

Climate Change Worksheet

C. Kohn, Waterford WI



Partner Names (first/last): _____

Hour _____ Date: _____ Why late? _____ Score: + ✓ -

Directions: work in pairs to complete this sheet. Pass the sheet onto a new person after each question. Those not writing should be using their notes and understanding to create the answer the other person writes. After each question, switch roles. + = exceed expectations. ✓ = met but did not exceed expectations. - = redo the assignment

Background: you are talking with your friend, Stanley Skeptick. Stanley usually has a hard time believing that anything is true (he questioned whether it was actually your birthday at your last birthday party). The topic of climate change comes up, and as usual, Stanley has his doubts.

1. Stanley claims that if we can't predict the weather one week from now, we have no idea what the weather was like 1000 years ago or what it will be like in 10 years. How do we know that Stanley's opinion is not accurate? Include the difference between *weather* and *climate* in your response.

2. Stanley claims that one of the major proofs that climate change is not legitimate science is that scientists expect there to be an increase in both droughts *and* flooding. Stanley claims that there is no way both droughts and flooding would increase, and that only one or the other should worsen. Is he right? Explain:

3. Stanley seems to be getting frustrated; he responds "Fine – what proof do we have that climate change is *actually* happening?!?" In the spaces below, summarize four pieces of evidence that climate change is real:

1 _____

2 _____

3 _____

4 _____

4. Stanley is wondering why climate change is occurring. What is the cause of climate change?

Stanley seems unconvinced. How could gases increase the amount of heat in the atmosphere?

5. Stanley has heard that CO₂ is a naturally-occurring molecule and is not a bad thing. He states that without CO₂ in the atmosphere, we couldn't even have life on earth! Is he right? Explain:

6. Stanley is undeterred. After a minute of thought, he then asks how we could possibly know what the atmospheric conditions were like 200 years ago, let alone 200,000 years ago. Is it possible for scientists to know the greenhouse gas levels from hundreds of thousands of years ago? Explain how this information has been obtained:

7. Stanley argues that greenhouse gas levels have always fluctuated. In fact, Stanley is now sure he has seen a graph of greenhouse gas levels that show constant fluctuations. If greenhouse gases have always fluctuated, what makes today any different? Why are we concerned about greenhouse gas fluctuations today if we weren't concerned about their fluctuations in the past?

8. Stanley is still unconvinced. He gets that we can measure CO₂ from hundreds of thousands of years ago, but how could we possibly know what the weather was like 400,000 years ago. How do we know the average yearly temperature from prehistoric times? Include *deuterium* in your answer and explain how this relates to temp.

9. Stanley may be more of a visual learner. A) In the space to the right, draw a graph showing how greenhouse gases have fluctuated since 0 AD. B) Then state how we know that the rise in GHG's is correlated to the use of fossil fuels starting during the Industrial Revolution.

10. Stanley seems skeptical that greenhouse gases alone could change the temperature of the earth. He counters that the energy output of the sun would have way more impact on temperature than greenhouse gases. How do we know this isn't related to the sun?

11. Stanley has heard that the earth's orbit and spin change over time, and that this is what causes ice ages every 10-15 thousand years.

What are these changes in the earth's orbit called? _____

How do we know that these are not the cause? _____

12. Stanley argues that even *if* climate change is real, it won't drastically change our lives if we do nothing to stop it. Is he right? Explain:

13. Stanley suggests that even *if* it did have an impact on our lives, there is really nothing that we, as average citizens, can do. Stanley argues that this is something only the President and Congress have the power to impact. Is he right? List six things that the average person could do to slow climate change.

1

2

3

4

5

6

14. You look at your watch and realize you are late for an appointment. Stanley seems skeptical but has to leave too. You have a chance to leave Stanley with one last message. If you could leave Stanley with one last message about climate change, what should that message be?
