ТЕМА: 2.3.2. СОВРЕМЕННЫЕ СТРОИТЕЛЬНЫЕ МАТЕРИАЛЫ
MODERN BUILDING MATERIALS

1. Read the text Modern Building Materials. Say what information about modern building materials is new for you. Exchange your opinion with your groupmates.

MODERN BUILDING MATERIALS

Because of its extensive use in industry, construction, and weaponry, iron is by far the most important of all metals. That is why metals are generally divided into two categories: ferrous metals (metals that contain iron) and non-ferrous metals (metals that do not contain iron, e.g. aluminium and copper). There are many types of metals used for building. Steel is the usual choice for metal structural building materials.

Steel is an alloy of iron and carbon; the quality of iron contained determines whether the alloy is hard or soft. It is the most important ferrous metal and its high strength in relation to its weight makes it the material of choice for skyscrapers and long-span structures, such as sport stadiums and bridges. Its malleability and weldability allow it to be shaped, bend, and made into different types of building components. Steel can be used both for exterior as well as interior infrastructures and its hard and resistant qualities enhance the durability, stability and safety of a building. Steel can also be used in corrugated sheets for roofing, for girders, frames, etc. Compared to conventional concrete buildings, steel buildings offer a longer lifetime and more endurance, so they cause less harm to the environment. Because steel buildings are usually prefabricated or made in sections and parts that are assembled on the construction site, they are cheaper than conventional buildings.

Glass is a fashionable material in contemporary architecture. Transparent buildings and structures are very popular in today's building construction. Because glass is very brittle it is generally made from mixtures of sand and silicates in a very hot fire stove called a kiln. Additives are very often added to the mixture when making to produce glass with different colours or characteristics.

One type of safety glass is *toughened glass*, also called *tempered glass*. As the term suggests, the glass is tempered - it's heated and kept hot for a certain time, to change its structure. Then if tempered glass is broken, it shatters (i.e. breaks into tiny pieces). These are a lot safer than the long, sharp pieces produced when annealed glass breaks. The disadvantage of toughened glass is that it can't withstand impacts from small objects. So in cases where impacts are a problem, another type of safety glass - *laminated glass* - is generally used. This is made by laminating glass with a polymer, in other words, making a glass and polymer "sandwich", with a sheet of polymer in the middle and sheets of glass at either side. The advantage of having a laminated material is not just that it's very strong. The layers of glass are bonded to a layer of polymer, i.e. they're stuck to the polymer, so if the glass does break, the broken pieces are held together, and don't fly.

Plastics are artificial materials used in construction work for a vast number of purposes. Synthetic resins are the main raw material for plastics. Plastics have some good advantages as they are lighter than metals, not subjected to corrosion, and they can be easier machined. Besides, they are inflammable, they can take any colour and pattern, and they are good electrical insulators. The recycled plastics keep all their properties when they are combined with virgin $plastics^3$. The main fields of application of these materials are pipes, insulation, wall covering, flooring (both in houses and in public areas) and, quite recently, window frames (made of PVC). PVC stands for Polyvinyl Chloride and it is plastic which has seen the most rapid growth in recent times in construction industry. PVC is often used in piping systems because of its good chemical resistance to corrosive fluids, PVC pipes are used for a great number of applications: to drain waste, for natural gas distribution, for electrical and communications wiring, for municipal water.

2. A. Match the words from A to the words from B to make up word combinations.

A	B
1) artificial	a) steel
2) ferrous	b) glass

3) construction	c) insulator
4) stainless	d) metals
5) virgin	e) material
6) tempered	f) resins
7) synthetic	g) work
8) building	h) systems
9) electrical	i) plastics
10) piping	j) component

B. Choose three word combinations from ex. 18. A and make up sentences with them.

3. Choose the correct option. Give Russian equivalents to the sentences.

1. The main disadvantage of stainless *iron / steel* is its high cost. 2. PVC is a popular type of *plastic / glass* used in construction industry. 3. More than any other building material, *concrete / steel* has a high strength-to-weight ratio. 4. *PVC / Steel* is used as structural framework for larger buildings such as skyscrapers. 5. When cement appeared, the first mortared *stone / brick* walls were created. 6. *Steel / Cement* is an alloy of iron and carbon. 7. *Timber / Plastic* window frames are becoming more popular due to their weathering resistance, durability, affordability and resistance to chemical erosion. 8. CMUs are *heavier/ Lighter* than bricks. 9. Compared to conventional *concrete / timber* buildings, steel buildings last longer. 10. *Steel / Brass* is the most widely used metal in the construction industry.

4. Complete the table with the names of building materials.

Durability and strength	**Waterproof**	**Corrosion resistance**	**Fire resistance**	**Sustainability**