# UNIT 1. WHAT IS WELDING

## 1.1. Vocabulary

***Ex. 1.*** *Match the words with their definitions.*

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|---|---|
| 1. virtually | a. to become bent or twisted out of shape. |
| 2. to involve | b. the total value of all goods and services produced by a country in a year, including income earned abroad. |
| 3. variable | c. to assign a position based on quality, importance, or performance. |
| 4. to rank | d. a flaw or defect in something that makes it less than perfect. |
| 5. joining | e. a small fiery particle thrown off from a fire, flame, or ignited substance. |
| 6. gross national product | f. almost entirely; nearly. |
| 7. vehicle | g. something that is subject to change or variation. |
| 8. to make a weld | h. a large structure used for extracting oil from beneath the earth's surface. |
| 9. spark | i. a means of transportation, such as a car, truck, or bicycle. |
| 10. oil drilling rig | j. to include as a necessary part or result. |
| 11. to warp | k. to join pieces of metal together by heating them until they melt and then pressing them together. |
| 12. imperfection | l. the act of connecting or combining two or more things together. |

***Ex. 2.*** *Complete the sentences with the given words:*

**gross national product, vehicle, Virtually, imperfections, involve, oil drilling rig, variable, spark, To make a weld, precise, rank, warp**

_____(1), you need to join two metal pieces together with heat.

The _____(2) of a country is an important economic indicator.

In the welding industry, certain companies _____(3) higher than others in terms of quality.

A successful welding project will _____(4) precise measurements and skilled handling.

The temperature in welding can be a _____(5) that affects the outcome.

The welder had to make a _____(6) weld on the metal without any imperfections.

The _____(7) created during welding indicates the process of joining materials together.

_____(8) all industries require welding services for various projects.

An _____(9) may need welding repairs to maintain its structural integrity.

The _____(10) manufacturing process often involves robotic welding techniques.

Excessive heat can cause metal to _____(11) during the welding process.

Welding requires attention to detail to avoid _____(12) in the final product.

**1.2. Grammar**

***Ex. 1.*** *Put the words in the correct order.*

1. a / practice / weld / make / and / to / skill / to / master / takes.

2. metal / as / a / weld / he / flew / spark / together / began / the / to / pieces /

3. the / weld / the / can / in affect / strength / imperfections / overall /

4. pieces / join / two / using / to / welding / metal / involves / together / heat /

5. the / done / cause / not / welding / warp / correctly / process / to / can / metal / if

## 1.3. Reading

***Ex. 1.*** *Read the text.*

### What is Welding?

Welding is a fabrication or sculptural process that joins materials, usually metals or thermoplastics, by using high heat to melt the parts together and allowing them to cool, causing fusion. Welding is distinct from lower temperature metal-joining techniques such as brazing and soldering, which do not melt the base metal.

In addition to melting the base metal, a filler material is typically added to the joint to form a pool of molten material (the weld pool) that cools to form a joint that, based on weld configuration (butt, full penetration, fillet, etc.), can be stronger than the base material (parent metal). Pressure may also be used in conjunction with heat, or by itself, to produce a weld.

The most common welding processes are MIG, TIG, and stick welding. Each process has its own benefits and limitations and is ideal for certain applications.

MIG Welding: MIG (Metal Inert Gas) welding is an arc welding process that uses a continuous solid wire electrode heated and fed into the weld pool from a welding gun. The two base materials are melted together, creating a strong, durable bond. MIG welding is versatile and can be used on a wide range of metals and alloys. It is commonly used in automotive and construction industries.

TIG Welding: TIG (Tungsten Inert Gas) welding is another arc welding process that uses a non-consumable tungsten electrode to produce the weld. A separate filler material may be used if necessary. TIG welding produces high-quality, precise welds and is often used in aerospace applications and for welding thin materials.

Stick Welding: Stick welding, also known as Shielded Metal Arc Welding (SMAW), is a manual welding process that uses a consumable electrode coated in flux. The flux creates a shield around the weld, protecting it from atmospheric contamination. Stick welding is versatile and can be used on a wide range of materials, making it a popular choice for outdoor and remote welding applications.

Welding is a crucial process in many industries, including construction, manufacturing, and automotive. Skilled welders are in high demand and play a vital role in creating and repairing various products and structures. Welding requires precision, attention to detail, and a thorough understanding of the different welding processes and techniques.

***Ex. 2.*** *Choose the correct answer.*

1. What is the primary difference between welding and lower temperature metal-joining techniques like brazing and soldering?

A. Welding uses high heat to melt the base metal, while brazing and soldering do not melt the base metal.

B. Welding requires the addition of a filler material, while brazing and soldering do not.

C. Welding produces a stronger joint than brazing and soldering.

D. Welding is a more complex process than brazing and soldering.

2. Which of the following is a key benefit of the TIG welding process?

A. TIG welding is a versatile process that can be used on a wide range of metals and alloys.

B. TIG welding is a manual process, making it suitable for outdoor and remote applications.

C. TIG welding produces high-quality, precise welds, often used in aerospace applications.

D. TIG welding is a cost-effective welding method compared to other processes.

3. Which of the following statements accurately describes the MIG welding process?

A. MIG welding uses a non-consumable tungsten electrode to produce the weld.

B. MIG welding is a manual welding process that requires a skilled operator.

C. MIG welding is commonly used in the aerospace industry for welding thin materials.

D. MIG welding uses a continuous solid wire electrode that is heated and fed into the weld pool.

4. What is the primary purpose of the flux coating on the electrode used in stick welding?

A. The flux coating helps to create a stronger weld joint.

B. The flux coating protects the weld from atmospheric contamination.

C. The flux coating allows the stick welding process to be used on a wider range of materials.

D. The flux coating makes the stick welding process more cost-effective.

5. Which industries are mentioned in the passage as heavily relying on welding processes?

A. Aerospace and automotive industries

B. Construction and manufacturing industries

C. Both the aerospace and construction industries

D. All industries that produce or repair various products and structures

6. Which of the following statements best describes the level of skill and knowledge required for welding?

A. Welding is a straightforward process that does not require specialized skills or knowledge.

B. Welding requires basic technical skills, but does not necessitate a thorough understanding of welding processes and techniques.

C. Welding demands a high level of precision, attention to detail, and a comprehensive understanding of the different welding processes.

D. Welding is a relatively easy process, but skilled welders are in high demand due to the complexity of the task.

7. What is the primary reason why welding is considered a crucial process in many industries?

A. Welding is a cost-effective method for joining materials.

B. Welding is a versatile process that can be used on a wide range of materials.

C. Welding is essential for creating and repairing various products and structures.

D. Welding is a highly specialized skill that is in high demand across multiple industries.

**1.4. Communication**

***Ex. 1.*** *Make sentences using the following words:*

1. creates/strong/bonds

2. Safety/gear/essential
3. machine/generates/heat
4. Proper/training/necessary
5. safety/procedures/avoid
6. sparks/cause/fires
7. joints/need/inspected
8. techniques/vary/depending
9. work/construction/manufacturing
10. rewarding/career/choice

***Ex. 2.*** *Complete the dialogue with the given words.*

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|---|
| When making a weld / Do you have any tips for me / How hard is it? / that would be fun / once you get the hang of it / What else should I know?/ just practicing some / |

Mike: Hey Gus, what are you working on there?

Gus: Oh, (1) _____ basic welding techniques. I'm trying to get a job at the local garage and they require some experience with welding.

Mike: Really? That's cool. (2) _____

Gus: It takes some practice, but (3) _____, it's not too bad. The key is having steady hands and good control over the welder's torch.

Mike: Interesting. (4) _____ if I wanted to try it out sometime?

Gus: Definitely. First, make sure you have all your protective gear on. And practice on scrap metal before moving on to real projects.

Mike: Got it. (5) _____

Gus: (6) _____, keep an even speed and move in a straight line. Also, don't forget to properly clean the metals beforehand for a strong bond.

Mike: Good to know. Thanks, Gus! Maybe one day we can do some welding together.

Gus: Yeah, (7) _____! Just remember to always put safety first.