

**Task 1. Watch the video and fill in the gaps with the most appropriate words from the list.**

Engineering has existed since ancient times with inventions like the \_\_\_\_\_(1)

The term "engineering" comes from the word "engineer," which originally referred to a constructor of \_\_\_\_\_(2).

Engineering was divided into \_\_\_\_\_(3) and \_\_\_\_\_(4). The word "engineer" has its root in the Latin word "ingenium," meaning innate quality, particularly of \_\_\_\_\_(5)

Today, an engineer is described as someone who applies scientific and technical knowledge to design and build \_\_\_\_\_(6). Engineering is a broad discipline with sub-disciplines like \_\_\_\_\_(7).

New branches of engineering, like \_\_\_\_\_(8) and \_\_\_\_\_(9), are being developed due to technological advancements. Engineers apply \_\_\_\_\_(10) to find solutions and evaluate options to identify the best route to follow

**Task 2. Read the text and decide if the statements are TRUE or FALSE.**

Engineering has roots that reach back to ancient times. Early civilizations, like those in Egypt, Mesopotamia, China, and India, made incredible advancements. The Egyptians built the pyramids, which are marvels of design and precision. Each block of stone, some weighing tons, was transported and stacked with remarkable accuracy. In Mesopotamia, the Sumerians created ziggurats, tiered structures that showcased their architectural skills. They also developed one of the first known systems of writing, cuneiform, which helped manage construction projects. China's engineers built the Great Wall, stretching over thousands of miles to protect against invasions. They also developed advanced irrigation systems that improved agriculture. In India, engineers constructed cities with well-planned grid layouts and complex drainage systems, as seen in the ancient city of Mohenjo-Daro. These civilizations laid the foundation for modern engineering. Their achievements show how creativity and problem-solving have always been at the heart of engineering.

1. \_\_\_\_\_ The Egyptians built the pyramids, which are known for their incredible design and precision.
2. \_\_\_\_\_ The Sumerians in Mesopotamia are credited with developing one of the first known systems of writing, known as hieroglyphics.
3. \_\_\_\_\_ The Great Wall of China was built primarily for protection against invasions.
4. \_\_\_\_\_ Ancient Indian engineers constructed cities with poorly planned layouts and no drainage systems.
5. \_\_\_\_\_ The achievements of early civilizations laid the foundation for modern engineering.
6. \_\_\_\_\_ Advanced irrigation systems developed in China significantly improved agriculture in ancient times.

**Task 3. Read the text and match the engineer ( A-D )with the following statements about them.**

The history of engineering is filled with remarkable individuals who made significant contributions to our world. Four famous engineers from ancient times to the Renaissance period stand out for their achievements. One notable figure is Archimedes of Syracuse, a Greek mathematician, physicist, and engineer. He lived in the 3rd century BCE and is best known for his work in geometry, hydrostatics, and mechanics. Archimedes invented the Archimedean screw, a device for raising water, which is still used in some parts of the world today. His principle of buoyancy explains why objects float or sink in water, which laid the foundation for hydrostatics.

Next, we have Vitruvius, a Roman engineer from the 1st century BCE. He is most famous for his work "De architectura," a treatise on architecture that covers various aspects of engineering, architecture, and city planning. Vitruvius emphasized the importance of durability, utility, and beauty in built structures. His work influenced Renaissance architecture and engineering, illustrating how ancient knowledge carried over into later periods. Another key figure is Alhazen, an Arab polymath who lived around 965 to 1040 CE. Known also as Ibn al-Haytham, he made significant advances in optics, mathematics, and engineering. Alhazen's Book of Optics laid the groundwork for modern optics and introduced the scientific method. His work on light and vision was revolutionary and influenced later scientists like Kepler and Newton.

Finally, Leonardo da Vinci, the quintessential Renaissance man, contributed immensely to engineering. Born in 1452, Da Vinci was not only an artist but also an innovative engineer and inventor. He designed numerous machines and devices, such as flying machines, armored vehicles, and various types of bridges. His notebooks contain detailed sketches and ideas that were ahead of his time. Many of his inventions were never built during his lifetime but have inspired modern engineering. These four engineers, spanning from ancient Greece to the Renaissance, have left a lasting legacy on the field of engineering. Their contributions continue to influence modern technology and the way we understand and apply engineering principles.

**Engineers:**

- A. Archimedes
- B. Vitruvius
- C. Alhazen (Ibn al-Haytham)
- D. Leonardo da Vinci

**Statements:**

1. \_\_\_\_\_ Known for his work on the Archimedean screw and principles of buoyancy.
2. \_\_\_\_\_ Authored "De architectura," which laid the foundation for architectural principles in later periods.
3. \_\_\_\_\_ Made significant advances in optics and introduced the scientific method in his work.
4. \_\_\_\_\_ Designed various machines and inventions, including flying machines and armored vehicles.
5. \_\_\_\_\_ His principles of mechanics contributed to the understanding of levers and pulleys.
6. \_\_\_\_\_ His work influenced Renaissance architecture and emphasized the integration of engineering and art.

**Task 4. Write the words in bolds in the correct form.**

The ancient philosophers and men of science in Persia and Greece understood the \_\_\_\_\_ **IMPORTANT** of heat in the scheme of things as their designation of it as one of four basic elements of the universe, that is, earth, air, fire, and water. The true \_\_\_\_\_ **UTILIZE** of heat as an energy source came with the \_\_\_\_\_ **DEVELOP** of the steam pump and the engine. Steam pressure was used to eject the water up a \_\_\_\_\_ **DELIVER** pipe.

The early mechanical engineers designed and built the first steam cycle engines without reference to any elaborate theory on heat engines. The reversible operation of the engine alone \_\_\_\_\_ **DETERMINATION** its \_\_\_\_\_ **EFFECTIVE** in producing mechanical work. The marriage of scientific theory and engineering made for rapid evolution of this field during the 19th and 20th centuries. Wind power came in the form of post mills, smock and tower mill, whereby Britons pumped and ground. Post mills were the earliest design going back to medieval times.

**Task 5. Fill in the gaps with the most appropriate words.**

|                   |                 |                    |                  |
|-------------------|-----------------|--------------------|------------------|
| <b>Force</b>      | <b>perform</b>  | <b>transferred</b> | <b>generate</b>  |
| <b>mechanical</b> | <b>pressure</b> | <b>converts</b>    | <b>harnessed</b> |
|                   |                 |                    | <b>engines</b>   |

- **Heat:** A form of energy that is 1) \_\_\_\_\_ between systems or bodies due to a temperature difference, which can cause changes in state or 2) \_\_\_\_\_ work.
- **Steam Pump:** A device that uses steam 3) \_\_\_\_\_ to move water from a lower elevation to a higher elevation, often employed in early 4) \_\_\_\_\_ systems for irrigation and drainage.
- **Mechanical Work:** The amount of energy transferred by a 5) \_\_\_\_\_ acting over a distance. In engineering, it refers to the output of energy by machines or 6) \_\_\_\_\_.
- **Efficiency:** A measure of how effectively a system 7) \_\_\_\_\_ input energy into useful output energy.
- **Wind Power:** The energy 8) \_\_\_\_\_ from the movement of air (wind) using turbines or mills to 9) \_\_\_\_\_ electricity or perform mechanical work, often considered a renewable energy source.