Climate Evidence Check

Read data and weigh claims about climate change

E.7.9B "Students will demonstrate an understanding of the relationship between natural phenomena, human activity, and global climate change. Read and evaluate scientific or technical information assessing the evidence and bias of each source to..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline one natural cause of climate change, circle the human activity that adds carbon dioxide to the air, and number two clues about a source's evidence or possible bias.

What Is Changing the Climate?

1. A weather station records one hot afternoon. Does that prove the climate is changing? No. Climate describes patterns measured over many years and across many places. Earth's climate can change naturally when volcanic eruptions or changes in sunlight alter the planet's energy balance. To test what is happening now, scientists compare several kinds of long-term evidence.

2. The table pairs yearly carbon dioxide (CO_2) emissions from burning fossil fuels worldwide with the amount of CO_2 in the air. Coal, oil, and natural gas release carbon stored underground. Some added CO_2 stays in the air; oceans and plants take up some. CO_2 traps heat, so a higher level strengthens the greenhouse effect.

GLOBAL FOSSIL FUEL EMISSIONS AND ATMOSPHERIC CARBON DIOXIDE, ROUNDED VALUES

Year	Fossil fuel CO_2 emissions (billion metric tons per year)	CO_2 in air (parts per million)
1960	9	317
1990	23	354
2023	37	420

3. Scientists also compare sources. A public research report explains how air samples were measured and shows data collected over decades. A fuel company advertisement says recent warming is natural but gives no measurements. The company benefits if people keep buying fuel. That interest does not automatically make its claim false, but its claim needs testable evidence. Long-term records show Earth is warming.

2 ANSWER WITH EVIDENCE

Use the passage

1. From 1960 to 2023, how did fossil fuel CO_2 emissions and the amount of CO_2 in the air change?

2. How could burning more fossil fuels affect Earth's temperature? Use the table and the passage in your answer.

3. Volcanic eruptions can change climate naturally. Why does that fact alone not show that recent warming is only natural?

4. Which source described in the passage offers stronger evidence about recent climate change? Explain one evidence difference and one possible bias.

3 YOUR TURN

Your own words

An unsigned flyer says, "Volcanoes change climate, so burning fuel cannot affect it." Write a response for a town council that uses one pair of values from the table and explains how to check the flyer's claim. Include one limit of what the table can prove.

ANSWER KEY

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GRADE 7 · E.7.9B

PART 1 · READ AND MARK

Underline one natural cause of climate change, circle the human activity that adds carbon dioxide to the air, and number two clues about a source's evidence or possible bias. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	From 1960 to 2023, how did fossil fuel CO_2 emissions and the amount of CO_2 in the air change?	**Yearly emissions rose from about 9 to 37 billion metric tons, and CO_2 in the air rose from about 317 to 420 parts per million.**
2	How could burning more fossil fuels affect Earth's temperature? Use the table and the passage in your answer.	**Fossil fuel emissions and atmospheric CO_2 both rose. Burning fuels adds CO_2, which traps heat and strengthens the greenhouse effect.**
3	Volcanic eruptions can change climate naturally. Why does that fact alone not show that recent warming is only natural?	**A natural cause can exist alongside a human cause. The table shows rising fossil fuel emissions and atmospheric CO_2, evidence that human activity may be adding to warming.**
4	Which source described in the passage offers stronger evidence about recent climate change? Explain one evidence difference and one possible bias.	**The public research report offers stronger evidence because it explains its air measurements and uses decades of data. The fuel company advertisement gives no measurements, and the company benefits from fuel sales.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Volcanoes can change climate naturally, but that does not rule out human effects. From 1960 to 2023, yearly fossil fuel CO_2 emissions rose from about 9 to 37 billion metric tons, while CO_2 in the air rose from about 317 to 420 parts per million. Added CO_2 traps heat. I would ask who wrote the flyer and whether it provides measurements from reliable research. The table shows that both amounts rose, but by itself it cannot prove how much warming fossil fuels caused.

Accept equivalent descriptions of the rising values and greenhouse effect. For the open task, look for a specific data pair, recognition that natural and human causes can coexist, a source-checking step, and a reasonable limit of the table.