Student Name:_____   Date:_____

PROGRAM COMPETENCY PROFILE FOR CAREER TECHNICAL EDUCATION
Career Cluster: Architecture and Construction

Program Name: Plumbing and Related Water Supply Services, Other   CIP: 460599   Effective 12/2015

National Standard: National Association of Plumbing, Heating and Cooling Contractors (NAPHCC)

Competencies (statement that provides the overview and defines the instructional area) NH Common Core State Standards **http://www.careertech.org/career-ready-practices** **http://www.education.nh.gov/career/career/aaoi.htm** **Student will:**	Knowledge, Content and Skills (what a student needs to know and be able to do and upon which they will be assessed) **Student will:**	Apprenticeship Standards **http://www.lcti.org/uploads/Standards_15-16.compressed.pdf** **https://www.nh.gov/safety/divisions/firesafety/building/mechanical/gasfitters**	Rating Scale -Sample Performance Assessments (Performance tasks the student needs to demonstrate in order to be rated proficient in meeting the competency) **Student will:**
Understand workplace safety in the use of tools and equipment, and in compliance with codes, laws, regulations relating to installation and repair in order to provide safe water supply and plumbing systems.	1. Identify and demonstrate the procedures and policies of safety of the trade (NH DOL, OSHA)	6.0	| 1 | 2 | 3 | 4 | For example: You are the company former and one of your responsibilities is to maintain a safe work environment. You will keep a record of your findings and present a final report to your administer. Cont. to # 3
ELA: 2, 4, 5, 6, 7, 8, 9 AAI: 8	2. Demonstrate and use personal and emergency equipment correctly.	6.0	| 1 | 2 | 3 | 4 | For example:
	3. Interpret and comply with MSDS and other safety provisions including labels and signs.	6.0	| 1 | 2 | 3 | 4 | For example:

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M=Mathematics (Numbers Quantity, Algebra, Functions, Geometry, Stat&Prob)   Page 1 of 9

PROGRAM COMPETENCY PROFILE FOR CAREER TECHNICAL EDUCATION
Career Cluster: Architecture and Construction

Program Name: Plumbing and Related Water Supply Services, Other   CIP: 460599   Effective 9/2015

National Standard: National Association of Plumbing, Heating and Cooling Contractors (NAPHCC)   :

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Student will:	**Student will:**		**Student will:**
Understand the concepts and procedures of correct use and maintenance of tools and equipment of the plumbing and water supply trade in order to provide safe and efficient service. ELA: 2 ,4, 7, 8	4. Identify tools of the trade.	6.0	1 2 3 4 For example: You are the journey and you need to set up the basic toolbox for your apprentice. OR You are the foreman and you are responsible for gathering tools, and materials in order for your crew to do complete the site project. Cont. to #7
AAI: 4	5. Demonstrate proper use of tools.	1.0	1 2 3 4 For example:
	6. Implement proper service and repair of basic hand tools.	6.0	1 2 3 4 For example:
Understand the concepts, procedures and processes of the uses of materials in order to measure, cut and fit pipe to provide safe and legal plumbing and water supply systems. ELA: 2, 6, 7, 8, 9	7. Identify and select the proper materials for the task.	3.0 & 4.0	1 2 3 4 For example:

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Program Name: Plumbing and Related Water Supply Services, Other   CIP: 460599   Effective 9/2015

National Standard: National Association of Plumbing, Heating and Cooling Contractors (NAPHCC)   :

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Understand and apply the fundamental mathematical concepts to solve situations ELA: 2 M:1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 ,14, 15, 17, 18, 19 AAI: 8 CRP: 2, 4, 5, 8,	8. Perform the math operations required by the trade. - solve single and multiple variable algebraic equations - measure angles - find volume and surface area of 3 dimensional objects - apply transformations (rotate-turn-reflect-flip-translate-dilate-scale) to geometric figures - construct 3 dimensional models - find slope of a line - solve problems involving complementary, supplementary, and congruent angles - use interior and exterior angles of polygons - Measure and calculate linear distances, circles, angles, and radii.	2.0	1 2 3 4 For Example: A customer has hired you to install a bathroom. You will need to perform the following: - Isometric drawing - Design piping to meet code - Materials take off list You will provide an estimate of materials and labor costs to the customer. Cont. to #17
	9. Through discussion, recognize the existence of state and local codes and apply the code to the task at hand.	6.0	1 2 3 4 . For example:

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PROGRAM COMPETENCY PROFILE FOR CAREER TECHNICAL EDUCATION
Career Cluster: Architecture and Construction

Program Name: Plumbing and Related Water Supply Services, Other   CIP: 460599   Effective 9/2015

National Standard: National Association of Plumbing, Heating and Cooling Contractors (NAPHCC)   :

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	10. Identify and interpret the elements in blueprints.	2.0	1 2 3 4 For Example:
Understand the concepts, practices and procedures of selecting and installing plumbing and water supply systems, fixtures, and DWV systems in new and existing applications.	11. Identify and explain various potable water systems.	3.0	1 2 3 4 For example:
ELA: 2, 6, 7, 8, 9 CPR:2	12.Recognize and apply basic electrical concepts	6.0	1 2 3 4 For example:
	13. Identify and explain different parts of a DWV system.	3.0	1 2 3 4 For example:
	14. Identify and select basic residential fixtures.	4.0	1 2 3 4 For example:
	15. Demonstrate proper installation of potable water systems.	3.0	1 2 3 4 For example:
	16. Demonstrate proper installation of DWV systems.	3.0	1 2 3 4 For example:

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Program Name: Plumbing and Related Water Supply Services, Other   CIP: 460599   Effective 9/2015

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	17. Demonstrate proper installation of residential plumbing fixtures and appurtenances.	4.0	1 2 3 4 For example:
Understand the concepts, procedures, and practices of installing and maintaining, hydronic heating systems in order to provide safe and efficient domestic systems. ELA: 2, 6, 7, 8, 9 CPR: 2	18. Explain and demonstrate proper installation of residential heating systems.		1 2 3 4 For Example: You have been hired by a customer to install a three zone hydronic system with indirect water heater. You will provide a work proposal and an estimate of materials and labor costs. Cont. to # 19
	19. Explain and demonstrate procedures for basic repair and maintenance of heating and plumbing systems.	5.0	1 2 3 4 For example:
Understand the concepts and application of energy and resource conservation. ELA: 2, 4, 5, 6, 7, 8 AAI: 5 CRP: 2, 11	20. Compare and contrast the various methods of potable water, DWV and energy conservation		1 2 3 4 For Example: You are a plumber engineer at the 100 bed facility. It is your job to calculate the effectiveness of a grey water system You will report your findings in a written report to the owner of the facility.

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Program Name: Plumbing and Related Water Supply Services, Other   CIP: 460599   Effective 9/2015

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Understand the fundamental concepts of business ownership ELA: 2, 5, 6, 7, 8 AAI: 1, 2, 3, 6, 7, 9 CRP: 1, 3, 6, 7	21. Discuss business possibilities and identify the steps in starting a business.		| 1 | 2 | 3 | 4 | For Example: You have decided you want to start your own business. You have been referred to the Small Business Development Center. The representative has asked you to complete the online form and bring the results to the meeting. Cont. to# 24 Resource: http://www.nhsbdc.org/resource-library/starting-a-business http://www.entre-ed.org/_teach/busplan.htm http://www.buzgate.org/8.0/nh/ch_youth.html
	22. Identify the resources needed for business startup and operation.		| 1 | 2 | 3 | 4 | For example:

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Student will:	**Student will:**		**Student will:**
	23. Discuss the options in planning the future growth, development and ending operations /dissolving the business.		1 2 3 4 For example:
	24. Identify and discuss the traits and behaviors of a small business owner (leadership, personal assessment, self-management).	.	1 2 3 4 For example: http://www.forbes.com/sites/tompost/2012/06/04/are-you-an-entrepreneur-startup/
Understand the importance of personal growth and leadership to enhance career success ELA: 2, 3, 4, 5, 6, 7, 8, 9 CRP: 9, 10	25. Demonstrate personal growth, community leadership, democratic principles and social responsibility by participating in activities/events offered through student and professional organizations.		1 2 3 4 For Example: You want to be the next Skills USA president, but there are three other people vying for the same position. In a speech, you will try to sway the membership to vote for you by promoting yourself. Your speech will need to include: your personal growth, your engagement in school activities, and list the evidence of your community involvement.

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Understand the necessary employability and career readiness skills in order to achieve success in today's workplace ELA: 6, 7, 8, 9	26. Act as a responsible and contributing citizen and employee.	7.0	| 1 | 2 | 3 | 4 | For Example: You instructor has asked you to select one assignment from your career /work portfolio to share with your peers. Resource http://www.livebinders.com/play/play?id=930447 Cont. to #32
	27. Attend to personal health and financial well-being.		| 1 | 2 | 3 | 4 | For Example:
	28. Communicate clearly, effectively and with reason.		| 1 | 2 | 3 | 4 | For Example:
	29. Consider the environmental, social and economic impacts of decisions.		| 1 | 2 | 3 | 4 | For Example:
	30. Demonstrate creativity and innovation.		| 1 | 2 | 3 | 4 | For Example:
	31. Employ valid and reliable research strategies.		| 1 | 2 | 3 | 4 | For Example:

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	32. Utilize critical thinking to make sense of problems and persevere in solving them.		1 2 3 4 For Example:

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