1. Complete: „For the food in the fridge to be cooled down, the internal energy of the food needs to ..... (*increase* / *decrease*). The food needs to ..... (*gain* / *lose*) heat. Heat needs to flow from the ..... (*inside* / *outside*) of the fridge to the …….. (*inside* / *outside*) of the fridge."

2. Complete: „The refrigerant circulates in the pipe system of the refrigerator. The purpose of the refrigerant is to carry heat from the …….. (*inside* / *outside*) of the fridge to the ……. (*inside* / *outside*) of the fridge. While the refrigerant vaporizes, it ..... (*absorbs* / *releases*) heat, and while it condenses it ..... (*absorbs* / *releases*) heat."

3. Complete (*warm/cold*; *absorbs / releases*; *inside / outside*):

a) The condenser feels ..... .
While condensating the refrigerant ..... heat, that's why the condenser is located ..... the fridge.

b) The evaporator feels ..... .
While vaporizating the refrigerant ..... heat, that's why the evaporator is located ..... the fridge.

4. How does the boiling point of a substance change if the pressure increases?
"At higher external pressure, the boiling point will be …….. (*higher* / *lower*). This means, that at the same temperature, a substance can be gaseous at ……. (*high* / *low*) pressure and liquid at ……. (*high* / *low*) pressure."

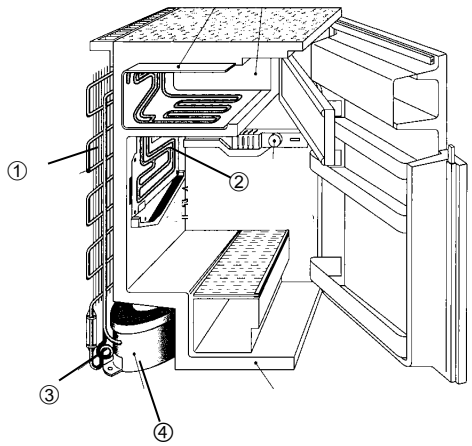
5. What makes the refrigerant condense, what makes it vaporize (without a change in temperature)?

6. The refrigerant ought to have the following properties: At „normal" pressure and room temperature it needs to be ……..…….. (*gaseous*/*liquid*) and at higher pressure it needs to be …….. (*gaseous*/*liquid*).
Look in the table for a couple of substances which fulfill these conditions. Give reasons for your choice!

7. What is the purpose of the compressor?

8. What is the purpose of the expansion valve?

9.



a) Label the parts ①, ②, ③ and ④ of the fridge. (*evaporator, condensor, compressor, expansion valve*)
b) In which parts of the fridge is the pressure high, where is it low?
c) In which parts of the fridge is the refrigerant's boiling point high, where is it low?
d) In which parts of the fridge does the refrigerant become liquid, where does it become gaseous?

10. Why is the condensor located on the outside of the fridge?

11. Would it be possible to cool the kitchen during summer by leaving the fridge door open? Give reasons for your answer.

12. „Spontaneously, heat always flows from an object of ..... (*higher* / *lower*) temperature to an object of …….. (*higher* / *lower*) temperature. For heat to flow in the opposite direction work needs to be done. In a fridge, ... (*internal*, *electrical, mechanical*) energy is required to operate the ……. (*evaporator*, *condensor*, *compressor*)."