

# KEEPING STUDENTS WELL INFORMED AT HOME WHILE THEY'RE DISTANCE LEARNING.

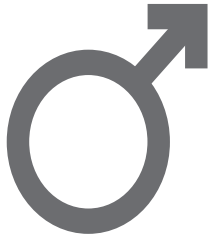


## WORLD OF WONDER

Exploring the realms of history, science, nature and technology

# THE IRON AGE

The alchemical symbol for iron, the metal of weapons, is that of Mars, the Roman god of war.



The Iron Age was a period when people began making tools and weapons with iron. One of three periods that classify prehistoric societies, it follows the Bronze Age and the Stone Age. The knowledge of working with iron did not happen at one time or in one place. The widespread use of iron began between 1500 B.C. and 1000 B.C. and continues to this day.

### Mastering metal

The earliest metals used by man were copper and gold. Nuggets of copper and gold could be found in nature and were soft enough to be hammered and cut with stone.

People began heating metals around 7000 B.C. Using a combination of copper and tin to make bronze marked the beginning of a new era in metallurgy.

Iron from meteorites was used to fashion tools and weapons as early as 4000 B.C. In many early languages, the word for iron translated as "metal from the sky."

Iron has a higher melting point than bronze, so it was not until people figured out how to make a fire hot enough to melt it that the Iron Age began. Once they knew how to work iron, it was adopted quickly over bronze.

Most early iron was wrought iron and not as strong as bronze, but it was less expensive and more abundant than the copper and tin used to make bronze.

The Hittites in Asia Minor (a region of modern Turkey) were the first people known to have large supplies of iron. As early as 1400 B.C., they were making iron by smelting ore. By 1000 B.C., many civilizations had developed iron-making techniques.

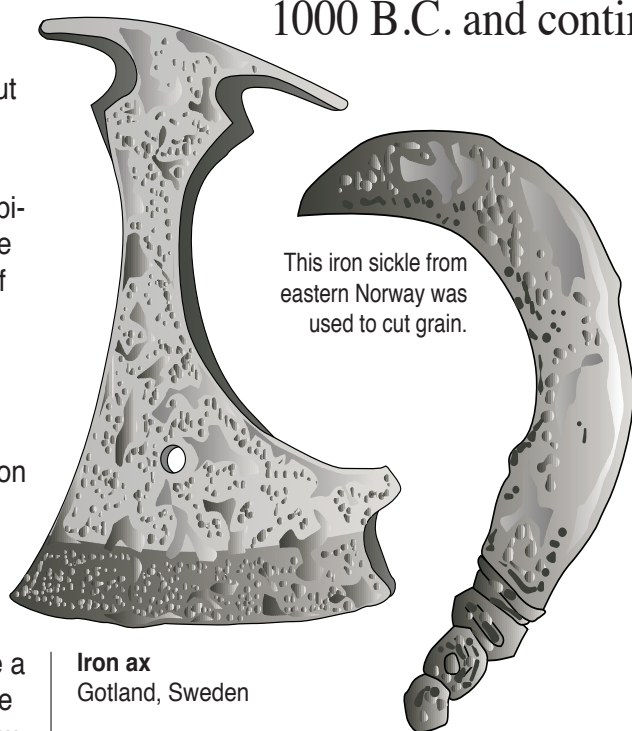
The invention of steel (adding carbon to iron) resulted in even stronger and potentially sharper tools and weapons.

### Early uses

Meteorite iron was more rare than gold and used sparingly, mostly in jewelry. Early ornamental weapons made of iron were reserved for kings, and iron daggers have been found in the tombs of Egyptian pharaohs.

The use of smelted iron marked the rise of many military powers. Civilizations such as the Persians, Scythians, Celts, Etruscans, Greeks and Romans rose to great power using weapons and tools forged of iron. With the iron plow, sickle and ax, rough or forested lands could be farmed. The iron adz and saw led to advances in woodworking and shipbuilding.

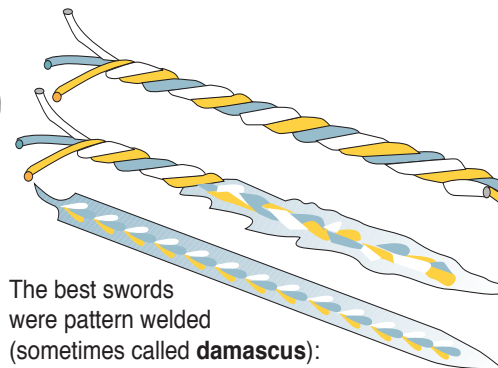
Work with cast iron began in Europe in the Middle Ages.



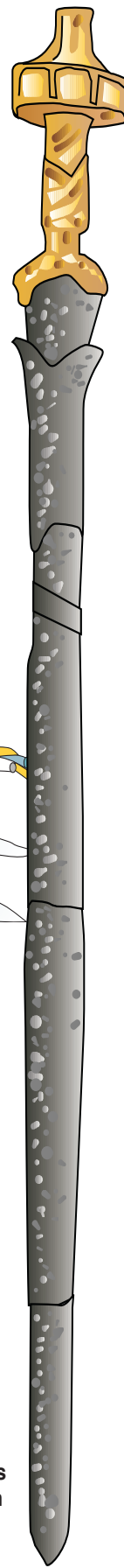
**Iron ax**  
Gotland, Sweden

### Tools of the trade

Metal tools have always played an important role in farming and agriculture. Iron rusts, so artifacts are relatively rare and often in poor condition.



The best swords were pattern welded (sometimes called **damascus**): Rods of iron and steel were twisted and hammered together to produce a very strong weapon.



**Iron sword with gold hilt**  
Hallstatt, Austria

### The basics

Iron is a silvery-white metallic element that is malleable and highly magnetic.

The symbol for iron is **Fe**, from its Latin name, **ferrum**.

Iron was one of the seven elements known to the ancient world. Today, it is the most widely used commercial metal.

### The Celts

The rise of the Celts in Europe is largely connected to their mastery of iron. They were working with steel as early as A.D. 200, and the strength of their swords was legendary. Celtic soldiers wore armor and used weapons made of iron.

### Cool facts

Hammering iron was known as **smithing**.

The Assyrians were the most powerful Iron Age kingdom in the Near East.

The earliest-known iron artifacts are nine small beads dated to 3200 B.C. Found in Egypt, they are made of meteoric iron shaped by careful hammering.

The **Gauls** were a group of people from Western Europe that emerged during the Iron Age. They were found in many countries, including Spain, France, Germany, Belgium and Austria.

### When it happened

The Iron Age began in the 12th century B.C. in the ancient Near East, ancient Greece and ancient India. In most of Europe, the Iron Age started much later, in the 8th and 6th centuries B.C. It reached Africa by the 6th century B.C.

The **Hittites** were among the first to smelt iron and to make steel.

Examples of iron work can be found in **ancient Egypt** as early as 3200 B.C.

Very little metal was used in **sub-Saharan Africa** before 500 B.C.

**India** was probably making quality steel as early as 300 B.C.

Iron was used in **east Africa** by 200 B.C. and reached **southern Africa** by A.D. 200.

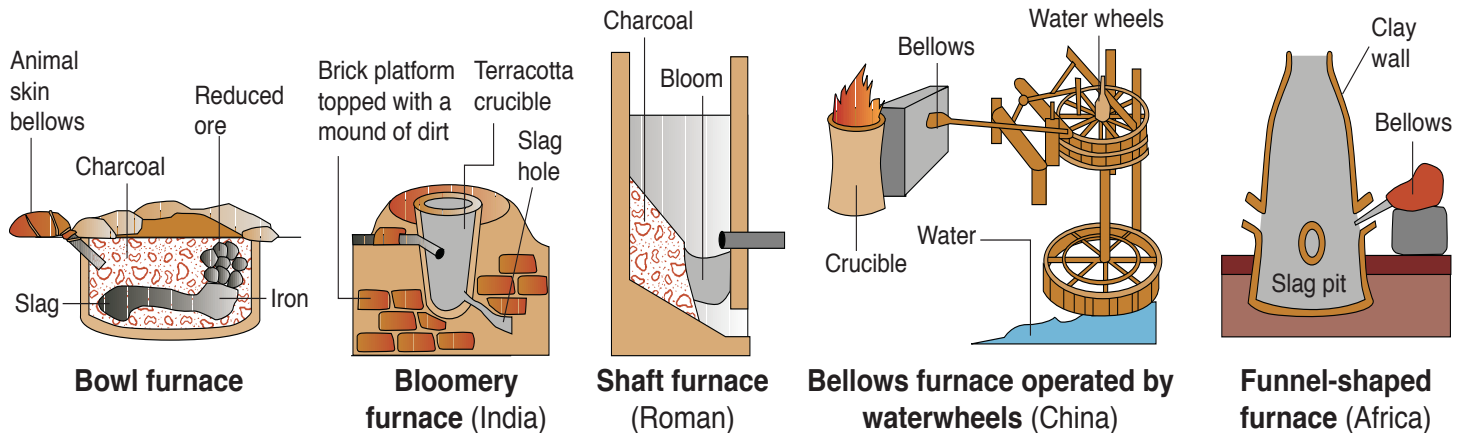
Iron was first smelted in **China** around 600 B.C. By 200 B.C., the Chinese were using smelting techniques that would not be found in Europe until the 1700s.

Except for a little work in gold, there was no metalworking in **the Americas** until after European contact.

There was no metal working in **Australia** until after European contact.

### Examples of smelting furnaces

Early iron-smelting furnaces were little more than round, shallow hearths. Iron ore and charcoal were heated together until the ore released its oxygen and changed into metal. The furnace had to reach and maintain a temperature of about 2,192 degrees Fahrenheit (1,200 C). The iron was reheated, worked and reworked several times to remove impurities. Iron makers discovered that blowing air into the furnace created a hotter fire and a better-quality metal. Heat reduces iron ore to a porous mass, or "bloom." The liquid slag settles to the bottom.



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