3D Animation and Visualization

This Blueprint contains the subject matter content for the Career Essentials - Assessment.
> **Note**: To fully prepare for the 3D Visualization and Animation SkillsUSA Championships contest, refer to the current year's SkillsUSA Championships Technical Standard, now included with your SkillsUSA Professional Membership. If you need help in accessing this benefit, contact the SkillsUSA Customer Care Team at 844-875-4557 or customercare@skillsusa.org

Standards and Competencies

Competencies are weighted throughout the assessment. The percent shown is the weight of the competency. There are 50 questions per assessment.

### Solve a problem or tell a story in a two-dimensional format

11%
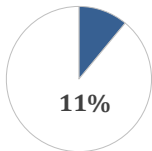
- Identify previsualization and/or storyboard design techniques.
- Define how a problem will be solved or how a story will be told without the benefit of support materials.
- Describe the concept with enough artistic depth visually and verbally to allow the viewer to accurately visualize the final 3D output.

Model a computer-generated object

13%
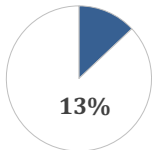
- Create three-dimensional objects using the appropriate technology.
- Apply geometry-deforming methods to create computer-generated models that possess shape, color, materials, and surface maps.
- Create models that are photo-realistic, artistic, and/or graphically pleasing.

### Create a three-dimensional scene

34%
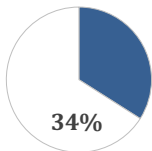
- Light, animate, and render a scene, including created model(s).
- Apply appropriate light and shadow to models and surfaces in a scene to convey the proper level of realism.
- Assign motion to objects and/or cameras in a scene.
- Use bones, links, and other forward and inverse kinematics to create complex animation of created objects.
- Create cameras, with or without motion attached, to properly view a scene.
- Create the final rendered output of a high-quality scene to a still image or animation using appropriate rendering technology.

### Demonstrate originality and creativity in telling the story

10%

- Create a final product that has an emotional impact on the viewer.
- Select aesthetically pleasing elements.
- Select elements that will evoke an appropriate emotional response from the viewer.

Demonstrate the ability to work in a team environment

18%
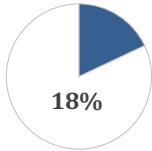
- Cooperate with others to achieve the solution to a problem or convey a story.
- Demonstrate consensus-building skills.
- Apply verbal and visual communication skills to convey ideas between team members and to a client.
- Work collaboratively with other team members.
- Honor the contributions and strengths of others.
- Honor personal commitments and responsibilities to the team.
- Foster positive and collaborative working relationships with others.

Project a professional self-image through attire and grooming

14%
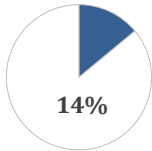
- Demonstrate a professional appearance in dress, good grooming, and personal presentation.
- Display clothing that meets national standards requirement for competition.
- Demonstrate good grooming in personal hygiene.
- Wear clothing that fits well.
- Present a wrinkle-free appearance.

COMMITTEE-IDENTIFIED ACADEMIC SKILLS

The SkillsUSA national technical committee has identified that the following academic skills are embedded in the 3D Animation and Visualization training program and assessment:

Math Skills
- Use fractions to solve practical problems.
- Use proportions and ratios to solve practical problems.
- Solve practical problems involving percentages.
- Apply transformations (rotate or turn, reflect or flip, translate or slide, and dilate or scale) to geometric figures.
- Construct three-dimensional models.
- Solve problems involving symmetry and transformation.

Science Skills
- Use knowledge of physical properties (shape, density, solubility, odor, melting point, boiling point, color).
- Use knowledge of nature and technological applications of light.
- Use knowledge of speed, velocity and acceleration.

Language Arts Skills
- Provide information in conversations and in group discussions.
- Provide information for oral presentations.
- Demonstrate use of verbal communication skills: word choice, pitch, feeling, tone, and voice.
- Demonstrate comprehension of a variety of informational texts.
- Organize and synthesize information for use in written and oral presentations.

- Demonstrate knowledge of appropriate reference materials.
- Demonstrate narrative writing.

CONNECTIONS TO NATIONAL STANDARDS

State-level academic curriculum specialists identified the following connections to national academic standards.

Math Standards
- Geometry
- Measurement
- Problem solving
- Communication
- Connections
- Representation

Source: *NCTM Principles and Standards for School Mathematics. NCTM Principles and Standards for School Mathematics. For more information, visit: www.nctm.org.*

Science Standards
- Understands forces and motion.
- Understands the nature of scientific inquiry.

Language Arts Standards
- Students adjust their use of spoken, written and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.
- Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.
- Students participate as knowledgeable, reflective, creative and critical members of a variety of literacy communities.
- Students use spoken, written and visual language to accomplish their own purposes. (e.g., for learning, enjoyment, persuasion and the exchange of information.)

Source: *IRA/NCTE Standards for the English Language Arts. To view the standards, visit: www.ncte.org/standards.*