



PrintED/SkillsUSA Graphic Communications Competencies

The PrintED/SkillsUSA Graphic Communications competencies encompass the knowledge and skill set a student should master to exhibit proficiency in graphics communications. The PrintED/SkillsUSA Graphic Communications Skill Connect Assessment test questions align with the PrintED/SkillsUSA Graphic Communications competencies.

Note: To fully prepare for the Graphic Communications SkillsUSA Championships contest, refer to the current year's *SkillsUSA Championships Technical Standards CD-ROM*, or purchase and download the relevant *Contest Singles*, which are both available in the Educational Resources Catalog at: <http://www.skillsusa.org/store/>.

A. Industry Overview

1. Define the role of graphics in the free enterprise system.
2. Identify and list print markets and types of print businesses.
3. List printing's ranking among other manufacturing industries.
4. Identify and describe the major printing processes: flexography, gravure, lithography, screen printing, and digital.
5. List the advantages and disadvantages of each major printing process.
6. List typical products produced by each major process.
7. Show a typical business flow of printing from initial concept to finished product.
8. List, in order, a typical technical production flow from idea to finished product.
9. Identify these major occupations in the graphic communications industry and describe the basic training needed for each: sales representative; customer service representative; prepress technician; press operator; bindery operator; and, management personnel.
10. Identify basic salary/wage expectation ranges.
11. Identify and describe basic production equipment used in a commercial printing plant, including: computer workstation; proofing device; platesetter; scanner; offset press; digital press; paper cutter; folder; saddle stitcher; perfect binder; paper padder; and, paper drill.
12. Identify the types of major companies that employ people with graphic communications skills, including: commercial printers; in-plant printers; book printers; packaging, label & wrapper printers; catalogs & directories printers; direct mail printers; business forms printers; financial & legal printers; inserts & coupon printers; magazine & periodical printers; trade binderies, and pre-press services.
13. Read and interpret production information on a job ticket.
14. Identify these major printing industry associations: National Association for Printing Leadership (NAPL); Printing Industries of America (PIA) and the local PIA affiliate; Flexographic Technical Association (FTA); Specialty Graphic Imaging Association (SGIA); and, AIGA, the professional association for design.
15. Define counterfeiting and copyright laws.
16. Describe the need for security within printing companies and the products they produce.
17. Observe a commercial printing operation (live or virtual) and identify the production departments.

B. Environmental Health, Safety, and First Aid

1. Identify location(s) and describe proper use of fire safety equipment in the facility.
2. List safety rules involving flammable liquids.
3. List the steps to be taken in case of injury in the lab.
4. Identify location(s) of first aid kit(s) and eye wash station(s).
5. Read and interpret Material Safety Data Sheets (MSDS).
6. Describe protective safety equipment, if needed (e.g., gloves, goggles, ear plugs, lab dress, etc.).
7. Describe appropriate safety procedures to follow when operating equipment.
8. Pass a general lab safety test.
9. Identify approved methods for disposing of waste materials.

10. Read, interpret, and follow instructions on warning labels and Hazardous Materials Information System (HMIS) labeling.
11. Identify the OSHA safety color code.

C. Digital File Preparation

1. Identify professional prepress software applications and uses, including: page layout (QuarkXPress, InDesign); image editing (Photoshop); illustration (Illustrator); PDF generation and editing (Acrobat, PitStop); and, imposition (Preps).
2. Describe the disadvantages of using office/home-based software for professional graphic purposes.
3. Describe the difference between a raster image and a vector graphic image.
4. List advantages/disadvantages of removable storage media.
5. Explain the significance of PDF as it pertains to the printing industry.
6. Explain the difference between supplying PDF files versus native files for print.
7. Identify various file formats and their extensions: .doc; .qxd; .pdf; .tif; .eps; .rtf; .raw; .jpg; .bmp; .txt; .indd; .psd; .ai; .pub; .html; .gif; .xls; .zip; .dmg; .png; .dng.
8. Explain the purpose of a folding dummy.
9. Explain the purpose of imposition.
10. Identify type classifications, size, positioning and alignment.

D. Image Capture

1. Explain basic scanning hardware.
2. Explain basic digital camera hardware.
3. Explain and identify the difference between line art and continuous tone originals.

E. Color Theory

1. Explain additive and subtractive color theory.
2. Explain the effect of lighting on color perception.
3. Explain the effect of the surround on color perception.
4. Explain the significance of standard viewing conditions in the graphic communications industry.
5. Explain the influence of the substrate on color reproduction.

F. Digital File Output

1. Explain and describe trapping and why it is necessary.
2. Explain the purpose of proofing.
3. Explain the difference between hard and soft proofs.
4. Explain digital platemaking equipment for offset plates.
5. Explain the difference between static output and variable output.
6. Explain the process of creating digital output from a computer file.

G. Press Operations (Offset and Digital)

1. Identify basic safety press procedures.
2. Identify basic press systems.
3. List and describe quality control devices for press (color bars, densitometer, etc.).

H. Bindery Operations

1. Describe the differences between, and the advantages/disadvantages of: in-line; off-line; and, near-line finishing.
2. List basic paper types, weights, grades and classifications commonly used in the printing industry.
3. Explain operational and safety features of a paper cutter.
4. Identify grain direction of paper, and explain its importance.
5. Calculate basic paper cuts from a parent sheet.
6. Create an accurate master cutting diagram for making cuts.

7. Identify padding equipment materials and hand tools.
8. Identify stapling and stitching equipment materials and supplies.
9. Identify punching/drilling equipment and tools.
10. Identify folding equipment.
11. Identify basic folds for printed products.
12. Identify collating equipment.
13. Identify die cut products, embossing and foil stamping products, and procedures/equipment used for each.
14. Identify and explain different binding methods and applications, including: case binding; perfect binding; saddle stitching; and, lay-flat.
15. Describe the mailing and distribution process.

I. Measurement

1. Measure linear dimensions for printing materials in inches and fractions of inches.
2. Measure type in points and line length in picas.
3. Measure volume for mixing chemicals for pressroom operations.
4. Measure original images for reduction and enlargement using various methods to determine the percentage for final reproduction.

J. Basic Math

1. Solve addition of whole number problems—two and three digits.
2. Solve addition of fraction problems.
3. Solve addition of decimal problems—two and three digits.
4. Solve subtraction of whole number problems—two and three digits.
5. Solve subtraction of fraction problems.
6. Solve subtraction of decimal problems—two and three digits.
7. Solve multiplication of whole numbers—two and three digits.
8. Solve multiplication of decimal problems—two and three digits.
9. Solve division of whole number problems—two and three digits.
10. Solve various problems that require dividing a given dimension in half.
11. Solve division of decimal problems—two and three digits.
12. Solve decimals to percent conversion problems.
13. Solve percent to decimal conversion problems.
14. Solve basic ratio and proportion problems.
15. Solve basic linear measurement problems.
16. Solve basic type calculation problems.
17. Solve basic liquid measurement problems.
18. Solve basic paper cutting calculations.
19. Solve word problems that require an understanding of estimating.

K. Job Application and Interpersonal Skill

1. Describe work ethics that should be exhibited by employees in the graphic communications industry.
2. Demonstrate how to locate job listings through a variety of sources (e.g., Internet; job boards; help wanted ads; job fairs; agencies, etc.).
3. Read and interpret the content of want ads and job postings.
4. Write a personal resume that includes three references.
5. Write a cover letter to obtain a job in the graphic communications industry.
6. Read and complete an employment application form.
7. Describe ways to prepare for a successful job interview.
8. Prepare for a job telephone interview by participating in a mock interview conducted by a teacher, parent, or another student.
9. Describe the reasons for job interview follow-up.
10. Write a letter or email to follow-up a job interview.
11. Evaluate an employment benefits package.



12. Compare job opportunities to include wages, benefits, and employment responsibilities.

SkillsUSA is of the understanding that students who take the PrintED/SkillsUSA Graphic Communications Skill Connect Assessment have been enrolled in a graphic communications training program with the following competencies embedded within the curriculum.

Identified Academic Skills

Math Skills

- Use fractions to solve practical problems
- Simplify numerical expressions
- Solve practical problems involving percents
- Solve single variable algebraic expressions

Language Arts Skills

- Provide information in conversations and in group discussions
- Provide information in oral presentations
- Demonstrate use of nonverbal communication skills: eye contact, posture and gestures using interviewing techniques to gain information
- Demonstrate knowledge of appropriate reference materials

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. To view high school standards, visit: standards.nctm.org/document/chapter7/index.htm. Select "Standards" from menu.

Science Standards

- Understands the structure and properties of matter
- Understands the sources and properties of energy
- Understands forces and motion
- Understands the nature of scientific inquiry

Source: McREL compendium of national science standards. To view and search the compendium, visit: www.mcrel.org/standards-benchmarks/.

Language Arts Standards

- Students read a wide range of print and nonprint texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.

- Students apply a wide range of strategies to comprehend, interpret, evaluate and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, and graphics).
- Students adjust their use of spoken, written and visual language (e.g., conventions, style, and 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 and video) to gather and synthesize information and to create and communicate knowledge.
- 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.readwritethink.org/standards/index.html.