

Name

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Chapter 1 Introduction to Welding

1. During what ancient time period did mankind begin to join metals?

- a. Bronze and Iron Age
- b. The Industrial Revolution
- c. During World War I
- d. During the American Revolution

ANSWER:

a

POINTS:

1

REFERENCES:

Page 3, Introduction

QUESTION TYPE:

Multiple Choice

HAS VARIABLES:

False

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2. What was the sand used for in the direct casting process of metal forming?

- a. It was used to form the desired shape of the part being cast.
- b. It was used as an insulation to keep the metal from overheating.
- c. It supported the base plate.
- d. It was melted into glass to form a mold for the hot metal to be cast.

ANSWER:

a

POINTS:

1

REFERENCES:

Page 3-4, Introduction

QUESTION TYPE:

Multiple Choice

HAS VARIABLES:

False

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3. The term coalescence refers to _____.

- a. gas welding of pipe
- b. the type of welding performed in space
- c. the growing together of the grain structure
- d. the newest type of welding processes

ANSWER:

c

POINTS:

1

REFERENCES:

Page 5, Welding Defined

QUESTION TYPE:

Multiple Choice

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4. What process that was used to join pieces of iron together was introduced during the Industrial Revolution (1750-1850)?

- a. Forge welding or hammer welding

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- b. Resistance welding
- c. Fusion welding
- d. Oxyacetylene welding

ANSWER: a
POINTS: 1
REFERENCES: Page 3-4, Introduction
QUESTION TYPE: Multiple Choice
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5. ____ is a type of welding.
- a. Flux metal arc welding
 - b. Flux tungsten arc welding
 - c. Gas tungsten arc welding
 - d. Plastic core arc welding

ANSWER: c
POINTS: 1
REFERENCES: Page 7, Welding and Cutting Processes
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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6. ____ is the most common type of fuel gas used for oxyfuel welding.
- a. MAPP
 - b. Acetylene
 - c. Propane
 - d. Oxygen

ANSWER: b
POINTS: 1
REFERENCES: Page 7, Oxyacetylene Welding, Brazing, and Cutting
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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7. Oxyacetylene welding is also referred to as ____.
- a. gas welding or torch welding
 - b. gas metal arc welding, or just gas welding
 - c. gas flux cored arc welding
 - d. shielded metal arc welding or torch arc welding

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ANSWER: a
POINTS: 1
REFERENCES: Page 7, Oxyacetylene Welding, Brazing, and Cutting
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8. An advantage of ____ welding is that a variety of metal types and metal thicknesses can be joined with one machine.
- a. oxyacetylene
 - b. shielded metal arc
 - c. gas metal arc
 - d. flux cored arc

ANSWER: b
POINTS: 1
REFERENCES: Page 8, Shielded Metal Arc Welding (SMAW)
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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9. Even though ____ welding is slower and requires a higher skill level as compared to other manual welding processes, it is still in demand because it can be used to make extremely high-quality welds in applications where weld integrity is critical.

- a. OAW
- b. SMAW
- c. GMAW
- d. GTAW

ANSWER: d
POINTS: 1
REFERENCES: Page 9, Gas Tungsten Arc Welding (GTAW)
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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10. ____ welding can be used to weld metal ranging in thickness from thin-gauge sheet metal to heavy plate by making only a few changes in the welding setup.
- a. Oxyacetylene
 - b. Shielded metal arc
 - c. Gas metal arc
 - d. Flux cored arc

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ANSWER: c
POINTS: 1
REFERENCES: Page 9-10, Gas Metal Arc Welding (GMAW)
QUESTION TYPE: Multiple Choice
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11. ____ welding is extremely fast and economical because it can produce long welds rapidly that require very little postweld cleanup.

- a. Oxyacetylene
- b. SMAW
- c. GMAW
- d. GTAW

ANSWER: c
POINTS: 1
REFERENCES: Pages 9-10, Gas Metal Arc Welding (GMAW)
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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12. GMAW and ____ welding are the first choice for many welding fabricators because these processes are cost effective, produce high- quality welds, and are flexible and versatile.

- a. FCAW
- b. OAW
- c. SMAW
- d. GTAW

ANSWER: a
POINTS: 1
REFERENCES: Page 10, Flux Cored Arc Welding (FCAW)
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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13. ____ cutting uses a stiff, highly ionized, extremely hot column of gas to almost instantly vaporize the metal being cut.

- a. Laser beam
- b. Air carbon arc
- c. Oxyfuel gas
- d. Plasma arc

ANSWER: d

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POINTS: 1
REFERENCES: Page 10, Plasma Arc Cutting
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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14. In selecting the joining process, one consideration relates to the ____, such as whether the weldment is only needed to test an idea, or will be a permanent structure.

- a. quality requirements
- b. appearance of the finished product
- c. materials to be used
- d. size of the parts to be joined

ANSWER: b
POINTS: 1
REFERENCES: Page 11, Selection of the Joining Process
QUESTION TYPE: Multiple Choice
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15. In selecting the joining process, one consideration relates to the ____, such as whether the weld will be used on a piece of furniture, or to repair a piece of equipment, or to join a pipeline.

- a. quality requirements
- b. appearance of the finished product
- c. materials to be used
- d. size of the parts to be joined

ANSWER: a
POINTS: 1
REFERENCES: Page 11, Selection of the Joining Process
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16. Which of the methods of applying weld metal only requires the welder to manipulate the welding gun?

- a. Manual welding
- b. Semiautomatic Welding
- c. Automatic welding
- d. Automated welding

ANSWER: b
POINTS: 1

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REFERENCES: Page 11, Selection of the Joining Process
QUESTION TYPE: Multiple Choice
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17. In selecting the joining process, one consideration relates to the _____, such as whether the parts are made out of a standard metal or an exotic alloy.

- a. quality requirements
- b. appearance of the finished product
- c. materials to be joined
- d. size of the parts to be joined

ANSWER: c
POINTS: 1
REFERENCES: Page 11, Selection of the Joining Process
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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18. Tack welders _____.

- a. clean slag from the welds, and help position weldments
- b. operate machines or automatic equipment used to make welds
- c. often help the welder by making small welds to hold parts in place
- d. design, specify, and oversee the construction of complex weldments

ANSWER: c
POINTS: 1
REFERENCES: Page 12, Occupational Opportunities in Welding
QUESTION TYPE: Multiple Choice
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19. Welders' helpers _____.

- a. clean slag from the welds, and help position weldments
- b. operate machines or automatic equipment used to make welds
- c. often help the welder by making small welds to hold parts in place
- d. design, specify, and oversee the construction of complex weldments

ANSWER: a
POINTS: 1
REFERENCES: Page 12, Occupational Opportunities in Welding
QUESTION TYPE: Multiple Choice

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HAS VARIABLES: False
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20. Welding operators ____.
- a. clean slag from the welds, and help position weldments
 - b. operate machines or automatic equipment used to make welds
 - c. often help the welder by making small welds to hold parts in place
 - d. demonstrate good management skills by planning jobs and assigning workers

ANSWER: b
POINTS: 1
REFERENCES: Page 12, Occupational Opportunities in Welding
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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21. Welding shop supervisors ____.
- a. have a high degree of skill and knowledge of small-business management
 - b. operate machines or automatic equipment used to make welds
 - c. position all the parts in their proper places and make ready for the tack welders
 - d. demonstrate good management skills by planning jobs and assigning workers

ANSWER: d
POINTS: 1
REFERENCES: Page 12, Occupational Opportunities in Welding
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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22. Welding shop owners ____.
- a. have a high degree of skill and knowledge of small business management
 - b. operate machines or automatic equipment used to make welds
 - c. often help the welder by making small welds to hold parts in place
 - d. demonstrate good management skills by planning jobs and assigning workers

ANSWER: a
POINTS: 1
REFERENCES: Pages 12-13, Occupational Opportunities in Welding
QUESTION TYPE: Multiple Choice
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23. Welder assemblers ____.

- a. have a high degree of skill and knowledge of small business management
- b. operate machines or automatic equipment used to make welds
- c. position all the parts in their proper places and make ready for the tack welders
- d. demonstrate good management skills by planning jobs and assigning workers

ANSWER: c
POINTS: 1
REFERENCES: Page 12, Occupational Opportunities in Welding
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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24. A ____ must be correctly applied so that it is strong enough to hold the assembly and still not interfere with the finished welding.

- a. forged weld
- b. stick weld
- c. tack weld
- d. rod weld

ANSWER: c
POINTS: 1
REFERENCES: Page 12, Occupational Opportunities in Welding
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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25. ____ must be able to interpret blueprints and welding procedures.

- a. Tack welders
- b. Weld shop owners
- c. Welder's helpers
- d. Welder assemblers

ANSWER: d
POINTS: 1
REFERENCES: Page 12, Occupational Opportunities in Welding
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26. Welding engineers ____

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- a. clean slag from the welds, and help position weldments.
- b. position all the parts in their proper places and make ready for the tack welders.
- c. often help the welder by making small welds to hold parts in place.
- d. design, specify, and oversee the construction of complex weldments.

ANSWER: d
POINTS: 1
REFERENCES: Pages 12-13, Occupational Opportunities in Welding
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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27. A ____ is required to know all of the welding process and metallurgy as well as have good math, reading, communication, and design skills.

- a. welding engineer
- b. welding inspector
- c. welder's helper
- d. welder operator

ANSWER: a
POINTS: 1
REFERENCES: Pages 12-13, Occupational Opportunities in Welding
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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28. In many industries, ____ must be able to pass a performance test to specific code or standard.

- a. the welding engineer, the welder, and the welding operator
- b. the welding engineer, the welding inspector, and the welding shop owner
- c. the welder, the welding operator, and the tack welder
- d. the welding operator, the tack welder, and the welder's helper

ANSWER: c
POINTS: 1
REFERENCES: Page 12, Occupational Opportunities in Welding
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29. A ____ may oversee the actual work for the engineer by providing the engineer with progress reports as well as chemical, physical, and mechanical test results.

- a. weld operator

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- b. foreman
- c. tack welder
- d. technician

ANSWER: d
POINTS: 1
REFERENCES: Pages 12-13, Occupational Opportunities in Welding
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30. In addition to welding skills an entry-level welder must possess what workplace skills?
- a. Teamwork, leadership, and integrity
 - b. Honesty and organizational skills
 - c. Time management and knowledge of the Equal Employment Opportunity law
 - d. All of the above

ANSWER: d
POINTS: 1
REFERENCES: Page 14, Job-Related Skills
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 12/29/2015 9:15 AM
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31. A(n) _____ is defined as “a localized coalescence of metals or nonmetals produced either by heating the materials to the required welding temperatures, with or without the application of pressure, or by the application of pressure alone, and with or without the use of filler materials.

ANSWER: weld
POINTS: 1
REFERENCES: Page 5, Welding Defined
QUESTION TYPE: Completion
HAS VARIABLES: False
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32. _____ cutting uses the high-temperature flame to heat the surface of a piece of steel to a point where a forceful stream of oxygen flowing out a center hole in the tip causes the hot steel to burn away, leaving a gap or cut.

ANSWER: Oxyfuel gas
POINTS: 1
REFERENCES: Page 10, Oxyfuel Gas Cutting

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QUESTION TYPE: Completion
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 12/29/2015 9:16 AM
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33. In a(n) _____ process, the welder is required to manipulate the entire process.

ANSWER: manual
POINTS: 1
REFERENCES: Page 11, Selection of the Joining Process
QUESTION TYPE: Completion
HAS VARIABLES: False
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34. In a(n) _____ process, filler metal is added automatically, and all other manipulation is done manually by the welder.

ANSWER: semiautomatic
POINTS: 1
REFERENCES: Page 11, Selection of the Joining Process
QUESTION TYPE: Completion
HAS VARIABLES: False
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35. In a(n) _____ process, operations are done mechanically under the observation of a welding operator.

ANSWER: machine
POINTS: 1
REFERENCES: Page 11, Selection of the Joining Process
QUESTION TYPE: Completion
HAS VARIABLES: False
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36. In a(n) _____ process, operations are performed by a machine that has been programmed to do an entire operation without interaction with the operator.

ANSWER: automatic
POINTS: 1
REFERENCES: Page 12, Selection of the Joining Process

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QUESTION TYPE: Completion
HAS VARIABLES: False
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37. In a(n) _____ process operations are performed by a robot or machine that is programmed flexibly to do a variety of processes.

ANSWER: automated
POINTS: 1
REFERENCES: Page 12, Selection of the Joining Process
QUESTION TYPE: Completion
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 12/29/2015 9:18 AM
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38. Welder _____ position all parts in their proper positions and make ready for the tack welders.

ANSWER: fitters
assemblers
POINTS: 1
REFERENCES: Page 12, Occupational Opportunities in Welding
QUESTION TYPE: Completion
HAS VARIABLES: False
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39. Welder _____ are employed in some welding shops to clean slag from the welds and help move and position weldments for the welder.

ANSWER: helpers
POINTS: 1
REFERENCES: Page 12, Occupational Opportunities in Welding
QUESTION TYPE: Completion
HAS VARIABLES: False
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40. Welding _____ operate machines or automatic equipment used to make welds.

ANSWER: operators
POINTS: 1

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REFERENCES: Page 12, Occupational Opportunities in Welding
QUESTION TYPE: Completion
HAS VARIABLES: False
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41. When was forge welding introduced, and what does it involve?

ANSWER: The Industrial Revolution, from 1750 to 1850, introduced a method of joining pieces of iron together known as forge welding or hammer welding. This process involved the use of a forge to heat the metal to a soft, plastic temperature. The ends of the iron were then placed together and hammered until fusion took place.

POINTS: 1

REFERENCES: Page 3-4, Introduction
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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42. Define the term *weld*.

ANSWER: A **weld** is defined by the American Welding Society (AWS) as “a localized **coalescence** (the fusion or growing together of the grain structure of the materials being welded) of metals or nonmetals produced either by heating the materials to the required welding temperatures, with or without the application of pressure, or by the application of pressure alone, and with or without the use of filler materials.

POINTS: 1

REFERENCES: Page 5, Welding Defined
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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43. Define the term *welding*.

ANSWER: **Welding** is defined as “a joining process that produces coalescence of materials by heating them to the welding temperature, with or without the application of pressure or by the application of pressure alone, and with or without the use of filler metal.”

POINTS: 1

REFERENCES: Page 5, Welding Defined
QUESTION TYPE: Subjective Short Answer

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HAS VARIABLES: False

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44. Describe the shielded metal arc welding (SMAW) process.

ANSWER: Shielded metal arc welding (SMAW) uses a 14-in. (355.6-mm) -long consumable stick electrode that conducts the welding current from the electrode holder to the work, and as the arc melts the end of the electrode away, it becomes part of the weld metal. The welding arc vaporizes the solid flux that covers the electrode so that it forms an expanding gaseous cloud to protect the molten weld metal. In addition to fluxes protecting molten weld metal, they also perform a number of beneficial functions for the weld, depending on the type of electrode being used.

POINTS: 1

REFERENCES: Page 7, Oxyacetylene Welding, Brazing, and Cutting

QUESTION TYPE: Subjective Short Answer

HAS VARIABLES: False

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45. List the 5 factors that must be considered when choosing a joining process.

ANSWER: Availability of equipment—Repetitiveness of the operation—Quality requirements—Location of work—Materials to be joined—Appearance of the finished product—Size of the parts to be joined—Time available for work—Skill or experience of workers—Cost of materials—Code or specification requirements.

POINTS: 1

REFERENCES: Page 11, Selection of the Joining Process

QUESTION TYPE: Subjective Short Answer

HAS VARIABLES: False

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46. Explain the difference between manual welding and semiautomatic welding.

ANSWER: With **manual welding** the welder is required to manipulate the entire process but with **semiautomatic welding** the filler metal is added automatically, and all other manipulation is done manually by the welder.

POINTS: 1

REFERENCES: Page 11, Selection of the Joining Process

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HAS VARIABLES: False

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47. What is the process to become a weld inspector?

ANSWER: Welding inspectors are often required to hold a special certification such as the one supervised by the American Welding Society known as Certified Welding Inspector (CWI). To become a CWI, candidates must pass a test covering the welding process, blueprint reading, weld symbols, metallurgy, codes and standards, and inspection techniques. Vision screening is also required on a regular basis once the technical skills have been demonstrated.

POINTS: 1

REFERENCES: Page 12, Occupational Opportunities in Welding

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HAS VARIABLES: False

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48. What is a welding engineer?

ANSWER: Welding engineers design, specify, and oversee the construction of complex weldments. The welding engineer may work with other engineers in areas such as mechanics, electronics, chemicals, or civil engineering in the process of bringing a new building, ship, aircraft, or product into existence. The welding engineer is required to know all of the welding process and metallurgy as well as have good math, reading, communication, and design skills. This person usually has an advanced college degree and possesses a professional certification.

POINTS: 1

REFERENCES: Page 12-13, Occupational Opportunities in Welding

QUESTION TYPE: Subjective Short Answer

HAS VARIABLES: False

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49. What qualities and skills are useful in preparation for a career in welding?

ANSWER: A young person planning a career as a welder needs good eyesight, manual dexterity, hand and eye coordination, and an understanding of welding technology. For entry into manual welding jobs, employers prefer to hire young people who have high school or vocational training in welding processes. Courses in drafting, blueprint reading, mathematics, and physics are also valuable.

POINTS: 1

REFERENCES: Page 14, Job-Related Skills

QUESTION TYPE: Subjective Short Answer

HAS VARIABLES: False

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50. List 5 areas of production where there is a need for welders?

ANSWER: Sheet metal products, pressure vessels, boilers, railroads, storage tanks, air-conditioning equipment, shipyards, pipelines, and petrochemical plants.

POINTS: 1

REFERENCES: Page 14, Job Prospects

QUESTION TYPE: Subjective Short Answer

HAS VARIABLES: False

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