Virginia CTE

Inventions and Innovations (2022)

Demonstrating Personal Qualities and Abilities	1	Demonstrate creativity and innovation. 1
	2	Demonstrate critical thinking and problem solving. 2
	3	Demonstrate initiative and self-direction. 3
	4	Demonstrate integrity. 4
	5	Demonstrate work ethic. 5
Demonstrating Interpersonal Skills	6	Demonstrate conflict-resolution skills. 6
	7	Demonstrate listening and speaking skills. 7
	8	Demonstrate respect for diversity. 8
	9	Demonstrate customer service skills. 9
	10	Collaborate with team members. 10
Demonstrating Professional Competencies	11	Demonstrate big-picture thinking. 11
	12	Demonstrate career- and life-management skills. 12
	13	Demonstrate continuous learning and adaptability. 13
	14	Manage time and resources. 14
	15	Demonstrate information-literacy skills. 15
	16	Demonstrate an understanding of information security. 16
	17	Maintain working knowledge of current information-technology (IT) systems. 17
	18	Demonstrate proficiency with technologies, tools, and machines common to a specific occupation. 18
		Apply mathematical skills to job-specific tasks. 19

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	20	**Demonstrate professionalism.** 20
	21	**Demonstrate reading and writing skills.** 21
	22	**Demonstrate workplace safety.** 22
Addressing Elements of Student Life	23	**Identify the purposes and goals of the student organization.** 23
	24	**Explain the benefits and responsibilities of membership in the student organization as a student and in professional/civic organizations as an adult.** 24
	25	**Demonstrate leadership skills through participation in student organization activities, such as meetings, programs, and projects.** 25
	26	**Identify Internet safety issues and procedures for complying with acceptable use standards.** 26
Exploring Work-Based Learning	27	**Identify the types of work-based learning (WBL) opportunities.** 27
	28	**Reflect on lessons learned during the WBL experience.** 28
	29	**Explore career opportunities related to the WBL experience.** 29
	30	**Participate in a WBL experience, when appropriate.** 30
Exploring Inventions and Innovations	31	**Explain the importance of technology in the development of society.** 31
	32	**Describe inventions throughout history.** 32
	33	**Explore how inventions and innovations relate to the development of new products, processes, and systems.** 33
	34	**Identify the purpose of protecting intellectual property.** 34
	35	**Examine how technology and engineering careers contribute to new inventions and innovations.** 35
Exploring Tools for Invention and Innovation	36	**Demonstrate safe use of a minimum of five tools and/or equipment.** 36
	37	**Demonstrate various types of measuring.** 37
	38	**Create sketches and drawings.** 38
	39	**Model various mechanisms used in inventions and innovations.** 39
	40	**Model electronic circuits used in inventions and innovations.** 40
		Program (code) a device to control an invention or innovation. 41

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Exploring Design and Creativity	**42**	**Evaluate a product's design with the goal of innovation.** 42
	43	**Reverse engineer an existing product.** 43
	44	**Describe the steps of the Virginia Department of Education (VDOE) engineering design process.** 44
	45	**Explain the characteristics of the engineering design process.** 45
	46	**Explain the effect of the criteria and constraints on a design.** 46
Applying the Engineering Design Process	**47**	**Plan a solution to an engineering design problem, as part of a team.** 47
	48	**Build a model or prototype of the proposed solution, as part of a team.** 48
	49	**Communicate the process and results of the proposed solution, as part of a team.** 49
Building Teamwork	**50**	**Plan a solution to an engineering design problem, as part of a team.** 50
	51	**Build a model or prototype of the proposed solution, as part of a team.** 51
	52	**Communicate the process and results of the proposed solution, as part of a team.** 52
	53	**Evaluate the team process followed.** 53