

# Technology Foundations (8403)

## Demonstrating Personal Qualities and Abilities

1. Demonstrate creativity and innovation. 8403.1
2. Demonstrate critical thinking and problem solving. 8403.2
3. Demonstrate initiative and self-direction. 8403.3
4. Demonstrate integrity. 8403.4
5. Demonstrate work ethic. 8403.5

## Demonstrating Interpersonal Skills

6. Demonstrate conflict-resolution skills. 8403.6
7. Demonstrate listening and speaking skills. 8403.7
8. Demonstrate respect for diversity. 8403.8
9. Demonstrate customer service skills. 8403.9
10. Collaborate with team members. 8403.10

## Demonstrating Professional Competencies

11. Demonstrate big-picture thinking. 8403.11
12. Demonstrate career- and life-management skills. 8403.12
13. Demonstrate continuous learning and adaptability. 8403.13
14. Manage time and resources. 8403.14
15. Demonstrate information-literacy skills. 8403.15
16. Demonstrate an understanding of information security. 8403.16
17. Maintain working knowledge of current information-technology (IT) systems. 8403.17
18. Demonstrate proficiency with technologies, tools, and machines common to a specific occupation. 8403.18
19. Apply mathematical skills to job-specific tasks. 8403.19

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**20. Demonstrate professionalism.** 8403.20

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**21. Demonstrate reading and writing skills.** 8403.21

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**22. Demonstrate workplace safety.** 8403.22

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**Examining All Aspects of an Industry**

**23. Examine aspects of planning within an industry/organization.** 8403.23

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**24. Examine aspects of management within an industry/organization.** 8403.24

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**25. Examine aspects of financial responsibility within an industry/organization.** 8403.25

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**26. Examine technical and production skills required of workers within an industry/organization.** 8403.26

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**27. Examine principles of technology that underlie an industry/organization.** 8403.27

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**28. Examine labor issues related to an industry/organization.** 8403.28

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**29. Examine community issues related to an industry/organization.** 8403.29

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**30. Examine health, safety, and environmental issues related to an industry/organization.** 8403.30

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**Addressing Elements of Student Life**

**31. Identify the purposes and goals of the student organization.** 8403.31

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**32. Explain the benefits and responsibilities of membership in the student organization as a student and in professional/civic organizations as an adult.** 8403.32

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**33. Demonstrate leadership skills through participation in student organization activities, such as meetings, programs, and projects.** 8403.33

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**34. Identify Internet safety issues and procedures for complying with acceptable use standards.** 8403.34

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**Exploring Work-Based Learning**

**35. Identify the types of work-based learning (WBL) opportunities.** 8403.35

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**36. Reflect on lessons learned during the WBL experience.** 8403.36

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**37. Explore career opportunities related to the WBL experience.** 8403.37

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**38. Participate in a WBL experience, when appropriate.** 8403.38

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**Exploring Technology Foundations**

**39. Define technology.** 8403.39

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- 40. Explain the characteristics and scope of technology.** 8403.40
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- 41. Identify the core concepts of technology.** 8403.41
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- 42. Describe the basic systems model.** 8403.42
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- 43. Distinguish between an open- and closed-loop system.** 8403.43
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- 44. Explain how systems may have varying outputs.** 8403.44
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- 45. List technological resources and their function in a system.** 8403.45
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- 46. Explain what process does in a system.** 8403.46
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- 47. Identify the seven resources for a particular technological system.** 8403.47
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- 48. Describe an engineering design process that is used to design a product.** 8403.48
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- 49. Identify common technological processes that convert materials or energy to produce an output or solution.** 8403.49
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- 50. Describe the core areas of STEM.** 8403.50
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- 51. Use the Pythagorean theorem during a problem-solving activity** 8403.51
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- 52. Identify career opportunities in a variety of technological contexts.** 8403.52
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## Understanding Technological Systems

- 53. Illustrate the concept of a technological system.** 8403.53
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- 54. Distinguish between a system and a subsystem.** 8403.54
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- 55. Analyze the effects of technological systems on society and the environment.** 8403.55
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## Analyzing Consumer Products

- 56. Define consumer.** 8403.56
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- 57. Explain how human factors engineering applies to product design.** 8403.57
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- 58. Describe ways consumer products have shaped society and the environment.** 8403.58
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- 59. Select a consumer product to analyze.** 8403.59
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- 60. Collect product data.** 8403.60
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- 61. Reverse engineer a product.** 8403.61
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- 62. Analyze how a product works, using mathematical and scientific concepts.** 8403.62
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**63. Describe an innovation that would improve a product.** 8403.63

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**64. Draw illustrations of an improved product.** 8403.64

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**65. Construct models of an improved product.** 8403.65

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**66. Represent 3D objects on a two-dimensional surface.** 8403.66

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**67. Create a display or multimedia presentation of an improved product, emphasizing STEM concepts.** 8403.67

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**68. Present recorded information about a product using multimedia.** 8403.68

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### Using Materials as a Technological Resource

**69. Classify materials as either natural or synthetic.** 8403.69

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**70. Classify materials according to the major types.** 8403.70

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**71. Explain how material resources are processed.** 8403.71

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**72. Create a detailed diagram for producing a designed product/model/prototype.** 8403.72

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**73. Use tools, machines, and processes to change materials to produce a designed product.** 8403.73

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**74. Select the best material for a specific design application.** 8403.74

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**75. Predict the outcomes of some technological processes.** 8403.75

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**76. Develop a design using recycled materials.** 8403.76

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### Using Energy as a Technological Resource

**77. Identify the two types of energy.** 8403.77

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**78. Analyze forms of energy.** 8403.78

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**79. Identify the sources of energy used with technological devices.** 8403.79

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**80. Model the use of energy with mechanical, electrical, fluidic, and thermal systems.** 8403.80

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**81. Map the path of current and emerging energy supplies from their source to end-users.** 8403.81

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**82. Compare methods to conserve energy through technological modification.** 8403.82

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### Controlling an Electronic System

**83. Analyze a problem whose solution uses electronic controls.** 8403.83

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**84. Describe the different methods for using electronically controlled devices.** 8403.84

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**85. Use engineering design to solve an identified problem using an electronically controlled device .** 8403.85

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**86. Construct a functional model of an electronically controlled device.** 8403.86

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**87. Control a device with a microcontroller.** 8403.87

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**88. Present information about an electronically controlled device.** 8403.88

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## Designing a Product

**89. Evaluate the needs and wants of people in school, home, community, or world that could be met through technological change.** 8403.89

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**90. Write a statement that defines a problem, challenge, need, or opportunity.** 8403.90

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**91. Collect information about a technological problem to be solved.** 8403.91

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**92. Generate potential solutions to the problem, challenge, need, or opportunity.** 8403.92

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**93. Select the best solution for a problem.** 8403.93

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**94. Construct a prototype of the best solution.** 8403.94

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**95. Evaluate the solution by comparing it with the problem statement, constraints, and criteria.** 8403.95

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**96. Present the final product.** 8403.96

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