

Task 1: Match the technical terms with their definitions:

Terms	Definitions
1. Refrigerant	a) Coils where heat is released to surrounding air
2. Evaporator	b) A set of pipes bent into a shape to transfer heat
3. Condenser	c) A component that changes the direction of the system operation
4. Expansion valve	d) Coils where heat is absorbed from surrounding air
5. Reversing valve	e) A device that moves air across coils
6. Compressor	f) A form of energy transferred between systems
7. Coil	g) A special fluid that circulates in cooling/heating systems
8. Fan	h) A device that reduces pressure and causes fluid to expand
9. Pressure	i) The force applied to a fluid inside the system
10. Heat	j) A device that pressurizes the refrigerant

Task 2: Complete the sentences using words from the text:

1. A special fluid called _____ circulates through the closed-loop system, carrying _____ from one place to another.
2. The _____ compresses the gaseous refrigerant, which increases its _____ and temperature.
3. After leaving the compressor, the hot gas flows to the _____, where it releases _____ to the outside air.
4. As the liquid refrigerant passes through the _____, its _____ suddenly drops, causing it to cool rapidly.
5. The cold refrigerant then flows through the _____, where it _____ heat from the surrounding air.
6. A _____ blows air across the _____ to improve the transfer of _____ into or out of the system.
7. During summer, the _____ changes the direction of the refrigerant flow, making the indoor _____ absorb heat instead of releasing it.

Task 3. Read the text and fill the gaps 1-5 with the appropriate option a-g. There are 2 options which you don't need to choose.

Heat Pumps: Heating and Cooling

A heat pump is an electrical device that uses the same principles as a refrigerator, but it can both heat and cool a building. It works by **1)** _____ .

Main Components:

- Compressor
- Expansion valve
- Reversing valve (allows the system to switch between heating and cooling)
- Two sets of coils (one outside, one inside the building)
- Two fans (one for outside air, one for inside air)

How It Works:

The compressor pumps a refrigerant around the coils. The refrigerant is under high pressure as it leaves the compressor and flows to the condenser coils. Here, it gives out heat to the surrounding air. The refrigerant then **2)** _____ , where its pressure suddenly drops. This causes it to evaporate. As it flows through the evaporator coils, **3)** _____ , becoming very cold. Then it flows back to the compressor.

Heating Mode (Winter):

In cold weather, the outside coil acts as the evaporator. The refrigerant is under low pressure, so it evaporates easily. A fan pulls outside air over the evaporator coils, and the cold refrigerant absorbs heat from this air. The compressor then pumps this heated refrigerant **4)** _____. It flows to the inside coils (now acting as the condenser). A second fan blows air over these coils, and the warm air is blown into the building. This heats the building.

Cooling Mode (Summer):

In hot weather, the reversing valve switches the operation. Now the inside coil acts as the evaporator, and **5)** _____. The cold refrigerant absorbs heat from inside the building, cooling it. The heated refrigerant then releases this heat outside. This cools the building.

- a) into the building under high pressure
- b) pumping heat from one place to another
- c) the refrigerant becomes a liquid
- d) it absorbs heat from the surrounding air
- e) flows back to the compressor
- f) the outside coil acts as the condenser
- g) passes through the expansion valve

Task 4: Read each statement and write True or False. If false, correct the statement.

1. A heat pump can only heat a building, not cool it.
2. The refrigerant absorbs heat in the evaporator coils.
3. During heating mode, the inside coil acts as the evaporator.
4. The compressor reduces the pressure of the refrigerant.
5. In cooling mode, the cold refrigerant absorbs heat from inside the building.
6. The reversing valve allows the system to switch between heating and cooling.

Task 5: Put the steps of the heat pump cycle in the correct order. Write the numbers 1-5 to show the sequence.

- ___ The refrigerant flows back to the compressor.
- ___ The compressor pumps the refrigerant around the coils under high pressure.
- ___ The refrigerant passes through the expansion valve and its pressure drops.
- ___ The refrigerant flows through the condenser coils and releases heat.
- ___ The refrigerant flows through the evaporator coils and absorbs heat.

Task 6: Complete the sentences using information from the text and words from the box.:

- refrigerant • heat • reversing • changes coils • absorbs • pressure • heat •
• principles • drops • evaporator •

1. A heat pump uses the same _____ as a refrigerator, but it can both heat and cool a building.
2. The main components include a compressor, an expansion valve, a _____ valve, two fans, and two sets of _____.
3. The compressor pumps a _____ around the system.
4. As the refrigerant leaves the compressor, it is under high _____.
5. In the condenser coils, the refrigerant gives out _____ to the surrounding air.
6. When the refrigerant passes through the expansion valve, its pressure suddenly _____.
7. As it flows through the evaporator coils, the refrigerant _____ heat from the surrounding air.
8. In heating mode, the outside coil acts as the _____.
9. A fan pulls outside air over the coils, and the refrigerant absorbs _____ from this air.
10. In cooling mode, the reversing valve _____ the direction of the system.