Metal processes

Listen and complete the texts about the different processes metals can go through.

https://soundcloud.com/userilianaarino/eli-flash-for-mechanics-tr02

A) Casting is a 6 ,000 year old process. It is the oldest and most well-known technique based on three fundamental steps: moulding, melting and (1).....First the pattern is made to form the **mould.** Then an empty mould is created, and finally the empty cavity is filled with molten metal which is then left to solidify into the shape. Casting materials are usually (2) .....but can also be plastic, resin or various cold materials for example (3).....Casting is usually used for making complex shapes.

B) Drawing is a manufacturing process for producing wires, bars and (4).....by pulling on material through a series of **dies** until it increases in length. It is divided into two types: sheet metal drawing, and wire, (5) .....and **tube** drawing. Drawing is usually
done at room temperature but it can be performed at elevated temperatures to hot work large wires, **rods or hollow** sections in order to reduce forces .

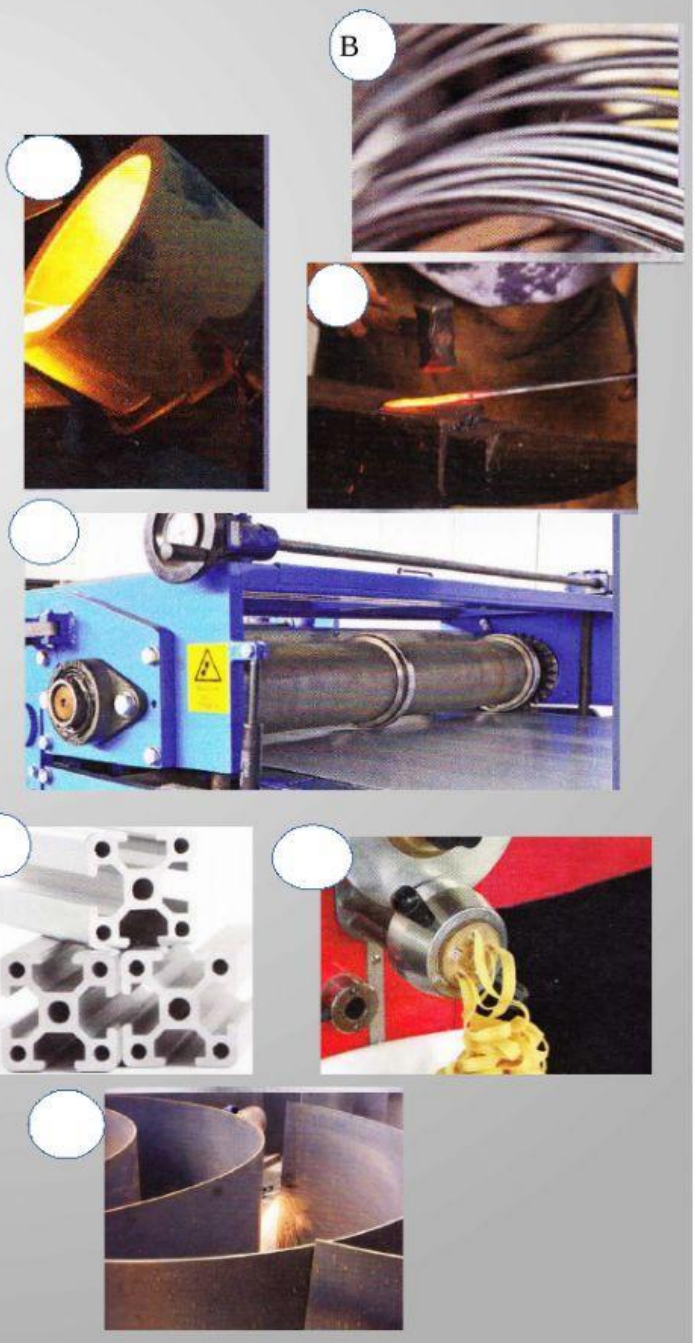
C) Forging is the process by which metal is heated and shaped by a compressive force using a **hammer** or a press. It is used to produce large quantities of identical parts, such as (6).....parts in the automobile industry. Cold forging is done at a low temperature using (7)..... metals and plastic. Hot forging is done at a high temperature and makes metal easier to shape without breaking. In the past, forging was done by a **blacksmith** using a hammer. Nowadays industrial forging is done with (8) .....powered by a machine.

D) Rolling is a metal forming (9)..... in which a material (metal, plastic, paper or glass) is passed through a pair of rollers. According to the (10) .....of material rolled, there is hot rolling or cold rolling.

E) Extrusion is a process used to produce objects with a fixed cross-sectional profile.
A material is pushed or drawn through a die of the desired cross-section . The two main (11) ..... of this process are its ability to create very complex cross-sections and work materials that are brittle. The extrusion process can be done with hot or cold materials. Commonly extruded materials include metals, polymers, (12)..... ,concrete and foodstuffs. Ceramic can also be formed into shapes via extrusion .Terracotta extrusion is used to produce **pipes.** Many modern **bricks** are also manufactured using a brick extrusion process. Extrusion is also used in (13)..... processing. Products such as certain pastas, many breakfast cereals, French fries, dry pet food and ready-to-eat snacks are mostly manufactured by extrusion.

F) Sheet metal forming is simply metal formed into thin and **flat** pieces.The basic forms can be cut and **bent** into a variety of different shapes. Everyday objects arconstructed with this process. There are many different metals that can be made into sheet metal , such as aluminium, (14)..... copper, steel, tin, nickel and titanium . For decorative uses, important sheet metals include
silver, gold, and platinum. Sheet metal forming is used in car bodies, airplane wings and roofs for (15) .....

Write the letter of the metal process on the picture



8 Put the words in the correct order to make complete sentences.

1 taking their forms / fluid substances / into moulds solidify.....
2 drawing / room temperature / is done at.....
3 not essential / heat / is / in the drawing process.....
4 in the past / using / forging / a hammer / was done.....
5 can be / brittle materials / extrusion / done / with.....
6 many / is used / everyday objects / sheet forming / to make.....

9 Work in pairs. Read the texts again and write the correct processes that produce the objects listed below

Product	Process
1 Wires	
2 Pasta	
3 Sheet	
4 Bricks	
5 Tubes	
6 Rods and Bars	
7 Golden leaves	
8 Machine parts	
9 Concrete	

10 Read the texts again and match the questions 1-12 to the anwers A-L.

1 Which steps are included in casting?

2 What is the mould used for?

3 What does drawing use in order to process metals?

4 What types of drawing are there?

5 What kind of process is forging?

6 How was forging done in the past?

7 What does rolling consist of?

8 What materials can be used in rolling?

9 What are the advantages of extrusion?

10 What materia ls can be used in extrusion?

11 What kind of process is sheet metal forming?

12 What can vary in sheet metal forming?

A) metals, polymers, ceramics, concrete and foodstuffs

B) a series of dies

C) The material is passed through a pair of rollers.

D) Metal is formed into thin and flat pieces.

E) The mould is filled with liquid metal which is left to solidify into complex shapes

F) shape and thickness

G) metal, plastic, paper or glass

H) It was done by a blacksmith using a hammer.

I) sheet metal drawing, and wire, bar, and tube drawing

J) moulding, melting and casting

K) Metal is heated and shaped by a compressive

L) The two main advantages of this process are its ability to create very complex cross-sections and work materials that are brittle.