

NATURAL MATERIALS



Answer these questions.

- What do you think the first building material used by man was?
- What is the building material mostly used in the area where you live?
- Do you think building materials are different in different geographical areas? Give examples.

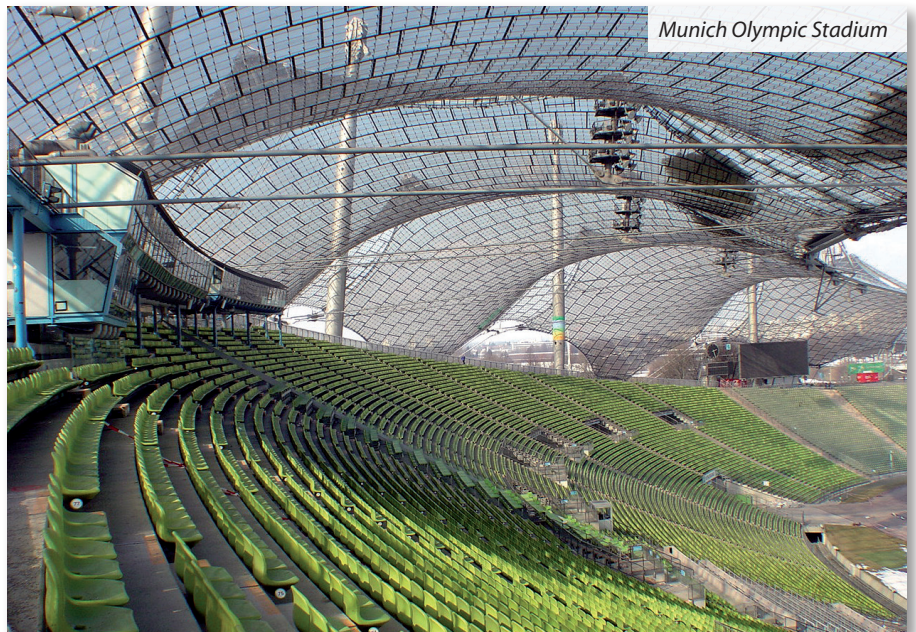
Building materials can be generally categorized into two groups, natural and synthetic or man-made. **Natural building materials** are those that are **unprocessed** or minimally processed by industry, such as wood.

Fabric. Tents used to be home for nomadic groups all over the world. Two well-known types of tent are the conical **tepee** and the circular **yurt**. The tent has been revived as a construction technique, with the development of **tensile architecture** and synthetic fabrics. Modern buildings can include flexible materials such as fabric membranes supported by a system of steel **cables**, a rigid **framework** or internal air pressure.

Mud and clay. The amount of each of the two materials used usually depends on the quality of the **soil** used. The other main ingredients can include **sand** and/or **gravel**. Soil and especially clay is good at keeping temperatures at a constant level. Homes built with earth tend to be naturally cool in the summer and warm in cold weather. Clay holds the heat or the cold, releasing it over a period of time, like stone. Walls change temperature slowly, so artificially raising or lowering the temperature can take longer than in a wooden house, but the **heat** and the **coolness** will stay longer.



A tepee



Munich Olympic Stadium

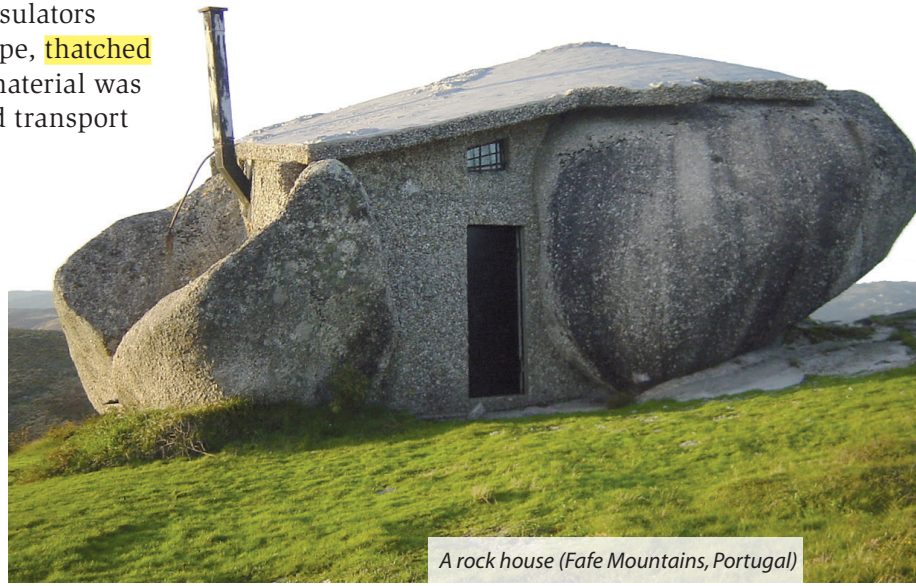


Clay wall

Rock. Rock structures have always existed. It is the longest-**lasting** building material and is usually readily available. There are many types of rock, all with differing properties making them better or worse for different uses. Rock is a very dense material so while it can offer a lot of protection, its main disadvantage as a building material is its weight and **hardness**. In addition, stone is hard to keep warm without using large amounts of heating resources. **Dry-stone** walls (that is to say, walls with no joining material – or **mortar** – between the individual stones) have been built for an incredibly long time. Different forms of mortar can of course be used to hold the stones together, and cement is the most common now.

Thatch. This is one of the oldest building materials known; **straw** and **reeds** together are good insulators and are available nearly everywhere. In Europe, **thatched** roofs on homes were once common but the material was gradually abandoned as industrialization and transport increased the availability of other materials.

Wood. Wood is a product of trees, and sometimes other plants, used for construction purposes once it has been cut or pressed into **timber**. It is a generic building material and is used in building any type of structure in different climates. Wood tends to be very flexible under **loads**, keeping its strength while **bending**, and is extremely strong when compressed vertically. There are many different types of wood with different properties and some species are better for various uses than others. In earlier times, wood was used unprocessed in the form of **logs** when building large structures. The trees were cut to the required length, and then moved into place. With the invention of **mechanizing saws** came the mass production of **dimensional lumber**, which made building quicker and more uniform.



A rock house (Fafe Mountains, Portugal)

- to bend: *piegare, incurvare*
- cable: *cavo*
- coolness: *frescura*
- dimensional: *(qui) su misura*
- dry-stone: *(muri) a secco*
- fabric: *stoffa*
- framework: *struttura*
- gravel: *ghiaia*
- hardness: *durezza*
- heat: *calore*
- lasting: *che dura*
- load: *carico*
- log: *ciocco, ceppo*
- lumber: *legname da costruzione*
- mechanizing saw: *sega meccanica*
- mortar: *malta di calce*
- reed: *canna, giunco*
- sand: *sabbia*
- soil: *terreno*
- straw: *paglia*
- tensile architecture: *tensostrutture*
- tepee: *tenda (dei nativi americani)*
- thatched: *di paglia*
- timber: *legname*
- unprocessed: *non lavorato*
- yurt: *tenda circolare*

Building a wooden house



1  **Choose the right option.**

1. Clay buildings
 - a. hold heat and coolness and are quick to heat and refresh.
 - b. are not as good as wooden houses at holding heat and coolness.
 - c. take longer to get warm or cool but then hold heat and coolness longer than wooden houses.
2. Rock offers protection,
 - a. and is easily available.
 - b. and is easily available, but is heavy and not easy to deal with.
 - c. is easily available and easy to deal with.
3. Thatch
 - a. is being used again all over Europe for roofs.
 - b. used to be common for roofs in Europe.
 - c. is being used again for roofs, in some countries.
4. Wood
 - a. has good flexibility under loads, is resistant when bent and very resistant when subjected to vertical compression.
 - b. is not flexible under loads, not very strong when bent but resistant to vertical compression.
 - c. tends to break when bent, is flexible under loads and not very resistant to vertical compression.



A thatched cottage

2  **Listen to the recording about rock types from which building stone is extracted and complete the chart.**

ROCK TYPE	CHARACTERISTICS	HOW IT FORMED	EXAMPLES	SUITABLE FOR

3  **Read the following short text about the different kinds of wood and fill in the chart below.**



Birch



Fir



Oak

Hardwoods and softwoods

Wood is divided into two kinds called hardwood and softwood, but the names do not always refer to its actual hardness or softness:

Hardwoods are those that come from trees with large leaves (deciduous) – those that drop their leaves each fall, also known as angiosperms because their seeds are contained in fruits or pods. Examples include ash, beech, birch, mahogany, maple, oak, teak and walnut.

Softwoods come from evergreen (coniferous) trees – those that have needles and keep their leaves all year-round, also called gymnosperms. Examples include cedar, cypress, fir, pine, spruce and redwood.

It is generally true that hardwoods are harder than softwoods, but not always.

Balsa is the best-known example of a hardwood that is actually very soft.

Hardwoods have lovely, attractive grains and are used for such things as making fine furniture and decorative woodwork, whereas softwoods often come from very tall, straight trees, and are better for construction work (in the form of planks, poles, and so on).

ash: *frassino*
 beech: *faggio*
 birch: *betulla*
 cedar: *cedro*
 cypress: *cipresso*
 fir: *abete*
 grain: *venatura*
 mahogany: *mogano*
 maple: *acero*
 oak: *quercia*
 pine: *pino*
 plank: *tavola*
 pod: *baccello*
 pole: *palo*
 redwood: *sequoia*
 spruce: *abete*
 teak: *tek*
 walnut: *noce*

TYPE OF WOOD	TYPE OF TREE	EXAMPLES	CHARACTERISTICS	USES



Birch leaf



Fir needles



Oak leaf



The Icehotel

The ICEHOTEL is a hotel built each year with snow and ice in the village of Jukkasjärvi, in northern Sweden, about 17 kilometres from Kiruna. It is the world's first ice hotel. Since its first opening in 1990, the hotel has been built each year from December to April. The hotel, including the chairs and beds, is constructed from snow and ice blocks taken from the nearby Torne River. Artists are invited to create different rooms and decorations made by ice. Besides bedrooms, there is a bar, with glasses made of ice and an ice chapel that is popular with couples for getting married.

