

# Construction Trades Foundation

Exam Information	Description																								
<b>Exam number</b> <b>510</b>	<p>The Construction Trades Foundation industry certification exam assesses foundational skills in construction trades. Learners demonstrate basic safety skills, basic math skills, and their ability to recognize and demonstrate the use of various hand tools and power tools. They also read and explain blueprints, and explain and demonstrate basic rigging techniques and concepts.</p>																								
<b>Items</b> <b>65</b>																									
<b>Points</b> <b>82</b>	<b>Exam Blueprint</b>																								
<b>Prerequisites</b> <b>None</b>	<table> <tr> <th>Standard</th><th>Percentage of exam</th></tr> <tr> <td>1. Basic Safety Skills</td><td>11%</td></tr> <tr> <td>2. Basic Math Skills</td><td>15%</td></tr> <tr> <td>3. Hand Tools</td><td>10%</td></tr> <tr> <td>4. Power Tools</td><td>8%</td></tr> <tr> <td>5. Blueprints</td><td>18%</td></tr> <tr> <td>6. Wood Building</td><td>5%</td></tr> <tr> <td>7. Flooring, Wall, Ceiling &amp; Roofing Systems</td><td>17%</td></tr> <tr> <td>8. Windows &amp; Doors</td><td>4%</td></tr> <tr> <td>9. Drywall Installation &amp; Finishing</td><td>5%</td></tr> <tr> <td>10. Interior Finishing</td><td>7%</td></tr> <tr> <td>11. Professional Understanding &amp; Skills (Optional)</td><td>0%</td></tr> </table>	Standard	Percentage of exam	1. Basic Safety Skills	11%	2. Basic Math Skills	15%	3. Hand Tools	10%	4. Power Tools	8%	5. Blueprints	18%	6. Wood Building	5%	7. Flooring, Wall, Ceiling & Roofing Systems	17%	8. Windows & Doors	4%	9. Drywall Installation & Finishing	5%	10. Interior Finishing	7%	11. Professional Understanding & Skills (Optional)	0%
Standard	Percentage of exam																								
1. Basic Safety Skills	11%																								
2. Basic Math Skills	15%																								
3. Hand Tools	10%																								
4. Power Tools	8%																								
5. Blueprints	18%																								
6. Wood Building	5%																								
7. Flooring, Wall, Ceiling & Roofing Systems	17%																								
8. Windows & Doors	4%																								
9. Drywall Installation & Finishing	5%																								
10. Interior Finishing	7%																								
11. Professional Understanding & Skills (Optional)	0%																								
<b>Recommended course length</b> <b>One year</b>																									
<b>National Career Cluster</b> <b>Architecture &amp; Construction</b>																									
<b>Manufacturing</b>																									
<b>Performance standards</b> <b>Included (Optional)</b>																									
<b>Certificate available</b> <b>Yes</b>																									

## Standard 1

Students will learn and practice basic safety skills.

**Objective 1** Describe how to avoid job-site accidents.

**Objective 2** Explain the relationship between housekeeping and safety.

**Objective 3** Appreciate the importance of following all safety rules and company safety policies.

**Objective 4** Explain the importance of reporting all on-the-job injuries, accidents, and near misses.

**Objective 5** Explain the need for evacuation procedures and the importance of following them.

**Objective 6** Explain their employer's substance abuse policy and how it relates to their safety.

**Objective 7** Explain the term Proximity Work.

**Objective 8** Recognize and explain personal protective equipment uses.

**Objective 9** Inspect and care for various types of personal protective equipment.

**Objective 10** Follow safe procedures for lifting heavy objects.

**Objective 11** Inspect and safely work with various types of ladders and scaffolds.

**Objective 12** Demonstrate an understanding of the OSHA Hazard Communication Standard.

**Objective 13** Explain the function of Material Safety Data Sheets.

**Objective 14** Practice fire prevention in dealing with various flammable materials.

**Objective 15** Practice safe work procedures around electrical hazards.

**Standard 1 Performance Evaluation included below (Optional)**

## Standard 2

Students will understand and demonstrate basic math skills.

**Objective 1** Add, subtract, multiply, and divide whole numbers, with and without a calculator.

**Objective 2** Use a standard ruler to measure.

**Objective 3** Add, subtract, multiply, and divide fractions.

**Objective 4** Add, subtract, multiply, and divide decimals, with and without a calculator.

**Objective 5** Convert decimals to percentages and percentages to decimals.

**Objective 6** Convert fractions to decimals and decimals to fractions.

**Standard 2 Performance Evaluation included below (Optional)**

## Standard 3

Students will recognize and demonstrate the hand tools.

**Objective 1** Recognize basic hand tools used in the construction trade.

1. Framing hammer
2. Key hole saw
3. Sledge hammer
4. Framing square
5. Speed square
6. Nail puller/cat's paw
7. Tape measure
8. Chalk box
9. Level
10. Utility knife
11. Coping saw
12. Wood chisel
13. Nail set
14. Screwdriver set – slotted, Phillips, Allen, Torx
15. Channel lock pliers
16. Needle nose pliers
17. Linemen pliers
18. Vise grip pliers
19. T-bevel square
20. Adjustable wrench
21. Socket set
22. Tin snips
23. Hack saw
24. Crow bar

25. Combination file
26. Tool belt
27. C-clamp
28. Shovel
29. Pick
30. Finish hammer

**Objective 2** Safely use these basic hand tools.

**Objective 3** Have an awareness of basic maintenance procedures on these hand tools.

### **Standard 3 Performance Evaluation included below (Optional)**

## **Standard 4**

Students will recognize and demonstrate power tools.

**Objective 1** Identify commonly used power tools of the construction trade.

1. Circular saw
2. Reciprocating saw
3. Jig saw
4. Hammer drill
5. Portable power planer
6. Router
7. Pneumatic and power fastening tools: Framing nailer, finishing nailer, teco nailer, plastic top nailer, brad nailer, stapler
8. Miter box saw
9. Cordless drill
10. Cordless reciprocating
11. ½" drill
12. Electric tin snips
13. Powder actuated tool
14. Electric impact wrench
15. Laser builders level

**Objective 2** Recognize safe use of power tools.

**Objective 3** Explain the procedures to properly maintain these power tools.

### **Standard 4 Performance Evaluation included below (Optional)**

## **Standard 5**

Students will identify and demonstrate how to read blueprints.

**Objective 1** Identify and recognize basic blueprint terms and symbols.

**Objective 2** Relate information on prints to real parts and locations.

**Objective 3** Identify the following:

1. Plot/site plan
2. Floor plan
3. Elevation plan
4. Foundation plan
5. Mechanical plan
6. Electrical plan
7. Specifications sheet
8. Door and window schedule

**Standard 5 Performance Evaluation included below (Optional)**

## Standard 6

Students will be able to understand and demonstrate the use of wood building materials, fasteners and adhesives.

**Objective 1** Explain the terms commonly used in discussing wood and lumber.

1. Crown

**Objective 2** Identify various types of imperfections that are found in lumber.

1. Holes
2. Knots
3. Pitch
4. Decay

**Objective 3** Identify the uses of pressure-treated lumber.

1. Landscape timbers
2. Sill plates
3. Foundations
4. Decks
5. Porches
6. Docks

**Objective 4** Identify the safety precautions associated with pressure-treated lumber.

1. When cutting pressure-treated lumber, always wear eye protection and a dust mask.
2. Wash any skin that is exposed while cutting or handling the lumber.
3. Wash clothing that is exposed to sawdust separately from other clothing.
4. Do not burn pressure-treated lumber as the ash poses a health hazard.
5. Be sure to read and follow the manufacturer's safety instruction.

**Objective 5** Describe the proper method of caring for lumber and wood building materials at the job site.

**Objective 6** State the uses of various types of engineered lumber.

1. Headers
2. Floor joists

**Objective 7** List the basic types of nails and staples and their uses.

1. Nails; common and finish
2. Chisel staples

**Objective 8** Describe the common types of adhesives used in construction work and explain their uses.

### **Standard 6 Performance Evaluation included below (Optional)**

## **Standard 7**

Students will be able to understand and demonstrate framing of flooring systems, wall and ceilings and roofing systems.

**Objective 1** Identify floor and sill framing and support members.

**Objective 2** List and recognize different types of floor joists.

**Objective 3** Demonstrate the ability to:

1. Layout and construct a floor assembly
2. Install a single floor system using tongue and groove plywood/OSB panels

**Objective 4** Identify the components of a wall.

**Objective 5** Layout, assemble, erect, and brace exterior walls for a frame building.

**Objective 6** Understand the use and installation of roofing members.

**Objective 7** Understand the members and installation of stairs.

### **Standard 7 Performance Evaluation included below (Optional)**

## **Standard 8**

Students will be able to understand and demonstrate installation of windows, exterior, and interior doors.

**Objective 1** State the requirements for a proper window installation.

**Objective 2** Install a pre-hung window.

**Objective 3** Install a pre-hung exterior door with weather-stripping.

**Objective 4** Install a lockset.

#### **Standard 8 Performance Evaluation included below (Optional)**

### **Standard 9**

Students will be able to understand and demonstrate drywall installation and finishing.

**Objective 1** Select fasteners for drywall installation.

1. Nails
2. Drywall screws
3. Adhesives

**Objective 2** Identify the hand tools used in drywall finishing and demonstrate the ability to use these tools.

**Objective 3** Identify the materials used in drywall finishing and state the purpose and use of each type of material, including:

1. Compounds
2. Joint reinforcing tapes
3. Trim materials
4. Textures and coatings

#### **Standard 9 Performance Evaluation included below (Optional)**

### **Standard 10**

Students will be able to understand and demonstrate interior finishing.

**Objective 1** Identify different types of interior doors.

**Objective 2** List and identify specific items included on a typical door schedule.

#### **Standard 10 Performance Evaluation included below (Optional)**

## Standard 11 (Optional)

Students will gain an understanding of the construction industry as a profession and will develop professional skills for the workplace.

**Objective 1** As a participating member of the SkillsUSA student organization completes the SkillsUSA Level 1 Professional Development Program.

1. Complete a self-assessment inventory and identify individual learning styles.
2. Discover self-motivation techniques and establish short-term goals.
3. Determine individual time-management skills.
4. Define future occupations.
5. Define awareness of cultural diversity and equity issues.
6. Recognize the benefits of conducting a community service project.
7. Demonstrate effective communication skills with others.
8. Participate in a shadowing activity.
9. Identify components of an employment portfolio.
10. Demonstrate proficiency in program competencies.
11. Explore what is ethical in the workplace or school.
  - a. State the SkillsUSA motto.
  - b. State the SkillsUSA creed.
  - c. Learn the SkillsUSA colors.
  - d. Describe the official SkillsUSA dress.
  - e. Describe the procedure for becoming a SkillsUSA officer.

**Objective 2** Understand the use of construction and how it relates to career opportunities.

**Objective 3** Display a professional attitude toward the instructor and peers.

### Construction Trades Foundation

Performance assessments may be completed and evaluated at any time during the course. The following performance skills are to be used in connection with the associated standards and exam. To pass the performance standard the student must attain a performance standard average of 8 or higher on the rating scale. Students may be encouraged to repeat the objectives until they average 8 or higher.

**Student's Name:** \_\_\_\_\_

**Class:** \_\_\_\_\_



## Performance standards rating scale

0	Limited skills	2	→	4	Moderate skills	6	→	8	High skills	10
---	----------------	---	---	---	-----------------	---	---	---	-------------	----

### Standard 1 – Basic Safety Skills

**Score:**

- Practice basic safety skills.
  - Describe how to avoid job-site accidents.
  - Explain the relationship between housekeeping and safety.
  - Appreciate the importance of following all safety rules and company safety policies.
  - Explain the importance of reporting all on-the-job injuries, accidents, and near misses.
  - Explain the need for evacuation procedures and the importance of following them.
  - Explain their employer's substance abuse policy and how it relates to their safety.
  - Explain the term Proximity Work.
  - Recognize and explain personal protective equipment uses.
  - Inspect and care for various types of personal protective equipment.
  - Follow safe procedures for lifting heavy objects.
  - Inspect and safely work with various types of ladders and scaffolds.
  - Demonstrate an understanding of the OSHA Hazard Communication Standard.
  - Explain the function of Material Safety Data Sheets.
  - Practice fire prevention in dealing with various flammable materials.
  - Practice safe work procedures around electrical hazards.

### Standard 2 – Basic Math Skills

**Score:**

- Understand and demonstrate basic math skills.
  - Add, subtract, multiply, and divide whole numbers.
  - Use a standard ruler to measure.
  - Add, subtract, multiply, and divide fractions
  - Add, subtract, multiply, and divide decimals, with and without a calculator.
  - Convert decimals to percents and percents to decimals.
  - Convert fractions to decimals and decimals to fractions.

### Standard 3 – Hand Tools

**Score:**

- Recognize and demonstrate hand tools.
  - Recognize basic hand tools used in the construction trade.
  - Safely use these basic hand tools.
  - Have an awareness of basic maintenance procedures on these hand tools.

### Standard 4 – Power Tools

**Score:**

- Recognize and demonstrate power tools.
  - Identify commonly used power tools of the construction trade.
  - Recognize safe use of power tools.
  - Explain the procedures to properly maintain these power tools.

### Standard 5 – Blueprints

**Score:**

- Identify and demonstrate how to read blueprints.
  - Identify and recognize basic blueprint terms and symbols.
  - Relate information on prints to real parts and locations.

## Standard 6 – Wood Building

**Score:**

- Understand and demonstrate the use of wood building materials, fasteners, adhesives.
  - Identify various types of imperfections that are found in lumber.
  - Identify the uses of pressure-treated lumber.
  - Identify the safety precautions associated with pressure-treated lumber.
  - Describe the proper method of caring for lumber and wood building materials at the job site.
  - State the uses of various types of engineered lumber.
  - List the basic nails and staple types and their uses.
  - Describe the common types of adhesives used in construction work and explain their uses.

## Standard 7 – Flooring, Wall, Ceiling & Roofing Systems

**Score:**

- Understand and demonstrate framing of flooring systems, walls and ceilings, and roofing systems.
  - Identify floor and sill framing and support members.
  - List and recognize different types of floor joists.
  - Identify the components of a wall.
  - Layout, assemble, erect, and brace exterior wall for a frame building.
  - Understand the use and installation of roofing members.
  - Understand the members and installation of stairs.

## Standard 8 – Windows, Exterior & Interiors Doors

**Score:**

- Understand and demonstrate installation of windows, exterior and interior doors.
  - State the requirements for a proper window installation.
  - Install a pre-hung window.
  - Install a pre-hung exterior door with weather-stripping.
  - Install a lockset.

## Standard 9 – Drywall Installation & Finishing

**Score:**

- Understand and demonstrate drywall installation and finishing.
  - Select fasteners for drywall installation.
  - Identify the hand tools used in drywall finishing and demonstrate the ability to use these tools.
  - Identify materials used in drywall finishing and state the purpose and use of each type of material.

## Standard 10 – Interior Finishing

**Score:**

- Understand and demonstrate interior finishing.
  - Identify different types of interior doors.
  - List and identify specific items included on a typical door schedule.

**Performance standard average score:**

**Evaluator Name:** \_\_\_\_\_

**Evaluator Title:** \_\_\_\_\_

**Evaluator Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_