Name:

Date:

TECNOLOGY: FROM THE STONE AGE TO THE IRON AGE

Today, technology changes so quickly that we expect new tools to make life easier. This was not always the case. We can define technology as the skills and tools people use to solve problems and build things, and we can trace the very first technological advancement to a period before we were fully human.

Archaeologists have found evidence of Homo habilis using stone tools as long as 2.4 million years ago. In fact, Homo habilis is a Latin term that means "skilled man." Homo habilis was not like us; their brains were only about half the size of ours, they were much smaller, and they had other physical differences. By the time the first anatomically modern humans appeared in the fossil record about 300,000 years ago in various parts of the world, stone tools were common.

Early humans used rocks to cut meat, crack bones, scrape animal hides, and shape wood into spears or shelters. These tools may seem basic, but they made survival easier and more reliable. Because of this, historians refer to this long period of early tool use as the Stone Age.

The most significant stone tool was the hand ax. In its simplest form, a hand ax is a stone shaped to fit the palm of the hand, but sharpened on both sides to create a sturdy, tapering edge. While the hand ax appears to be simple, it was a significant technological breakthrough. A hand ax has to be manufactured. The maker had to look at a raw rock and "see" the symmetrical, teardrop shape inside it before they started striking. This required a higher level of brain power and planning.

Not all tools from this period were made of stone. Early humans almost certainly used materials such as wood and bone, but these organic materials rarely survive for thousands of years. As a result, most of the surviving evidence we have from this time is made of stone.

About 7,000 years ago, people discovered that metal could be extracted from ores—rocks that contain metal. This discovery likely began by accident, as people gathered around fires and noticed that certain rocks changed when heated, releasing metal. Unlike stone, which can only be flaked or ground, metal can be melted, molded, and hardened into durable shapes. Over time, people learned to control this process, called smelting, by heating ore to release liquid metal that could be cast into superior tools and weapons.

The use of metal was a major advance. Metal tools cut more effectively and lasted longer, making it easier to farm, build, and shape the world around them. Metal weapons were stronger, giving some societies an advantage in conflict. These changes helped societies grow larger and more organized. The shift from stone to metal did not happen everywhere at the same time, but wherever it occurred, it transformed daily life.

Copper and tin were the first metals widely used by ancient peoples, though both were relatively soft. Copper could be shaped into simple tools and ornaments, but it bent easily. Over time, metalworkers discovered that adding tin to molten copper created an alloy called bronze. Copper was melted by heating ore in very hot fires. The heat was increased by blowing air into the fire through tubes or by using simple hand-operated devices called bellows. The glowing liquid metal was poured into molds to cool and harden. Bronze is harder and more durable than either metal alone. It can be shaped and sharpened into tools and weapons that hold their edge. Once people learned to make bronze, it marked a major advance beyond the Stone Age.

For centuries, bronze was the best material for tools and weapons. Then a new metal began to appear. It was darker, heavier, and far more difficult to work. Early metalworkers found that this metal did not melt easily in ordinary fires. It required hotter furnaces and more careful work to remove impurities. Over time, they learned to heat and hammer it into shape.

This new metal was iron. It was stronger than bronze and far more abundant, making it possible to produce tools and weapons on a much larger scale. Iron plows could cut deeper into the soil, allowing farmers to clear tougher land and grow more crops. Iron axes could fell trees more quickly, opening new land for settlement. Iron swords and spearheads were stronger and less likely to bend or break in battle. Once cultures learned how to make iron, they gained a significant advantage over their neighbors.

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Fill in the Blanks

Technology includes the s__i__ls and t__o__s people use to solve problems. Early humans used s__o__e tools to cut meat, scrape hides, and shape wood, making survival more reliable during the Stone Age. Later, people learned to extract m__t__l from o___. One of the first metals used was c__p__er, but it was soft. By adding t___ to copper, people created b__o__ze, an a__l__y that was s__r__n__er and more d__r__b__e. Eventually, i_____ replaced bronze because it was s__r__n__er and more a__u__d__nt, allowing people to make better t_____ and w__a__o__s.

Answer in Complete Sentences

1. How did Home habilis differ from modern humans?

*2. Why was the hand ax a significant technological improvement?.

3. Why were metal tools and weapons generally superior to stone tools and weapons?

4. Why is iron generally considered superior to bronze.

*This is a higher order learning question. You must answer the question to the best of your ability, but any reasonable answer will be graded as correct.