Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

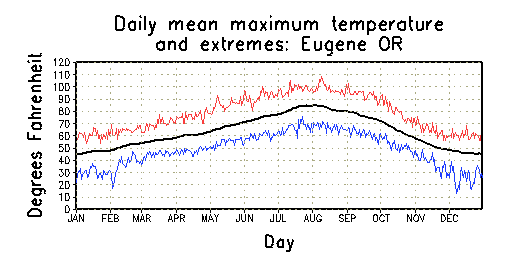
**Unit 2 Homework Packet**

**Lessons 1 through 2**

Fill in the blanks with the word that best completes the statement. Use the following word bank. Words may not be used more than once:

|  |
| --- |
| infrared visible carbon-dioxide average climate UV shortwave methane atmospheric clouds oxygen albedo oceanic weather hydrogen |

1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ condition at any given time or place is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ refers to the ***long*** term \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of weather for a specific location usually taken over a 20-30 year time period.
3. Solar radiation takes the form of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_waves.
4. The amount a surface reflects incoming solar radiation is described as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. Long wave radiation, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves, is what is emitted by earth.
6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are examples of greenhouse gases.
7. If you experience an abnormally hot day in your city, can you claim that the climate is changing? Justify your answer.
8. The following graph shows the daily mean maximum temperatures and extremes (red and blue lines) for Eugene, Oregon from 1961-1990. State whether the smooth black line shows weather, climate or both. Justify your answer.



1. Describe what happens to incoming solar radiation. (Should list 3 things)
2. Describe what happens to outgoing longwave radiation. (Should list 3 things)
3. What would happen to Earth’s climate if there were no greenhouse gases present in the atmosphere?

**Lessons 3 through 5**

Fill in the blanks with the word that best completes the statement. Use the following word bank. Words may not be used more than once:

|  |
| --- |
| less oil Milankovitch-cycle observation more anomaly wobble tilt greenhouse-gases volcanoes long-wave transportation fossil-fuels anthropogenic fluorinated-gases shortwave |

One way to observe whether climate is changing is to look at the Earth’s temperature over a long period of time. The deviation of Earth’s temperature from a normal condition is called a (n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#12). There are several causes of the observed change in temperature on Earth. When humans burn \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#13) such as coal, natural gas and \_\_\_\_\_\_\_\_\_\_\_\_\_ (#14), they release more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#15) into the atmosphere. This causes more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#16) radiation emitted from the Earth to be absorbed by the atmosphere. Climate change that is caused by human sources is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#17) climate change.

Natural causes of climate change include solar variability. For example, when the sun has an increased amount of sunspots, there is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#18) solar radiation that reaches Earth. The Earth’s position relative to the sun can also affect climate. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#19) describes how Earth’s orbit around the sun, precession and \_\_\_\_\_\_\_\_\_\_\_ (#20) vary regularly.

Lastly, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#21) may affect the global temperature by releasing dust and gaseous materials in the upper atmosphere preventing some solar radiation from reaching Earth.

22. a) Give an example of the human activity that contributes THE MOST to global climate change.

b) Give an example of the human activity that contributes SECOND MOST to global climate change.

23. In terms of its contribution to global climate change, rank the following human sources from greatest to least. So, in other words, the largest contributor will be listed first and the one that contributes the least should be listed last.

Methane, Fluorinated gases, Carbon dioxide, Nitrous Oxide

24. Which is more important to global climate change: human sources or natural sources? Justify your answer.

**Lessons 6 through 7**

Fill in the blanks with the word that best completes the statement. Use the following word bank. Words may not be used more than once:

|  |
| --- |
| floods glaciers sea-levels wet drought temperature solar-radiation frequent sea-surface-temperatures evaporation heat-waves transportation agriculture dry albedo wild-fires snow |

25. The key indicator of climate change is global \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which impacts oceans, the weather and the long term climate.

26. Rising \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ provide more energy to hurricanes making them stronger and more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

27. The high \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of ice caps prevents solar radiation from being absorbed by Earth.

28. Rising \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ threaten to flood coastal cities and is primarily caused by melting \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

29. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ results in more moisture put into the atmosphere. This can increase precipitation in some areas, while other areas may experience \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

30. Reducing climate change is important because it affects human health, water supplies, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

31. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are occurring more and more frequently due to climate change. This can lead to more greenhouse gas emissions as the use of air conditioning will also increase as a result.

32. Explain how melting ice caps are a positive feedback mechanism for global climate change.

33. Describe how scientists use ice cores to extract information about the historical climate.

34. Johnny is interested in observing whether climate change is affecting his hometown. He decides to collect temperature data in his backyard on a daily basis. After recording data for a month, he compares his data with the data from several local weather stations. He notices his temperature data is consistently different than theirs by about 20 degrees Fahrenheit. Should Johnny continue collecting data? Justify your answer.

**Lessons 8 through 10**

Fill in the blanks with the word that best completes the statement. Use the following word bank. Words may not be used more than once.

|  |
| --- |
| less agricultural fossil-fuels create irreversible assess provide clean solar develop human adaptation natural geothermal mitigation hybrid non-renewable wind more |

The job of the Intergovernmental Panel on Climate Change (IPCC) is to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#35) the latest climate science in order to provide information on the current state of climate change to the public. Their latest report shows that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#36) influences are most certainly the cause of climate change. To reduce the emission of greenhouse gases, the IPPC suggests \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#37) strategies such as using a variety of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#38) energy sources that do not emit greenhouse gases. Technologies such as \_\_\_\_\_\_\_\_\_\_\_ (#39) power which uses the generation of steam on hot rocks below Earth’s surface to make electricity help shift our dependence away from\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#40).

Other technologies such as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#41) vehicles, which use a combination of a battery and gasoline emit \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#42) greenhouse gases into the atmosphere than conventional vehicles. Some impacts of climate change, however, are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#43). In this case, human and animal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (#44) is needed to reduce our vulnerability to the changing climate.

45. Describe an ***adaptation strategy*** for rising sea levels.

46. Describe a ***mitigation strategy*** for rising sea levels. Your answer should be different from that in #45.

47. Explain why, even when implementing adaptation strategies, humans and animals can still be vulnerable to climate change. Provide an example.