Name _____

ACID RAIN

Answer the questions immediately after reading each paragraph.

To understand what acid rain is, it is necessary to first know what is meant by acidity. Scientists calculate the acidity of a substance using a measure called pH. The lower the pH (between 1 and 7) the greater the acidity. For example, lemon juice is very acidic since its pH is 2,3. If the pH is greater than 7, the substance is said to be basic or alkaline, which is the opposite of acidic. Pure water, at a pH of 7, is between the two and therefore neither acidic nor alkaline. Rain water is naturally a little acidic because its pH is 5,6. This is due to the fact that the air contains carbon gas, which transforms into carbon acid when in contact with water.

1 What measure allows us to know the acidity of rain?

It is called pH.

2 Is unpolluted rain water considered pure water with a pH of 7? Explain.

No it is not; rain water is naturally acidic (pH 5.6) due to the fact that the air contains carbon gas, which transforms into carbon acid when in contact with water.

The problem with acid rain stems from the fact that different human activities increase rain water's acidity. This leads to devastating consequences for the environment, in particular for the forests and lakes. The fossil fuels that we use in our cars and in our industries give off certain toxic gases. When these gases mix with the water in clouds, sulphuric acid and nitric acid form. These polluted clouds are transported by the winds. Their now acidic rain begins to pollute the places where it falls. Since the winds carry the polluted clouds over hundreds and thousands of kilometres, acid rain can pollute huge areas.

3 What are we? We were formed by the combination of toxic gases and cloud waters.

We are nitric and sulphuric acid.

4 Can a place that does not create pollution receive acid rain?

Yes it can. Winds can carry the polluted clouds over hundreds and thousands of kilometres, acid rain can pollute huge areas.

Name _____

ACID RAIN (Continued)

Water from acid precipitation (rain or snow) can fall into bodies of water or penetrate the Earth and contaminate subterranean water tables known as groundwater. The risks to human health are high since people use this polluted water in abundance. Nature, too, is affected by acid rain. Acid rain destroys nutrients in the soil that are indispensable to plant life. Thus, the capacity of trees to send sap up to their leaves in order to nourish them properly is reduced. Each year thousands of trees die because of acid rain.

5 **Using your dictionary, find the meaning of the word "nutrient".**

A substance or ingredient that promotes growth, provides energy, and maintains life.

6 **How can acid rain cause the death of thousands of trees?**

Acid rain destroys nutrients in the soil that are indispensable to plant life. The trees cannot send sap up to their leaves in order to nourish them properly.

Acid precipitation also causes the acidification of certain lakes and kills almost all plant and animal life found in them. Sometimes certain gases fall down to earth in the form of dry deposits. These deposits are dangerous for tree leaves because they render them vulnerable to insects, disease and fungus. Fortunately, certain places are well protected against acid rain. Lakes in areas with limestone can neutralize acid rain and thus save the life forms in them. If we are going to reduce this devastating rain, polluting industries will have to reduce their use of fossil fuels, including crude oil and coal.

7 **Can you name the polluting industries referred to in the last paragraph?**

The polluting industries would be the oil industry and the coal industry.

8 **In your opinion, what would our planet look like if there were no acid rain?**

It would be much cleaner and more beautiful.