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## PrintED/SkillsUSA Offset Press Operations/Binding & Finishing Competencies

The PrintED/SkillsUSA Offset Press Operations/Binding & Finishing competencies encompass the knowledge and skill set a student should master to exhibit proficiency in offset press operations/binding & finishing. The PrintED/SkillsUSA Offset Press Operations/Binding & Finishing Skill Connect Assessment test questions align with the PrintED/SkillsUSA Offset Press Operations/Binding & Finishing competencies.

**Note:** To fully prepare for the Offset Press Operations/Binding & Finishing 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/>.

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### A. Offset Press Operations

1. Read and interpret production information on job docket/ticket.
2. Explain how an offset lithographic plate works.
3. Identify and demonstrate safe work habits in press operations.
4. Identify basic systems and parts of an offset press.
5. Describe the attributes of sheet-fed, webfed, stream-fed, and perfecting presses.
6. Identify the printing processes used in the press segment of the printing workflow.
7. Identify basic paper types, sizes, and weights.
8. Determine grain direction of paper and explain the importance of proper grain direction when running the press, including folds and scoring.
9. Handle and jog paper stock (wire/felt, watermarks, and carbonless sequence).
10. Locate paper weight, coating, and sizes on a ream, box, or skid.
11. Describe the importance of paper conditioning prior to running the press.
12. Demonstrate and correct paper problems prior to running the press.
13. Compare offset ink types and uses including oil-based, rubber-based, soy-based, and U.V.
14. Identify ink ingredients.
15. Identify causes of ink problems and suggest appropriate solutions.
16. Explain the purpose of using spray powder on an offset press.
17. Explain the purpose of an infra-red dryer on an offset press.
18. Describe the procedure for mixing and testing custom colored inks.
19. Explain the purpose and use of fountain solution and fountain solution additives.
20. Mix fountain solutions using appropriate ratios and demonstrate understanding and use of monitoring techniques.
21. Perform make-ready steps for paper handling.
22. Perform make-ready of the inking system.
23. Perform make-ready of the dampening system.
24. Perform make-ready of the printing unit.
25. Print a single color one-sided job.
26. Print a single color properly registered two-sided job. Indicate gripper and guide sides.
27. Print a single color properly registered job on carbonless stock (two-parts or three parts).
28. Print a single color job on envelopes.
29. Print a job on heavy stock.
30. Describe sheetwise, work-and-turn, and work-and-tumble jobs, and how they differ.
31. Print a two-sided job using one of the following methods: sheetwise, work-and-turn, or work-and-tumble.
32. Explain the purpose of registration, crop, and bleed marks.
33. Explain the major functions of a densitometer as a quality control device.
34. Print a multicolor job with register marks and color bars. Maintain accurate registration and monitor ink density.
35. Print a multicolor, two-sided job.

36. Demonstrate the use of flags to count sheets during a pressrun.
37. Perform roller care and maintenance of inking and dampening systems.
38. Demonstrate ink roller, dampener roller, and cylinder pressure settings on a press.
39. Install a blanket and explain follow-up procedures.
40. Demonstrate proper wash-up techniques for the inking system, dampening system, and cylinders.
41. Demonstrate a proper color wash.
42. Identify problems inherent in printing heavy solid work on a duplicator press.
43. Estimate small offset press labor costs to include make-ready, running and clean-up.
44. Estimate ink and paper costs.
45. Observe offset press operations in a commercial printing plant either on site or online via a virtual tour.
46. Explain procedures for daily, weekly, and monthly maintenance on a press; explain importance of recording this information in a log.
47. Perform basic press maintenance and record the information in a log.

## **B. Binding & Finishing Competencies**

1. Read and interpret production information on job docket/ticket.
2. Identify and demonstrate proper safety considerations when working with bindery equipment.
3. Practice safe work habits when working with bindery equipment.
4. Describe how to change the blade and perform preventive maintenance on an automatic paper cutter.
5. Estimate the cost of materials and production for performing various bindery operations.
6. Identify basic hand tools, equipment, and materials in bindery operations.
7. Demonstrate proper paper handling and storage procedures.
8. Demonstrate basic paper jogging techniques.
9. Demonstrate basic paper counting techniques: measure by ream marker, weight, caliper, or other methods.
10. Demonstrate knowledge of paper types related to their grain direction, cutting, folding and binding characteristics.
11. Calculate basic paper cuts from a parent sheet, considering job requirements and grain direction.
12. Describe how to use and set up programmable cutters.
13. Make accurate paper cuts using a mechanized paper cutter.
14. Demonstrate how to check the squareness of stock.
15. Collate sets in proper sequence.
16. Prepare folding dummies for commonly used impositions.
17. Define folding terminology and list different folding techniques.
18. Demonstrate the use of folding equipment to produce a single fold, an accordion fold, and a gate fold.
19. Describe and identify the uses of right angle folding, knife folding, buckle folding, and combination folding.
20. Demonstrate the use of folding equipment to produce a right-angle fold job.
21. Demonstrate and properly use folding equipment to produce a high-folio lip signature and a low-folio lip signature and describe the advantages of both.
22. Describe tipping in procedures.
23. Demonstrate the use of folding equipment to perforate and score.
24. Demonstrate and perform preventative maintenance on a folder.
25. Describe and identify in-line finishing systems.
26. Describe and identify off-line finishing systems.
27. Produce correctly made pads of paper.
28. Describe the fundamentals and applications of saddle stitching and perfect binding.
29. Produce side and saddle stitched/stapled products.
30. Identify spiral binding and wire binding equipment and products.
31. Describe the case binding process.
32. Identify packaging and shrink wrap equipment and materials.
33. Identify specialty bindery processes: foil stamping, embossing, die cutting, and thermography.

34. Identify common production problems encountered in the bindery area.
35. Describe and identify basic mailing equipment.
36. Demonstrate an understanding of United States Postal Service (USPS) standards (sizes and mail class rates).
37. Observe a commercial bindery operation.

**C. 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.

**D. Job Application and Interpersonal Skill**

1. Describe work ethics that should be exhibited by employees in the offset press operations/binding & finishing 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 offset press operations/binding & finishing 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.

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*SkillsUSA is of the understanding that students who take the PrintED/SkillsUSA Offset Press Operations/Binding & Finishing Skill Connect Assessment have been enrolled in a offset press operations/binding & finishing 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](http://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/](http://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](http://www.readwritethink.org/standards/index.html).