

1 What is the name of the force that attracts the molecules of a liquid together?

INTERMOLECULAR FORCES

2 Describe the difference between vaporization and evaporation.

EVAPORATION HAPPENS ONLY AT THE SURFACE OF A LIQUID AS SOME MOLECULES GET ENOUGH KINETIC ENERGY TO ESCAPE AS A GAS. BOILING IS WHEN ALL THE PARTICLES HAVE ENOUGH KINETIC ENERGY TO ESCAPE THE LIQUID PHASE AND BECOME GAS, THROUGHOUT THE LIQUID.

3 How can evaporation be described as a "cooling process"?

ONLY THE PARTICLES WITH THE VERY MOST KINETIC ENERGY GET TO ESCAPE AS A GAS. THE REST STAY A LIQUID. THE AVERAGE KINETIC ENERGY OF THE PARTICLES THAT GET TO STAY AS A LIQUID ALWAYS GOES DOWN AS THE MOST ENERGETIC LEAVE. THIS IS WHY EVAPORATION COOLS US DOWN WHEN WE SWEAT. IT TRULY LOWERS THE TEMPERATURE BECAUSE IT DIRECTLY LOWERS THE REMAINING KINETIC ENERGY LEVEL OF THE LEFT BEHIND MOLECULES.

4 Using the diagram on the bottom of page 275 in the text, explain what dynamic equilibrium means in your own words.

DYNAMIC EQUILIBRIUM ONLY CAN HAPPEN IN A CLOSED SYSTEM, LIKE THE DIAGRAM ON THE RIGHT SIDE. AT ANY TEMPERATURE, A LIQUID WILL EVAPORATE A CERTAIN AMOUNT OF ITSELF INTO THE GAS PHASE. THE GAS WILL CONDENSE. WHEN THE RATES OF EVAPORATION EQUAL THE RATE OF CONDENSATION, THAT IS DYNAMIC EQUILIBRIUM (CHANGING AND THE SAME - AT THE SAME TIME).

5 Explain this statement in your own words: The temperature of a liquid never goes above its boiling point, even if extra heat is added to it.

ONCE A LIQUID REACHES ITS BOILING POINT, ALL THE MOLECULES HAVE ENOUGH KINETIC ENERGY TO BECOME A GAS. ONCE THIS HAPPENS, IT CAN BOIL FASTER, BUT NOT HOTTER. GASES CAN BE HEATED ABOVE THE BOILING POINT, BUT THE TRUE CONCEPT OF BOILING POINT IS THE HIGHEST TEMPERATURE (AT a PRESSURE) THAT A LIQUID CAN REACH. IF HIGH PRESSURE EXISTS, THE BOILING POINT CAN EXCEED THE NORMAL BOILING POINT, WHICH IS THE TEMPERATURE THAT A LIQUID BOILS AT THE STANDARD OR NORMAL PRESSURE. THIS IS STILL "NOT" EXCEEDING THE BOILING POINT THOUGH, AS BOILING POINT IS A PRODUCT OF TEMPERATURE AND PRESSURE AT THE SAME TIME.

6 Why can't liquids be compressed much? **PARTICLES OF LIQUIDS ARE ALREADY TOO CLOSE TOGETHER. THE PARTICLES CAN MOVE AROUND A LOT, BUT THEY PRESSED TIGHTLY TOGETHER. THERE IS NO ROOM BETWEEN THEM FOR MUCH SQUEEZING.**

	air pressure (in kPa)	boiling point of water °C
below sea level in a deep cave	MORE THAN 101.3 kPa	MORE THAN 100°C
at sea level	101.3 kPa	100°C
high atop a mountain	LESS THAN 101.3 kPa	LESS THAN 100°C