMN101	CompTIA A+ OS 5.1-5.2	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	111
A013	Explain basics of ergonomics.	CMN101	CompTIA A+ OS 5.1-5.2	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	N/A
A014	Explain how to maintain a safe work area to avoid common accidents.	CMN101	CompTIA A+ OS 5.1-5.2	3.5.11-12.F	N/A	N/A	13.2.11.E	X	N/A	114
B	MATH FOR COMPUTER NETWORKING	CMN102								

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B001	Describe how mathematics has affected computers and networking.	CMN102	CompTIA Network+ 5.2	3.5.11-12.F	N/A	N/A	13.2.11.E	N/A	N/A	N/A
B002	Identify and distinguish between bits and bytes.	CMN102	CompTIA Network+ 5.2	N/A	N/A	2.1.HS.F.2	13.2.11.E	N/A	X	504
B003	Explain how mathematical powers are used in computer and network calculations.	CMN102	CompTIA Network+ 5.2	N/A	N/A	2.1.HS.F.5	13.2.11.E	N/A	N/A	N/A
B004	Demonstrate how to perform number conversions used in computers (binary, octal, hexadecimal and decimal).	CMN102	CompTIA Network+ 5.2	N/A	N/A	2.1.HS.F.6	13.2.11.E	X	X	504
B005	Understand how to solve algebraic formulas with two unknowns.	CMN102	CompTIA Network+ 5.2	N/A	N/A	2.1.HS.F.5	13.2.11.E	N/A	N/A	N/A
B006	Understand basic logic statements.	CMN102	CompTIA Network+ 5.2	N/A	N/A	2.1.HS.F.4	13.2.11.E	N/A	N/A	N/A
B007	Demonstrate how to use mathematics with addressing concepts in computers and networks.	CMN102	CompTIA Network+ 5.2	N/A	N/A	2.1.HS.F.4	13.2.11.E	N/A	X	504
B008	Demonstrate how to perform subnetting calculations using number of subnets or number of hosts.	CMN102	CompTIA Network+ 1.8	N/A	N/A	2.1.HS.F.4	13.2.11.E	N/A	X	504
B009	Understand basic percentages and weighted averages.	CMN102	CompTIA Network+ 1.8	N/A	N/A	2.1.HS.F.5	13.2.11.E	N/A	N/A	N/A
B010	Demonstrate how to use basic geometry for computer and network calculations.	CMN102	CompTIA Network+ 1.8	N/A	N/A	2.1.HS.F.2	13.2.11.E	N/A	N/A	N/A
B011	Explain common mathematical problem solving skills used in computers.	CMN102	CompTIA Network+ 1.8	N/A	N/A	2.1.HS.F.4	13.2.11.E	X	N/A	N/A
C	CUSTOMER SERVICE SKILLS	CMN103								
C001	Identify and distinguish between job roles and responsibilities used in computers and networking.	CMN103	CompTIA A+ OS 5.3-5.4	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	N/A	N/A
C002	Describe key traits needed for a person working in customer service.	CMN103	CompTIA A+ OS 5.3-5.4	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
C003	Explain how to deal with irate, difficult, not knowledgeable, overly confident, or overly friendly customers.	CMN103	CompTIA A+ OS 5.3-5.4	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	N/A
C004	Recognize customer service skills associated with prohibited content or activity.	CMN103	CompTIA A+ OS 5.3-5.4	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	N/A

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C005	Identify and describe elements of a working Help Desk environment.	CMN103	CompTIA A+ OS 5.3-5.4	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
C006	Describe features of a help desk ticket call tracking system.	CMN103	CompTIA A+ OS 5.3-5.4	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	N/A
C007	Explain things to consider when documenting repairs.	CMN103	CompTIA A+ OS 5.3-5.4	3.5.11-12.F	N/A	N/A	13.2.11.E	N/A	N/A	N/A
C008	Demonstrate how to enter work, time, and expense details on a customer issue using a help desk ticket system.	CMN103	CompTIA A+ OS 5.3-5.4	N/A	3.6.11-12.B	N/A	13.2.11.E	N/A	N/A	N/A
C009	Demonstrate how to run managerial reports on a help desk ticket system.	CMN103	CompTIA A+ OS 5.3-5.4	N/A	3.6.11-12.D	2.1.HS.F.5	13.2.11.E	N/A	N/A	N/A
D	CYBER SAFETY TRAINING	CMN201								
D001	Understand basics of cyber safety.	CMN201	CompTIA Strata 3.1	3.5.11-12.A	N/A	N/A	13.2.11.E	N/A	N/A	N/A
D002	Identify and describe common cyber security threats found today.	CMN201	CompTIA Strata 3.1	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1006
D003	Explain the tools to help mitigate cyber security threats.	CMN201	CompTIA Strata 3.2	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1006
D004	Understand common types of cyber bullies and online predators.	CMN201	CompTIA Strata 3.1	3.5.11-12.A	N/A	N/A	13.2.11.E	N/A	N/A	N/A
D005	Explain factors and techniques used by cyber bullies and online predators.	CMN201	CompTIA Strata 3.2	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
D006	Explain what sexting is and how it can occur.	CMN201	CompTIA Strata 3.1	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
D007	Identify common Internet acronyms.	CMN201	CompTIA Strata 3.1	3.5.11-12.B	3.6.11-12.H	N/A	13.2.11.E	N/A	N/A	N/A
D008	Identify common Internet emoticons.	CMN201	CompTIA Strata 3.1	3.5.11-12.B	3.6.11-12.H	N/A	13.2.11.E	N/A	N/A	N/A
D009	Describe how Internet acronyms and emoticons and cause different communication on the Internet.	CMN201	CompTIA Strata 3.1	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	N/A
D010	Describe how cyber safety and the corresponding disciplines relate to the computer networking field.	CMN201	CompTIA Strata 3.1	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	N/A

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E	INDUSTRY CERTIFICATION PREPARATION L2	CMN202								
E001	Identify and demonstrate common certification study techniques.	CMN202	CompTIA All	3.5.11-12.F	N/A	N/A	13.2.11.E	N/A	N/A	N/A
E002	Explain the benefits of obtaining an industry standard certification.	CMN202	CompTIA All	3.5.11-12.A	N/A	N/A	13.2.11.E	N/A	N/A	N/A
E003	Explain the details of preparing for an industry standard certification.	CMN202	CompTIA All	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
E004	Successfully attempt the TestOut PC Pro industry standard certification.	CMN202	CompTIA All	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
E005	Successfully attempt the TestOut NET Pro industry standard certification.	CMN202	CompTIA All	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
F	OSHA GENERAL INDUSTRY TRAINING	CMN301								
F001	Understand basics of the Occupational Safety and Health Administration (OSHA).	CMN301	CompTIA Network+ 5.5	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
F002	Identify employer responsibilities under OSHA.	CMN301	CompTIA Network+ 5.5	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
F003	Explain the use of OSHA Standards.	CMN301	CompTIA Network+ 5.5	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	N/A
F004	Understand common tripping hazards in the workplace.	CMN301	CompTIA Network+ 5.5	3.5.11-12.H	N/A	N/A	13.2.11.E	X	N/A	101
F005	Identify the four elements of an effective safety and health program.	CMN301	CompTIA Network+ 5.5	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
F006	Describe common personal protective equipment used in the workplace.	CMN301	CompTIA Network+ 5.5	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	102
F007	Identify basics of blood borne pathogens.	CMN301	CompTIA Network+ 5.5	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	114
F008	Describe common electrical safety issues.	CMN301	CompTIA Network+ 5.5	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	108
F009	Explain how to communicate hazardous issues in the workplace.	CMN301	CompTIA Network+ 5.5	3.5.11-12.G	N/A	N/A	13.2.11.E	X	N/A	108

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F010	Describe elements of ergonomics.	CMN301	CompTIA Network+ 5.5	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	N/A
F011	Understand how to prevent or reduce workplace violence.	CMN301	CompTIA Network+ 5.5	3.5.11-12.A	N/A	N/A	13.2.11.E	N/A	N/A	114
F012	Describe how OSHA and the corresponding disciplines relate to the computer networking field.	CMN301	CompTIA Network+ 5.5	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	N/A	100
G	INDUSTRY CERTIFICATION PREPARATION	CMN302								
G001	Identify and demonstrate common certification study techniques.	CMN302	CompTIA All	3.5.11-12.F	N/A	N/A	13.2.11.E	N/A	N/A	N/A
G002	Explain the benefits of obtaining an industry standard certification.	CMN302	CompTIA All	3.5.11-12.A	N/A	N/A	13.2.11.E	N/A	N/A	N/A
G003	Explain the details of preparing for an industry standard certification.	CMN302	CompTIA All	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
G004	Successfully attempt the TestOut PC Pro industry standard certification.	CMN302	CompTIA All	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
G005	Successfully attempt the TestOut NET Pro industry standard certification.	CMN302	CompTIA All	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
H	PERSONAL FINANCE	BFM201								
I	BUSINESS FINANCE	BFM301								
J	LEADERSHIP	PFS109								
K	LEADERSHIP	PFS110								
L	BUSINESS PRINCIPLES	PFS209								
M	BUSINESS PRINCIPLES	PFS210								
N	TOTAL QUALITY PRINCIPLES	PFS309								
O	TOTAL QUALITY PRINCIPLES	PFS310								
	10 - HARDWARE									
P	OVERVIEW OF PERSONAL COMPUTER COMPONENTS	CMN111								
P001	Explain how form factor is used with computer components.	CMN111	CompTIA A+ HW 1.2	3.5.11-12.F	N/A	N/A	13.2.11.E	N/A	N/A	N/A
P002	Categorize the different types of computer cases.	CMN111	CompTIA A+ HW 1.2	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	202
P003	Categorize power supplies types and characteristics.	CMN111	CompTIA A+ HW 1.8	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	204

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P004	Explain cooling methods and devices.	CMN111	CompTIA A+ HW 1.6	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	206
P005	Summarize the function and types of expansion adapter cards.	CMN111	CompTIA A+ HW 1.4	3.5.11-12.F	N/A	N/A	13.2.11.E	X	X	209
P006	Identify and explain common peripherals.	CMN111	CompTIA A+ HW 1.12	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	213
P007	Identify and explain common computer and network exterior ports.	CMN111	CompTIA A+ HW 1.11	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	203
P008	Understand the major internal components of a computer.	CMN111	CompTIA Strata 2.3	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	203
P009	Explain how the major computer components interact with each other.	CMN111	CompTIA Strata 5.1	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	213
P010	Identify how to create proper cooling in a computer or network device.	CMN111	CompTIA Strata 2.3	N/A	N/A	2.1.HS.F.5	13.2.11.E	N/A	N/A	206
P011	Demonstrate how to calculate wattage capacity for a computer or network device.	CMN111	CompTIA A+ HW 1.8	N/A	N/A	2.1.HS.F.5	13.2.11.E	N/A	N/A	108
Q	MOTHERBOARDS, CPUs, AND MEMORY	CMN112								
Q001	Explain motherboard components, types, and features.	CMN112	CompTIA A+ HW 1.2	3.5.11-12.F	N/A	N/A	13.2.11.E	X	N/A	203
Q002	Describe common interfaces found on motherboards.	CMN112	CompTIA A+ HW 1.7	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	203
Q003	Demonstrate how to install and configure options on motherboards.	CMN112	CompTIA A+ HW 1.2	N/A	N/A	2.1.HS.F.4	13.2.11.E	N/A	X	213
Q004	Demonstrate how to verify and reconfigure settings in firmware such as BIOS/CMOS/UEFI.	CMN112	CompTIA A+ HW 1.1	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	X	203
Q005	Explain the purpose and characteristics of processors and their features.	CMN112	CompTIA A+ HW 1.6	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	205
Q006	Categorize common processors by sockets.	CMN112	CompTIA A+ HW 1.6	3.5.11-12.F	N/A	N/A	13.2.11.E	X	N/A	205
Q007	Demonstrate how to install and configure CPUs and their associated cooling systems.	CMN112	CompTIA A+ HW 1.6	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	206

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Q008	Identify the differences between ROM and RAM.	CMN112	CompTIA A+ HW 1.3	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	207
Q009	Explain memory types, characteristics, and their purpose.	CMN112	CompTIA A+ HW 1.3	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	207
Q010	Identify and explain basics of cache memory.	CMN112	CompTIA A+ HW 1.6	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	207
Q011	Demonstrate how to install and configure memory.	CMN112	CompTIA A+ HW 1.3	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	207
Q012	Describe factors to consider when replacing motherboards, processors, or memory.	CMN112	CompTIA A+ HW 1.9	3.5.11-12.D	N/A	2.1.HS.F.5	13.2.11.E	N/A	N/A	214
R	STORAGE DEVICES AND I/O SYSTEMS	CMN113								
R001	Categorize storage devices and backup media.	CMN113	CompTIA A+ HW 1.5	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	201
R002	Explain the assorted interface standards used with storage devices.	CMN113	CompTIA A+ HW 1.5	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	N/A	203
R003	Identify and distinguish between the various RAID techniques used with storage devices.	CMN113	CompTIA A+ HW 1.5	3.5.11-12.F	N/A	N/A	13.2.11.E	N/A	N/A	201
R004	Demonstrate how to install and configure storage devices using SATA and PATA techniques.	CMN113	CompTIA A+ HW 1.11	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	203
R005	Demonstrate how to install and configure assorted RAID techniques.	CMN113	CompTIA A+ HW 1.5	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	201
R006	Explain common input and output systems used in computer and networking equipment.	CMN113	CompTIA A+ HW 1.12	3.5.11-12.A	N/A	N/A	13.2.11.E	X	X	210
R007	Describe the concept of 32-bit and 64-bit hardware.	CMN113	CompTIA A+ OS 1.1	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	401
R008	Demonstrate how to install and configure assorted input/output hardware.	CMN113	CompTIA A+ HW 1.10	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	210
R009	Identify between common display devices and their characteristics.	CMN113	CompTIA A+ HW 1.10	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	208
R010	Describe the meaning and importance of the Energy Star Rating System.	CMN113	CompTIA A+ HW 1.10	3.5.11-12.A	N/A	N/A	13.2.11.E	N/A	N/A	112

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R011	Demonstrate how to configure power management settings on input/output hardware.	CMN113	CompTIA A+ OS 1.5	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	113
S	LAPTOPS, HANDHELDS, AND PRINTERS	CMN114								
S001	Install, configure, and optimize laptop or handheld device components and features.	CMN114	CompTIA A+ HW 3.1	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	211
S002	Compare and contrast the components within the display of a laptop or handheld device.	CMN114	CompTIA A+ HW 3.2	3.5.11-12.F	N/A	N/A	13.2.11.E	X	N/A	214
S003	Explain basics of battery options on laptop or handheld devices.	CMN114	CompTIA A+ HW 3.1	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	214
S004	Demonstrate how to detect problems, troubleshoot, and repair laptop or handheld computer components.	CMN114	CompTIA A+ HW 3.3	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	304
S005	Explain the differences between the various printer types.	CMN114	CompTIA A+ HW 1.14	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	212
S006	Summarize the associated imaging printing process.	CMN114	CompTIA A+ HW 1.14	3.5.11-12.A	N/A	2.1.HS.F.4	13.2.11.E	N/A	N/A	212
S007	Explain common printer maintenance tasks performed on printers.	CMN114	CompTIA A+ HW 1.15	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	212
S008	Install, configure, and optimize printers.	CMN114	CompTIA Strata 5.1	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	215
S009	Demonstrate how to detect problems, troubleshoot, and repair printer components.	CMN114	CompTIA A+ HW 1.13	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	303
S010	Identify how laptops, handhelds, and printers enhance use of technology on a given network.	CMN114	CompTIA A+ HW 1.13	3.5.11-12.F	N/A	N/A	13.2.11.E	N/A	N/A	N/A
20 - OPERATING SYSTEMS										
T	OVERVIEW OF OPERATING SYSTEMS	CMN121								
T001	Identify the major functions of an operating system.	CMN121	CompTIA Strata 1.1	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	401
T002	Distinguish between GUI (graphical user interface) and CLI (command line interface) operating systems.	CMN121	CompTIA A+ OS 1.2	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	402
T003	Compare and contrast common operating system features.	CMN121	CompTIA A+ OS 1.4	3.5.11-12.D	N/A	N/A	13.2.11.E	X	X	406

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T004	Given a scenario, demonstrate proper use of user interfaces.	CMN121	CompTIA A+ OS 1.4-1.5	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	402
T005	Differentiate between various operating system directory structures.	CMN121	CompTIA A+ OS 1.4-1.5	3.5.11-12.B	N/A	N/A	13.2.11.E	X	X	406
T006	Identify and use operating system utilities/tools and evaluate the results.	CMN121	CompTIA A+ OS 1.4-1.5	3.5.11-12.A	3.6.11-12.A	N/A	13.2.11.E	X	X	404
T007	Explain the process and steps to install and configure an operating system.	CMN121	CompTIA A+ OS 1.2	3.5.11-12.C	3.6.11-12.B	N/A	13.2.11.E	X	N/A	403
T008	Identify and explain the purpose of device drivers.	CMN121	CompTIA A+ OS 1.2	3.5.11-12.B	N/A	N/A	13.2.11.E	X	X	403
T009	Distinguish between installing and upgrading operating systems.	CMN121	CompTIA A+ OS 1.2	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	403
T010	Describe common operating system installation methods for small and large network environments.	CMN121	CompTIA A+ OS 1.2	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	403
T011	Explain common post-installation operating system considerations.	CMN121	CompTIA A+ OS 1.2	3.5.11-12.G	N/A	N/A	13.2.11.E	X	N/A	403
T012	Successfully install and configure a functioning operating system using all provided hardware.	CMN121	CompTIA A+ OS 1.2	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	403
U	ADVANCED OPERATING SYSTEMS	CMN122								
U001	Identify and explain common operating system directory structures.	CMN122	CompTIA A+ OS 1.2	3.5.11-12.B	N/A	N/A	13.2.11.E	X	X	406
U002	Explain basics of boot sequences, methods, and startup utilities.	CMN122	CompTIA A+ OS 1.4	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	407
U003	Describe common utilities used with day-to-day tasks performed on operating systems.	CMN122	CompTIA A+ OS 1.4	3.5.11-12.A	3.6.11-12.A	N/A	13.2.11.E	X	X	407
U004	Explain methods to optimize performance in an operating system.	CMN122	CompTIA Strata 1.3	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	N/A	805
U005	Describe how to evaluate and resolve common operating system and software issues.	CMN122	CompTIA Strata 1.3	3.5.11-12.H	N/A	N/A	13.2.11.E	N/A	N/A	408
U006	Explain the administration of local users, local groups, and local policies.	CMN122	CompTIA A+ OS 1.4	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	409

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U007	Identify and explain the common types of profiles.	CMN122	CompTIA A+ OS 1.4	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	409
U008	Demonstrate how to perform preventative maintenance tasks on operating systems.	CMN122	CompTIA A+ OS 4.1	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	404
U009	Demonstrate how to configure boot sequence and startup options for operating systems.	CMN122	CompTIA A+ OS 4.1	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	404
U010	Demonstrate how to perform common administrative tasks using assorted operating system utilities.	CMN122	CompTIA A+ OS 1.3	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	405
U011	Demonstrate basics of working with local users and groups.	CMN122	CompTIA A+ OS 1.4	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	409
V	NETWORK HARDWARE OPERATING SYSTEMS	CMN221								
V001	Compare and contrast broadcast domains and collision domains.	CMN221	CompTIA Network+ 1.8	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	606
V002	Identify and describe features of common network device equipment.	CMN221	CompTIA Network+ 1.8	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	504
V003	Explain basics of the three-layer networking hardware model.	CMN221	CompTIA Network+ 1.8	3.5.11-12.H	N/A	N/A	13.2.11.E	X	N/A	801
V004	Compare the three-layer model to the OSI Reference Model and the TCP/IP Department of Defense Model.	CMN221	CompTIA Network+ 3.6	3.5.11-12.H	N/A	N/A	13.2.11.E	X	N/A	801
V005	Identify the hardware and software components of networking equipment.	CMN221	CompTIA Network+ 1.8	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	504
V006	Identify features and elements of the network hardware operating system.	CMN221	CompTIA Network+ 1.8	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	606
V007	Identify and explain key configuration files and settings used by networking equipment.	CMN221	CompTIA Network+ 1.8	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	606
V008	Demonstrate how to configure assorted settings using network hardware command-line syntax.	CMN221	CompTIA Network+ 1.8	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
V009	Demonstrate how to utilize network hardware commands.	CMN221	CompTIA Network+ 1.8	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
V010	Demonstrate how to configure network equipment for broadcast and collision domains.	CMN221	CompTIA Network+ 1.8	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A

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W	MICROSOFT NETWORK OPERATING SYSTEMS	CMN321								
W001	Identify features and elements of network operating systems.	CMN321	CompTIA Network+ 1.12	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	400
W002	Compare and contrast network operating systems with workstation operating systems.	CMN321	CompTIA Network+ 1.12	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	410
W003	Explain common access method techniques.	CMN321	CompTIA Network+ 5.2	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	606
W004	Summarize common name based techniques used with network operating systems.	CMN321	CompTIA Network+ 1.12	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	N/A	N/A
W005	Describe features of common network protocols including TCP/IP, IPX/SPX, NetBEUI, and AppleTalk.	CMN321	CompTIA Network+ 1.2	3.5.11-12.A	N/A	N/A	13.2.11.E	X	X	501
W006	Identify basics elements of Microsoft network operating systems.	CMN321	CompTIA Network+ 1.12	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	406
W007	Explain the purpose of roles and features in Microsoft network operating systems.	CMN321	CompTIA A+ OS 2.4	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	407
W008	Describe basics of Server Manager used in Microsoft network operating systems.	CMN321	CompTIA A+ OS 2.4	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	X	407
W009	Identify and explain licensing considerations for Microsoft network and workstation operating systems.	CMN321	CompTIA A+ OS 5.3	3.5.11-12.A	N/A	2.1.HS.F.2	13.2.11.E	N/A	N/A	N/A
W010	Demonstrate how to configure and utilize assorted naming techniques on Microsoft network operating systems.	CMN321	CompTIA Network+ 4.1	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	N/A
W011	Demonstrate how to work with roles, features, and Server Manager on Microsoft network operating systems.	CMN321	CompTIA Network+ 2.4	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	407
X	OTHER NETWORK OPERATING SYSTEMS	CMN322								
X001	Define the terms kernel, module, and daemon.	CMN322	CompTIA A+ OS 2.1	3.5.11-12.A	N/A	N/A	13.2.11.E	N/A	N/A	N/A
X002	Identify and explain licensing considerations for UNIX/Linux/Macintosh network operating systems.	CMN322	CompTIA A+ OS 2.1	3.5.11-12.A	N/A	2.1.HS.F.2	13.2.11.E	N/A	N/A	N/A
X003	Understand the file system structure used on UNIX/Linux/Macintosh operating systems.	CMN322	CompTIA A+ OS 2.1	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	N/A

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X004	Explain characteristics of the UNIX/Linux/Macintosh operating system and network operating system.	CMN322	CompTIA A+ OS 2.1	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	N/A
X005	Identify and explain elements of the X Windows System used in UNIX/Linux/Macintosh operating systems.	CMN322	CompTIA A+ OS 2.1	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	N/A
X006	Explain common interoperability techniques used with Microsoft operating systems.	CMN322	CompTIA A+ OS 2.1	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	N/A	N/A
X007	Demonstrate how to work with files and directories using a shell and command syntax.	CMN322	CompTIA A+ OS 2.1	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
X008	Demonstrate how to work with packages and compressed packages using a shell and command syntax.	CMN322	CompTIA A+ OS 2.1	3.5.11-12.C	3.6.11-12.B	N/A	13.2.11.E	N/A	N/A	N/A
X009	Demonstrate how to work with software installation using a shell and command syntax.	CMN322	CompTIA A+ OS 2.1	3.5.11-12.C	3.6.11-12.B	N/A	13.2.11.E	N/A	N/A	N/A
X010	Demonstrate how to work with the X Windows System and its assorted components.	CMN322	CompTIA A+ OS 2.1	3.5.11-12.C	3.6.11-12.B	N/A	13.2.11.E	N/A	N/A	N/A
X011	Compare and contrast how to integrate other network operating systems with Microsoft operating systems.	CMN322	CompTIA A+ OS 2.1	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	410
30 - FUNDAMENTALS OF NETWORKING										
Y	NETWORKING FUNDAMENTALS	CMN131								
Y001	Explain the purpose of a network.	CMN131	CompTIA Network+ 1.6-1.7	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	603
Y002	Identify the advantages and disadvantages of using a network.	CMN131	CompTIA Network+ 1.6-1.7	3.5.11-12.I	N/A	N/A	13.2.11.E	X	N/A	603
Y003	Distinguish between local area networks and wide area networks.	CMN131	CompTIA Network+ 1.6-1.7	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	603
Y004	Identify and explain common physical network topologies used with networking.	CMN131	CompTIA Network+ 1.6-1.7	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	603
Y005	Identify and explain the two main administration models used with networking.	CMN131	CompTIA Network+ 1.6-1.7	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	607
Y006	Explain the purpose of a protocol.	CMN131	CompTIA Network+ 1.6-1.7	3.5.11-12.A	N/A	N/A	13.2.11.E	X	X	801

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Y007	Describe how data is packaged and transmitted.	CMN131	CompTIA Network+ 1.6-1.7	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	801
Y008	Distinguish between common network connectivity devices.	CMN131	CompTIA Network+ 1.6-1.7	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	701
Y009	Identify and explain common network protocols.	CMN131	CompTIA Network+ 1.6	3.5.11-12.B	N/A	N/A	13.2.11.E	X	X	701
Y010	Explain major standards and organizations used with networking.	CMN131	CompTIA Network+ 1.6	3.5.11-12.G	N/A	N/A	13.2.11.E	X	N/A	507
Z	NETWORKING MODELS AND PROTOCOLS	CMN132								
Z001	Identify and explain basics of the OSI Reference Model.	CMN132	CompTIA Network+ 5.1	3.5.11-12.G	N/A	N/A	13.2.11.E	X	N/A	801
Z002	Identify and explain basics of the TCP/IP DoD Reference Model.	CMN132	CompTIA Network+ 5.1	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	801
Z003	Describe the common functions that occur on each layer of each model.	CMN132	CompTIA Network+ 5.1	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	801
Z004	Compare connection-oriented transmissions to connectionless transmissions.	CMN132	CompTIA Network+ 5.2	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	501
Z005	Distinguish between the two sublayers of the OSI data link layer.	CMN132	CompTIA Network+ 5.1	3.5.11-12.F	N/A	N/A	13.2.11.E	X	N/A	801
Z006	Classify how applications, devices, and protocols relate to the OSI and DoD layers.	CMN132	CompTIA Network+ 5.1-5.2	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	801
Z007	Explain the concept of data encapsulation.	CMN132	CompTIA Network+ 5.1-5.2	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	501
Z008	Explain the difference between analog and digital signals.	CMN132	CompTIA Network+ 5.1-5.2	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	601
Z009	Identify common number conversions used in computers (binary, octal, hexadecimal and decimal).	CMN132	CompTIA Network+ 5.1-5.2	N/A	N/A	2.1.HS.F.2	13.2.11.E	X	X	503
Z010	Identify and explain different encoding standards for data.	CMN132	CompTIA Network+ 5.2	3.5.11-12.D	N/A	2.1.HS.F.4	13.2.11.E	X	N/A	601
Z011	Demonstrate how to read and analyze data transmissions from packet sniffing tools.	CMN132	CompTIA Network+ 4.7	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	902

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AA	WIRED NETWORK MEDIA	CMN133								
AA01	Identify the concepts and key terms associated with network media.	CMN133	CompTIA Network+ 1.5	3.5.11-12.A	N/A	N/A	13.2.11.E	X	X	601
AA02	Compare simplex, full duplex, and half duplex transmissions.	CMN133	CompTIA Network+ 5.2	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	601
AA03	Identify and describe elements of copper based network media.	CMN133	CompTIA Network+ 1.5	3.5.11-12.D	N/A	N/A	13.2.11.E	X	X	602
AA04	Distinguish and categorize common coaxial and twisted-pair network media standards.	CMN133	CompTIA Network+ 1.5	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	601
AA05	Classify common IEEE 802.3 standards.	CMN133	CompTIA Network+ 5.4	3.5.11-12.G	N/A	2.1.HS.F.5	13.2.11.E	X	N/A	601
AA06	Identify and describe elements of fiber based network media.	CMN133	CompTIA Network+ 1.5	3.5.11-12.D	N/A	N/A	13.2.11.E	X	X	602
AA07	Distinguish and categorize common fiber optic network media standards.	CMN133	CompTIA Network+ 5.4	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	601
AA08	Explain the difference between plenum and non-plenum network media.	CMN133	CompTIA Network+ 1.5	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	601
AA09	Identify common network media connectors used with copper and fiber network media.	CMN133	CompTIA Network+ 1.5	3.5.11-12.A	N/A	N/A	13.2.11.E	X	X	604
AA10	Identify and explain the major components of wiring distribution.	CMN133	CompTIA Network+ 5.7	3.5.11-12.B	N/A	2.1.HS.F.4	13.2.11.E	X	X	608
AA11	Summarize the concept of structured cabling.	CMN133	CompTIA Network+ 5.7	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	608
AA12	Demonstrate how to create assorted wired network media cables.	CMN133	CompTIA Network+ 1.5	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	903
AA13	Demonstrate how to use appropriate wired network media hardware tools.	CMN133	CompTIA Network+ 1.5	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	903
AA14	Demonstrate how to create a basic network using wired network media.	CMN133	CompTIA Network+ 1.5 and 5.7	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	906
AB	WIRELESS NETWORK MEDIA	CMN134								

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AB01	Identify the concepts and key terms associated with wireless network media.	CMN134	CompTIA Network+ 2.7	3.5.11-12.B	N/A	N/A	13.2.11.E	X	X	704
AB02	Compare the major antenna styles used with wireless transmissions.	CMN134	CompTIA Network+ 2.7	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	704
AB03	Distinguish and categorize common radio, microwave, cellular, and infrared network media standards.	CMN134	CompTIA A+ HW 2.6	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	507
AB04	Explain basics of Bluetooth technology.	CMN134	CompTIA A+ HW 2.6	3.5.11-12.B	N/A	2.1.HS.F.5	13.2.11.E	X	N/A	704
AB05	Identify the purpose of an access point.	CMN134	CompTIA Network+ 2.7	3.5.11-12.A	N/A	N/A	13.2.11.E	X	X	704
AB06	Describe the two major infrastructure modes used with wireless network media.	CMN134	CompTIA Network+ 2.7	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	704
AB07	Identify and describe basics of SSID and ESSID.	CMN134	CompTIA Network+ 2.7	3.5.11-12.A	N/A	N/A	13.2.11.E	X	X	705
AB08	Explain and distinguish between common wireless security measures.	CMN134	CompTIA Network+ 5.1	3.5.11-12.D	N/A	N/A	13.2.11.E	X	X	906
AB09	Classify common IEEE 802.11, 802.15, and 802.16 wireless standards.	CMN134	CompTIA Network+ 3.3	3.5.11-12.G	N/A	N/A	13.2.11.E	X	N/A	507
AB10	Demonstrate how to setup basic wireless networks.	CMN134	CompTIA 1.12	3.5.11-12.C	N/A	2.1.HS.F.5	13.2.11.E	X	X	704
AB11	Demonstrate how to configure advanced wireless network options	CMN134	CompTIA Network+ 3.3	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	1003
AB12	Demonstrate how to configure security options on wireless networks.	CMN134	CompTIA Network+ 3.3	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	1003
AC	TCP/IP ESSENTIALS	CMN135								
AC01	Identify and describe the following address formats, including IPv4, IPv6, and MAC addressing.	CMN135	CompTIA Network+ 1.8	3.5.11-12.D	3.6.11-12.A	N/A	13.2.11.E	X	X	503
AC02	Explain the purpose of class address ranges and the loopback address.	CMN135	CompTIA Network+ 1.8	3.5.11-12.B	N/A	N/A	13.2.11.E	X	X	503
AC03	Describe the purpose of an IP address, subnet mask, and a default gateway.	CMN135	CompTIA Network+ 1.8	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	503

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AC04	Identify common terms and components of IPv4 and IPv6 addressing.	CMN135	CompTIA Network+ 1.8	3.5.11-12.B	N/A	N/A	13.2.11.E	X	X	503
AC05	Describe common methods used to assign IP addresses.	CMN135	CompTIA Network+ 1.8	3.5.11-12.A	N/A	N/A	13.2.11.E	X	X	503
AC06	Explain the purpose of APIPA addressing.	CMN135	CompTIA Network+ 1.8	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	503
AC07	Identify common terms and components of MAC addressing.	CMN135	CompTIA Network+ 1.8	3.5.11-12.B	N/A	N/A	13.2.11.E	X	X	503
AC08	Explain how an IPv6 address is composed compared to traditional IPv4.	CMN135	CompTIA Network+ 1.8	3.5.11-12.E	3.6.11-12.B	N/A	13.2.11.E	X	N/A	503
AC09	Identify and explain basics of subnetting.	CMN135	CompTIA Network+ 1.8	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	504
AC10	Demonstrate how to configure IPv4 and IPv6 addressing.	CMN135	CompTIA A+ HW 2.3	3.5.11-12.C	3.6.11-12.B	2.1.HS.F.2	13.2.11.E	X	X	504
AC11	Demonstrate how to calculate subnetting using classful and classless notation.	CMN135	CompTIA Network+ 1.8	3.5.11-12.C	N/A	2.1.HS.F.4	13.2.11.E	X	X	504
AC12	Demonstrate how to configure TCP/IP networking on computer and network equipment.	CMN135	CompTIA Network+ 1.8	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	504
40 - LOCAL AREA NETWORK COMPONENTS										
AD	CLIENT AND SERVER INTEGRATION	CMN141								
AD01	Explain common logical network topologies and their characteristics, including Peer to peer and Client/server.	CMN141	CompTIA Network+ 1.6	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	607
AD02	Summarize the common network directory service terminology.	CMN141	CompTIA Network+ 1.6	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AD03	Identify and explain the purpose of a directory service database.	CMN141	CompTIA Network+ 1.6	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AD04	Describe the protocols used with client and server integration.	CMN141	CompTIA Network+ 1.6	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	X	N/A
AD05	Identify and explain the physical and logical components of a directory service.	CMN141	CompTIA Network+ 1.6	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A

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AD06	Identify and explain components of virtualization.	CMN141	CompTIA A+ OS 2.2	3.5.11-12.A	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AD07	Describe how virtualization can be used today.	CMN141	CompTIA A+ OS 2.2	3.5.11-12.I	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AD08	Demonstrate how to configure devices for client/server or peer-to-peer networking environments.	CMN141	CompTIA Network+ 4.7	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AD09	Demonstrate how to create, use, and manage virtual machines.	CMN141	CompTIA A+ OS 2.2	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AE	NETWORK DIRECTORY FUNDAMENTALS	CMN241								
AE01	Explain the physical and logical components of directory services.	CMN241	CompTIA Network+ 1.6	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AE02	Compare and contrast contiguous and disjointed namespaces.	CMN241	CompTIA Network+ 1.6	3.5.11-12.A	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AE03	Identify and explain common objects used with directory service environments.	CMN241	CompTIA Network+ 1.6	3.5.11-12.A	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AE04	Describe the concept of replication used in client and service environments.	CMN241	CompTIA Network+ 1.6	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AE05	Summarize common trust relationships used with directory service databases.	CMN241	CompTIA Network+ 1.6	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AE06	Identify and explain how name resolution ties into directory service.	CMN241	CompTIA Network+ 1.6	3.5.11-12.A	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AE07	Describe the purpose of FSMO roles used with directory service.	CMN241	CompTIA Network+ 1.6	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AE08	Summarize the major networking tools used with directory service.	CMN241	CompTIA Network+ 1.6	3.5.11-12.H	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AE09	Demonstrate how to configure a functioning directory service in single or multiple locations.	CMN241	CompTIA Network+ 1.6	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	X	N/A
AE10	Demonstrate how to work with client and server environments.	CMN241	CompTIA Network+ 1.6	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	X	N/A
AE11	Demonstrate how to configure trust relationships with client and server environments.	CMN241	CompTIA Network+ 1.6	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A

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AF	NETWORK POLICIES AND PROCEDURES	CMN242								
AF01	Explain the difference between permissions, policies, rights, and regulations.	CMN242	CompTIA Security+ 5.4	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	409
AF02	Identify and describe elements of group policy.	CMN242	CompTIA A+ OS 5.3	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	409
AF03	Describe group policy hierarchy.	CMN242	CompTIA A+ OS 5.3	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	409
AF04	Explain how policies integrated into TCP/IP networks and TCP/IP hosts.	CMN242	CompTIA A+ OS 5.3	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	409
AF05	Troubleshoot policies and procedures.	CMN242	CompTIA A+ OS 5.3	3.5.11-12.H	N/A	N/A	13.2.11.E	N/A	N/A	409
AF06	Identify common laws and regulations associated with network policies and procedures.	CMN242	CompTIA Security+ 5.4	3.5.11-12.I	N/A	N/A	13.2.11.E	N/A	N/A	409
AF07	Demonstrate how to create functioning policies and rights in single or multiple locations.	CMN242	CompTIA A+ OS 5.3	3.5.11-12.I	N/A	N/A	13.2.11.E	N/A	N/A	409
AF08	Demonstrate how to configure multiple policies for a user or computer.	CMN242	CompTIA A+ OS 5.3	3.5.11-12.I	N/A	N/A	13.2.11.E	N/A	N/A	409
AF09	Demonstrate how to train users on rights and regulations.	CMN242	CompTIA Security+ 5.8	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	409
AG	APPLICATION SERVER SERVICES	CMN243								
AG01	Identify the purpose of application servers.	CMN243	CompTIA Network+ 1.10	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AG02	Distinguish between common application servers used on networks.	CMN243	CompTIA Network+ 1.10	3.5.11-12.H	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AG03	Explain how application servers integrate with network and directory services.	CMN243	CompTIA Network+ 1.10	3.5.11-12.I	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AG04	Identify and explain common database server terminology.	CMN243	CompTIA Network+ 1.10	3.5.11-12.A	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AG05	Identify and explain common mail server terminology.	CMN243	CompTIA Network+ 1.10	3.5.11-12.A	N/A	N/A	13.2.11.E	N/A	N/A	N/A

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AG06	Identify and explain common web collaboration server terminology.	CMN243	CompTIA Network+ 1.10	3.5.11-12.A	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AG07	Describe common network services associated with application servers.	CMN243	CompTIA Network+ 1.10	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AG08	Demonstrate how to install and configure database application servers.	CMN243	CompTIA Network+ 1.10	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AG09	Demonstrate how to install and configure mail application servers.	CMN243	CompTIA Network+ 1.10	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AG10	Demonstrate how to install and configure web collaboration application servers.	CMN243	CompTIA Network+ 1.10	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AH	NAME RESOLUTION TECHNIQUES	CMN341								
AH01	Explain the purpose of name resolution.	CMN341	CompTIA Network+ 1.3	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	501
AH02	Distinguish between internal and external name resolution.	CMN341	CompTIA Network+ 1.3	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AH03	Explain the hierarchical structure and operation of name resolution.	CMN341	CompTIA Network+ 1.3	3.5.11-12.A	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AH04	Identify the purpose of ICANN.	CMN341	CompTIA Network+ 1.3	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	N/A
AH05	Describe and distinguish between the common name resolution techniques: DNS Server, WINS Server, and HOSTS/LMHOSTS files.	CMN341	CompTIA Network+ 1.3	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	501
AH06	Summarize the concepts of DNS zones, domains, and records.	CMN341	CompTIA Network+ 1.3	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	901
AH07	Explain the purpose of common types of DNS records.	CMN341	CompTIA Network+ 1.3	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	501
AH08	Explain how DHCP ties into name resolution techniques.	CMN341	CompTIA Network+ 1.3	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	501
AH09	Demonstrate how to configure a client device for name resolution.	CMN341	CompTIA A+ HW 2.3	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	N/A
AH10	Demonstrate how to create DNS, WINS, and DHCP servers.	CMN341	CompTIA Network+ 1.3	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	N/A

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AH11	Demonstrate how to configure DNS zones, domains, and records.	CMN341	CompTIA Network+ 1.3	3.5.11-12.C	3.6.11-12.A	N/A	13.2.11.E	X	N/A	N/A
AI	FILE AND PRINT SERVICES	CMN342								
AI01	Identify features of common file systems.	CMN342	CompTIA A+ OS 1.2	3.5.11-12.D	N/A	N/A	13.2.11.E	X	X	406
AI02	Explain common file and print sharing protocols.	CMN342	CompTIA A+ OS 3.3	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	501
AI03	Distinguish between the terms permissions and rights.	CMN342	CompTIA A+ OS 3.3	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	409
AI04	Identify and explain common file sharing permissions.	CMN342	CompTIA A+ OS 3.3	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	409
AI05	Distinguish between partitions and volumes.	CMN342	CompTIA A+ OS 1.2	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	501
AI06	Describe common printer terminology.	CMN342	CompTIA A+ OS 1.6	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	303
AI07	Identify and explain common print sharing permissions.	CMN342	CompTIA A+ OS 1.6	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	N/A
AI08	Demonstrate how to configure permissions and rights on file systems.	CMN342	CompTIA A+ OS 1.6	3.5.11-12.C	N/A	2.1.HS.F.4	13.2.11.E	X	N/A	N/A
AI09	Demonstrate how to work with partitions and volumes.	CMN342	CompTIA A+ OS 3.3	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	409
AI10	Demonstrate how to configure options on print servers.	CMN342	CompTIA A+ OS 1.6	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	N/A
AJ	BACKUP AND RECOVERY TECHNIQUES	CMN343								
AJ01	Explain the concept of uptime.	CMN343	CompTIA Network+ 3.1	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	803
AJ02	Identify and distinguish between types of fault tolerance.	CMN343	CompTIA Network+ 3.1	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	N/A
AJ03	Describe basic backup and recovery concepts.	CMN343	CompTIA Network+ 3.1	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	201

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AJ04	Explain the difference between common server data backup strategies.	CMN343	CompTIA Network+ 3.1	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	N/A
AJ05	Compare and contrast load balancing and clustering technologies.	CMN343	CompTIA Network+ 3.1	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	702
AJ06	Compare and contrast fault tolerance and disaster recovery.	CMN343	CompTIA Network+ 3.1	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	N/A
AJ07	Identify and explain common disaster recovery preparedness strategies.	CMN343	CompTIA Network+ 3.1	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AJ08	Demonstrate common computer and network backup and recovery methods.	CMN343	CompTIA Network+ 3.1	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AJ09	Demonstrate common fault tolerance and disaster recovery strategies.	CMN343	CompTIA Network+ 3.1	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
50 - WIDE AREA NETWORK COMPONENTS										
AK	CONSOLE-BASED SWITCHING AND ROUTING	CMN251								
AK01	Explain the purpose and properties of switching and routing.	CMN251	CompTIA Network+ 1.9 and 2.6	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	500
AK02	Identify and explain components of a switch table.	CMN251	CompTIA Network+ 2.6	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	702
AK03	Explain the advanced features of a switch.	CMN251	CompTIA Network+ 2.6	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	703
AK04	Identify and explain components of a routing table.	CMN251	CompTIA Network+ 1.9	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	505
AK05	Identify and explain common IPv4 and IPv6 routing protocols.	CMN251	CompTIA Network+ 1.9	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	506
AK06	Distinguish between link state, distance vector, and hybrid protocols.	CMN251	CompTIA Network+ 1.9	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	506
AK07	Summarize elements of routing including IGP versus EGP, static versus dynamic, and hop count.	CMN251	CompTIA Network+ 2.6	3.5.11-12.F	N/A	N/A	13.2.11.E	X	N/A	505
AK08	Troubleshoot common router and switch problems.	CMN251	CompTIA Network+ 1.9 and 2.6	3.5.11-12.H	N/A	N/A	13.2.11.E	X	N/A	506

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AK09	Identify and distinguish between layer 2 and layer 3 network devices.	CMN251	CompTIA Network+ 1.9 and 2.6	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	506
AK10	Distinguish between graphical and text based interfaces for switches and routers.	CMN251	CompTIA Network+ 1.9 and 2.6	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	N/A
AK11	Demonstrate how to install and configure switches.	CMN251	CompTIA Network+ 2.6	3.5.11-12.C	N/A	2.1.HS.F.4	13.2.11.E	X	X	703
AK12	Demonstrate how to install and configure routers.	CMN251	CompTIA Network+ 1.9	3.5.11-12.C	N/A	2.1.HS.F.4	13.2.11.E	X	X	506
AL	ACCESS CONTROL LISTS	CMN252								
AL01	Identify and explain the purpose of an access control list.	CMN252	CompTIA Security+ 1.1	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1003
AL02	Distinguish between common types of access control lists including standard, extended, numbered, named, and sequential.	CMN252	CompTIA Security+ 1.1	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AL03	Identify basics of address translation.	CMN252	CompTIA Security+ 3.3	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	504
AL04	Distinguish between forms of address translation.	CMN252	CompTIA Security+ 3.3	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	504
AL05	Identify and describe remote administration tools and techniques for enterprise networking equipment.	CMN252	CompTIA Security+ 2.1	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	1005
AL06	Demonstrate how to configure assorted access control lists.	CMN252	CompTIA Security+ 1.1	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	1003
AL07	Demonstrate how to configure address translation.	CMN252	CompTIA Security+ 3.3	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	504
AL08	Demonstrate how to configure remote administration connections.	CMN252	CompTIA Security+ 2.1	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	1005
AM	WEB-BASED SWITCHING AND ROUTING	CMN351								
AM01	Explain the purpose and properties of switching and routing.	CMN351	CompTIA Network+ 1.9 and 2.6	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	500
AM02	Identify and explain components of a switch table.	CMN351	CompTIA Network+ 2.6	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	702

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AM03	Explain the advanced features of a switch.	CMN351	CompTIA Network+ 2.6	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	703
AM04	Identify and explain components of a routing table.	CMN351	CompTIA Network+ 1.9	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	505
AM05	Identify and explain common IPv4 and IPv6 routing protocols.	CMN351	CompTIA Network+ 1.9	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	506
AM06	Distinguish between link state, distance vector, and hybrid protocols.	CMN351	CompTIA Network+ 1.9	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	506
AM07	Summarize elements of routing including IGP versus EGP, static versus dynamic, and hop count.	CMN351	CompTIA Network+ 2.6	3.5.11-12.F	N/A	N/A	13.2.11.E	X	N/A	505
AM08	Troubleshoot common router and switch problems.	CMN351	CompTIA Network+ 1.9 and 2.6	3.5.11-12.H	N/A	N/A	13.2.11.E	X	N/A	506
AM09	Identify and distinguish between layer 2 and layer 3 network devices.	CMN351	CompTIA Network+ 1.9 and 2.6	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	506
AM10	Distinguish between graphical and text based interfaces for switches and routers.	CMN351	CompTIA Network+ 1.9 and 2.6	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	N/A
AM11	Demonstrate how to install and configure switches.	CMN351	CompTIA Network+ 2.6	3.5.11-12.C	N/A	2.1.HS.F.4	13.2.11.E	X	X	703
AM12	Demonstrate how to install and configure routers.	CMN351	CompTIA Network+ 1.9	3.5.11-12.C	N/A	2.1.HS.F.4	13.2.11.E	X	X	506
AN	WEB SERVER AND SERVICES	CMN352								
AN01	Identify the major components and syntax of a web page and a website.	CMN352	CompTIA Strata 3.3	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	N/A
AN02	Distinguish between common HTML tags, attributes, and elements.	CMN352	CompTIA Strata 3.3	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AN03	Identify and explain elements of CSS and JavaScript.	CMN352	CompTIA Strata 3.3	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AN04	Construct a basic web site with web pages including HTML, CSS, and JavaScript functionality.	CMN352	CompTIA Strata 3.3	N/A	3.6.11-12.A	N/A	13.2.11.E	N/A	N/A	N/A
AN05	Distinguish between the terms Internet, Intranet, and Extranet.	CMN352	CompTIA Strata 3.3	3.5.11-12.F	N/A	N/A	13.2.11.E	X	N/A	N/A

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AN06	Identify and describe basics of a URL.	CMN352	CompTIA Strata 3.3	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	N/A
AN07	Describe how to install and configure a web server.	CMN352	CompTIA Strata 3.3	3.5.11-12.F	N/A	N/A	13.2.11.E	X	N/A	N/A
AN08	Identify and explain basics of HTTP, FTP, NNTP, and SMTP protocols.	CMN352	CompTIA Strata 3.3	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	501
AN09	Identify commonly used TCP and UDP default ports.	CMN352	CompTIA Strata 3.3	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	502
AN10	Demonstrate how to install and configure web servers.	CMN352	CompTIA Strata 3.3	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	N/A
AN11	Demonstrate how to use common web protocols.	CMN352	CompTIA Strata 3.3	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	502
AN12	Demonstrate how to work with common TCP and UDP ports.	CMN352	CompTIA Network+ 1.5	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	502
AO	REMOTE ACCESS COMMUNICATIONS	CMN353								
AO01	Identify and describe components of telecommunication systems.	CMN353	CompTIA Network+ 1.4	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	605
AO02	Explain how remote access occurs.	CMN353	CompTIA Network+ 1.2	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	605
AO03	Describe common remote access protocols.	CMN353	CompTIA Network+ 1.2	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	605
AO04	Identify and explain the purpose of virtual private networking.	CMN353	CompTIA Network+ 1.2	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	N/A
AO05	Describe common security techniques associated with remote access and virtual private networking.	CMN353	CompTIA Network+ 1.2 and 1.4	3.5.11-12.F	N/A	N/A	13.2.11.E	X	N/A	1004
AO06	Categorize common WAN technology types and properties.	CMN353	CompTIA Network+ 1.4	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	605
AO07	Explain the purpose of remote desktop.	CMN353	CompTIA Strata 1.2	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AO08	Demonstrate how to configure remote access and virtual private network connections.	CMN353	CompTIA Network+ 1.2 and 1.4	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	N/A

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AO09	Demonstrate how to configure remote desktop connections.	CMN353	CompTIA Strata 1.2	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AO10	Demonstrate how to configure security options associated with remote access and virtual private networking.	CMN353	CompTIA Network+ 1.2 and 1.4	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	N/A
60 - SECURITY AND FORENSICS										
AP	FIREWALLS AND IDS/IPS DEVICES	CMN261								
AP01	Identify and explain basics of firewalls.	CMN261	CompTIA Security+ 3.1	3.5.11-12.B	N/A	N/A	13.2.11.E	X	X	1001
AP02	Identify and explain basics of intrusion detection and intrusion prevention systems.	CMN261	CompTIA Security+ 3.1	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1001
AP03	Describe basics of rules.	CMN261	CompTIA Network+ 3.5	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	1001
AP04	Distinguish between permit allow and explicit deny rules.	CMN261	CompTIA Network+ 3.5	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	N/A	1001
AP05	Distinguish between security zones used with firewalls and IDS/IPS devices.	CMN261	CompTIA Security+ 3.1	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	1001
AP06	Explain the purpose of a demilitarized zone.	CMN261	CompTIA Security+ 3.3	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1001
AP07	Identify basics of honeypots and honeynets.	CMN261	CompTIA Security+ 3.4	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1001
AP08	Demonstrate how to configure host and network based firewalls.	CMN261	CompTIA Network+ 3.5	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	X	1001
AP09	Demonstrate how to configure intrusion detection and intrusion prevention systems.	CMN261	CompTIA Network+ 3.5	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	1001
AP10	Demonstrate how to configure honeypots.	CMN261	CompTIA Security+ 3.4	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	1001
AP11	Demonstrate advanced options of security devices and appliances.	CMN261	CompTIA Security+ 3.1	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	1001
AQ	COMPUTER FORENSICS AND RESPONSE	CMN262								
AQ01	Identify and describe common types of investigations.	CMN262	CompTIA Security+ 5.6	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A

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AQ02	Identify and describe common forensic hardware and software tools used by forensic investigators.	CMN262	CompTIA Security+ 5.6	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AQ03	Identify and explain the steps of single-system investigations	CMN262	CompTIA Security+ 5.6	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AQ04	Explain the difference between free space, slack space, file slack, and unallocated space.	CMN262	CompTIA Security+ 5.6	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AQ05	Identify and explain elements of a good forensic process.	CMN262	CompTIA Security+ 5.6	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AQ06	Describe equipment needed in a computer forensic laboratory.	CMN262	CompTIA Security+ 5.6	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AQ07	Describe the rules and types of evidence.	CMN262	CompTIA Security+ 5.6	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AQ08	Explain the purpose of chain of custody.	CMN262	CompTIA Security+ 5.6	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AQ09	Demonstrate how to hash digital evidence.	CMN262	CompTIA Security+ 5.6	3.5.11-12.G	N/A	2.1.HS.F.6	13.2.11.E	N/A	N/A	N/A
AQ10	Demonstrate how to perform drive wiping.	CMN262	CompTIA Security+ 5.6	3.5.11-12.G	N/A	2.1.HS.F.6	13.2.11.E	N/A	N/A	N/A
AQ11	Demonstrate how to perform computer forensic skills in a single-system investigation.	CMN262	CompTIA Security+ 5.6	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AR	GENERAL SECURITY STRATEGIES	CMN263								
AR01	Describe recent trends and terminology used in computer security.	CMN263	CompTIA Security+ 3.1	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	1003
AR02	Explain simple steps to minimize security problems from occurring on computers or networks.	CMN263	CompTIA Security+ 1.3	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1003
AR03	Describe the various threats that exist for computers and networks.	CMN263	CompTIA Security+ 5.8	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	1003
AR04	Identify and distinguish between major computer crimes.	CMN263	CompTIA Security+ 5.8	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AR05	Identify and explain access controls.	CMN263	CompTIA Security+ 1.1	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1003

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AR06	Explain models used to implement security in hardware, operating systems, and networks.	CMN263	CompTIA Security+ 1.3	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	N/A
AR07	Identify basics of information security.	CMN263	CompTIA Security+ 3.5	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AR08	Demonstrate how to configure computer, network, and information security.	CMN263	CompTIA Security+ 3.5	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AR09	Demonstrate how to configure security relating to access control models.	CMN263	CompTIA Security+ 1.3	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AR10	Demonstrate how to configure authentication and identification security techniques.	CMN263	CompTIA Security+ 1.3	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AS	ATTACKS, EXPLOITS, AND SOCIAL ENGINEERING	CMN264								
AS01	Classify common computer, network, and information attacks.	CMN264	CompTIA Security+ 1.4	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1002
AS02	Identify and describe basics of denial-of-service attacks.	CMN264	CompTIA Security+ 1.4	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1002
AS03	Identify and describe basics of spoofing and hijacking attacks.	CMN264	CompTIA Security+ 1.4	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1002
AS04	Identify and describe basics of password guessing attacks.	CMN264	CompTIA Security+ 1.4	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1002
AS05	Explain basics of malicious software used on computer, network, and information attacks.	CMN264	CompTIA Security+ 1.5	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1002
AS06	Identify and explain basics of virus and worm exploits.	CMN264	CompTIA Security+ 1.5	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1002
AS07	Identify and explain basics of Trojan horses, logic bombs, and rootkit exploits.	CMN264	CompTIA Security+ 1.5	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1002
AS08	Explain how social engineering can be used to gain access to computers, networks, or information.	CMN264	CompTIA Security+ 1.6	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AS09	Describe the importance of auditing and what should be audited.	CMN264	CompTIA Security+ 1.7	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	1007
AS10	Demonstrate how to attack a computer or network using assorted tools.	CMN264	CompTIA Security+ 1.4	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	N/A

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AS11	Demonstrate how to exploit a computer or network using assorted tools.	CMN264	CompTIA Security+ 1.5	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AS12	Demonstrate assorted social engineering skills.	CMN264	CompTIA Security+ 1.6	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AT	COMPUTER AND NETWORK SECURITY	CMN361								
AT01	Identify and describe common security breaches, threats, vulnerabilities, and mitigation techniques.	CMN361	CompTIA Network+ 3.2	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1006
AT02	Explain the function of hardware and software security devices and tools used on computers and networks.	CMN361	CompTIA Network+ 3.5	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	1001
AT03	Identify and describe elements of Public Key Infrastructure.	CMN361	CompTIA Network+ 3.3	3.5.11-12.D	N/A	2.1.HS.F.5	13.2.11.E	X	N/A	1004
AT04	Explain common physical security features.	CMN361	CompTIA Network+ 3.4	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	1005
AT05	Identify and describe common wireless security measures.	CMN361	CompTIA Network+ 3.3	3.5.11-12.B	N/A	N/A	13.2.11.E	X	X	1003
AT06	Explain common user authentication security techniques.	CMN361	CompTIA Network+ 3.3	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	1004
AT07	Identify and explain basics of hacking.	CMN361	CompTIA Network+ 3.7	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AT08	Describe common hacking terminology.	CMN361	CompTIA Network+ 3.7	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AT09	Demonstrate how to configure physical security aspects.	CMN361	CompTIA Network+ 3.4	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	1007
AT10	Demonstrate how to configure computer and network security using assorted hardware and software tools.	CMN361	CompTIA Network+ 3.6	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	1002
AT11	Demonstrate how to configure elements of Public Key Infrastructure.	CMN361	CompTIA Network+ 3.3	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	1004
AT12	Demonstrate how to configure elements of wireless security.	CMN361	CompTIA Network+ 3.3	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	1003
AT13	Demonstrate understanding of basic hacking elements.	CMN361	CompTIA Network+ 3.7	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A

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AU	NETWORK FORENSICS AND RESPONSE	CMN362								
AU01	Identify and describe common types of investigations.	CMN362	CompTIA Security+ 5.6	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AU02	Identify and describe common forensic hardware and software tools used by forensic investigators.	CMN362	CompTIA Security 5.6	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AU03	Identify and explain the steps of multi-system investigations	CMN362	CompTIA Security+ 5.7	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AU04	Explain the difference between free space, slack space, file slack, and unallocated space.	CMN362	CompTIA Security 5.6	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AU05	Identify and explain elements of a good forensic process.	CMN362	CompTIA Security 5.6	3.5.11-12.B	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AU06	Describe equipment needed in a computer forensic laboratory.	CMN362	CompTIA Security 5.6	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AU07	Describe the rules and types of evidence.	CMN362	CompTIA Security 5.6	3.5.11-12.E	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AU08	Explain the purpose of chain of custody.	CMN362	CompTIA Security 5.6	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AU09	Demonstrate how to hash digital evidence.	CMN362	CompTIA Security 5.6	3.5.11-12.G	N/A	2.1.HS.F.6	13.2.11.E	N/A	N/A	N/A
AU10	Demonstrate how to perform drive wiping.	CMN362	CompTIA Security 5.6	3.5.11-12.G	N/A	2.1.HS.F.6	13.2.11.E	N/A	N/A	N/A
AU11	Demonstrate how to perform computer forensic skills in a multi-system investigation.	CMN362	CompTIA Security+ 5.7	3.5.11-12.G	N/A	N/A	13.2.11.E	N/A	N/A	N/A
70 - NETWORK ANALYSIS AND DOCUMENTATION										
AV	NETWORK AND PC INTEGRATION L2	CMN271								
AV01	Summarize basic computer components.	CMN271	CompTIA Strata 1.1-1.3	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	200
AV02	Summarize basic network terminology.	CMN271	CompTIA A+ HW 2.9	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	500
AV03	Summarize basic network devices.	CMN271	CompTIA A+ HW 2.8	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	700

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AV04	Summarize basic network addressing.	CMN271	CompTIA A+ HW 2.4	3.5.11-12.E	N/A	N/A	13.2.11.E	X	XX	600
AV05	Summarize basic network cabling.	CMN271	CompTIA A+ HW 2.1	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	705
AV06	Identify and explain major components of cellular WAN networks.	CMN271	CompTIA Strata 4.2	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	507
AV07	Explain advanced features of network devices.	CMN271	CompTIA A+ HW 2.8	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	800
AV08	Begin to design and construct a multiple location local area network using enterprise networking equipment.	CMN271	CompTIA Network+ 2.1	N/A	3.6.11-12.D	N/A	13.2.11.E	N/A	N/A	N/A
AV09	Demonstrate how to setup a basic functioning peer-to-peer network using enterprise networking equipment.	CMN271	CompTIA Network+ 2.1	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AW	NETWORK PERFORMANCE MONITORING	CMN272								
AW01	Explain different methods and rationales for network performance optimization.	CMN272	CompTIA Network+ 2.2-2.3	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	805
AW02	Identify and explain the concept of a baseline.	CMN272	CompTIA Network+ 2.2-2.3	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	804
AW03	Describe procedures used to install patches, updates, and service packs.	CMN272	CompTIA Strata 1.3	3.5.11-12.F	N/A	N/A	13.2.11.E	X	N/A	805
AW04	Describe common network monitoring tools and techniques.	CMN272	CompTIA Network+ 2.2-2.3	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	804
AW05	Explain the purpose of SNMP.	CMN272	CompTIA Network+ 2.2-2.3	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	804
AW06	Identify and distinguish between types of malware.	CMN272	CompTIA Strata 3.1	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	804
AW07	Demonstrate how to perform monitoring on a system or network.	CMN272	CompTIA Network+ 2.2-2.3	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	805
AW08	Demonstrate how to implement fault tolerance techniques on a system or network.	CMN272	CompTIA Network+ 2.2-2.3	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	804
AW09	Demonstrate how to combat malware on a system or network.	CMN272	CompTIA Strata 3.1	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	804

**Erie County Technical School
Computer Networking Duty/Task List**

This program prepares students for PA High Priority Occupations				Pennsylvania Standards				NOCTI Alignment Test Code 8148		PDE Program of Study Alignment CIP 11.0901
Duty Area and Task #	Content Areas, Course Titles and Task Statements	Course Number	National Skill Standards	Common Core Reading	Common Core Writing	Common Core Mathematics	Career Education & Work	Written Test	Performance Test	
AX	NETWORK AND PC INTEGRATION L3	CMN371								
AX01	Summarize basic computer components.	CMN371	CompTIA Strata 1.1-1.3	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	200
AX02	Summarize basic network terminology.	CMN371	CompTIA A+ HW 2.9	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	500
AX03	Summarize basic network devices.	CMN371	CompTIA A+ HW 2.8	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	700
AX04	Summarize basic network addressing.	CMN371	CompTIA A+ HW 2.4	3.5.11-12.E	N/A	N/A	13.2.11.E	X	XX	600
AX05	Summarize basic network cabling.	CMN371	CompTIA A+ HW 2.1	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	705
AX06	Identify and explain major components of cellular WAN networks.	CMN371	CompTIA Strata 4.2	3.5.11-12.D	N/A	N/A	13.2.11.E	N/A	N/A	507
AX07	Explain advanced features of network devices.	CMN371	CompTIA A+ HW 2.8	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	800
AX08	Begin to design and construct a multiple location local area network using enterprise networking equipment.	CMN371	CompTIA Network+ 2.1	N/A	3.6.11-12.D	N/A	13.2.11.E	N/A	N/A	N/A
AX09	Demonstrate how to setup a basic functioning peer-to-peer network using enterprise networking equipment.	CMN371	CompTIA Network+ 2.1	3.5.11-12.C	N/A	N/A	13.2.11.E	N/A	N/A	N/A
AY	NETWORK DOCUMENTATION TECHNIQUES	CMN372								
AY01	Identify the various stages of network design for designing a network.	CMN372	CompTIA Network+ 2.3	3.5.11-12.G	N/A	N/A	13.2.11.E	X	N/A	802
AY02	Explain the concept of naming conventions.	CMN372	CompTIA Network+ 5.7	3.5.11-12.D	N/A	N/A	13.2.11.E	X	N/A	802
AY03	Identify and distinguish between types of configuration management documentation.	CMN372	CompTIA Network+ 2.3	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	802
AY04	Identify and explain common documentation tasks that can be performed with common software tools.	CMN372	CompTIA Network+ 2.3	3.5.11-12.B	N/A	N/A	13.2.11.E	X	N/A	802
AY05	Describe the importance of having documentation timelines.	CMN372	CompTIA Network+ 5.7	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	802

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AY06	Identify common standards organizations associated with network documentation.	CMN372	CompTIA Network+ 4.5	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	802
AY07	Demonstrate how to create naming conventions.	CMN372	CompTIA Network+ 5.7	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	802
AY08	Demonstrate how to evaluate networks based on documentation.	CMN372	CompTIA Network+ 5.7	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	803
AY09	Demonstrate how to create network documentation using assorted software programs.	CMN372	CompTIA Network+ 5.7	3.5.11-12.C	3.6.11-12.B	N/A	13.2.11.E	X	N/A	803
AY10	Demonstrate how to evaluate a network based on configuration management documentation.	CMN372	CompTIA Network+ 5.7	3.5.11-12.C	N/A	N/A	13.2.11.E	X	N/A	803
80 - NETWORK DESIGN AND IMPLEMENTATION										
AZ	NETWORK PLANNING, DESIGNING, & IMPLEMENTING L2	CMN281								
AZ01	Demonstrate working knowledge of assorted computer and networking concepts.	CMN281	CompTIA All	3.5.11-12.C	3.6.11-12.B	2.1.HS.F.4	13.2.11.E	N/A	N/A	N/A
AZ02	Plan, design, and implement a network that includes several elements from previous courses.	CMN281	CompTIA All	3.5.11-12.C	3.6.11-12.B	2.1.HS.F.4	13.2.11.E	N/A	N/A	N/A
AZ03	Troubleshoot problems that occur with the network being implemented.	CMN281	CompTIA All	3.5.11-12.C	3.6.11-12.B	2.1.HS.F.4	13.2.11.E	N/A	N/A	N/A
AZ04	Identify and be able communicate the details of the network being implemented.	CMN281	CompTIA All	3.5.11-12.C	3.6.11-12.B	2.1.HS.F.4	13.2.11.E	N/A	N/A	N/A
AZ05	Demonstrate how to create proper documentation for the network being implemented.	CMN281	CompTIA All	3.5.11-12.C	3.6.11-12.B	2.1.HS.F.4	13.2.11.E	N/A	N/A	N/A
BA	NETWORK PLANNING, DESIGNING, & IMPLEMENTING L3	CMN381								
BA01	Demonstrate working knowledge of assorted computer and networking concepts.	CMN381	CompTIA All	3.5.11-12.C	3.6.11-12.B	2.1.HS.F.4	13.2.11.E	N/A	N/A	N/A
BA02	Plan, design, and implement a network that includes several elements from previous courses.	CMN381	CompTIA All	3.5.11-12.C	3.6.11-12.B	2.1.HS.F.4	13.2.11.E	N/A	N/A	N/A
BA03	Troubleshoot problems that occur with the network being implemented.	CMN381	CompTIA All	3.5.11-12.C	3.6.11-12.B	2.1.HS.F.4	13.2.11.E	N/A	N/A	N/A
BA04	Identify and be able communicate the details of the network being implemented.	CMN381	CompTIA All	3.5.11-12.C	3.6.11-12.B	2.1.HS.F.4	13.2.11.E	N/A	N/A	N/A

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Duty Area and Task #	Content Areas, Course Titles and Task Statements	Course Number	National Skill Standards	Common Core Reading	Common Core Writing	Common Core Mathematics	Career Education & Work	Written Test	Performance Test	
BA05	Demonstrate how to create proper documentation for the network being implemented.	CMN381	CompTIA All	3.5.11-12.C	3.6.11-12.B	2.1.HS.F.4	13.2.11.E	N/A	N/A	N/A
90 - TROUBLESHOOTING TOOLS										
BB	TROUBLESHOOTING SKILLS AND PROCEDURES	CMN191								
BB01	Describe and explain troubleshooting theory.	CMN191	CompTIA A+ OS 5.5	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	301
BB02	Explain and interpret common hardware and operating system symptoms and their causes.	CMN191	CompTIA A+ OS 4.2	3.5.11-12.E	N/A	N/A	13.2.11.E	X	X	302
BB03	Identify common preventative maintenance techniques.	CMN191	CompTIA A+ OS 4.2	3.5.11-12.E	N/A	N/A	13.2.11.E	X	N/A	305
BB04	Identify and explain common tools and utilities that can be used when troubleshooting.	CMN191	CompTIA Network+ 4.2	3.5.11-12.D	N/A	N/A	13.2.11.E	X	X	901
BB05	Explain the importance of having proper documentation following troubleshooting.	CMN191	CompTIA A+ HW 4.1	3.5.11-12.A	N/A	N/A	13.2.11.E	X	N/A	301
BB06	Summarize common troubleshooting scenarios with computer hardware and operating systems.	CMN191	CompTIA A+ OS 4.1-4.3	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	302
BB07	Summarize common troubleshooting scenarios with network equipment.	CMN191	CompTIA Network+ 4.2	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	306
BB08	Summarize common troubleshooting scenarios with networks and networking.	CMN191	CompTIA Network+ 4.2	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	306
BB09	Describe and create an action plan and solution identifying potential effects, implement and test the solution, identify the results and effects of the solution, document the solution and the entire process.	CMN191	CompTIA Network+ 4.1	N/A	3.6.11-12.D	N/A	13.2.11.E	X	N/A	905
BB10	Demonstrate how to perform troubleshooting using troubleshooting theory techniques.	CMN191	CompTIA A+ OS 4.1	3.5.11-12.C	N/A	N/A	13.2.11.E	X	X	301
BB11	Understand common tools that can be used in conjunction with troubleshooting techniques.	CMN191	CompTIA A+ OS 4.1-4.3	3.5.11-12.F	N/A	N/A	13.2.11.E	X	X	N/A
BB12	Identify why computer troubleshooting is an essential skill used in computer networking.	CMN191	CompTIA A+ OS 4.1	3.5.11-12.F	N/A	N/A	13.2.11.E	X	N/A	N/A