

Shield - The Earth's Defense Systems

1. The sun is not our friend. It's a monster. A _____ killer.
2. What did astronaut Jeff Hoffman find special about seeing the sun in space compared to seeing it from the surface of Earth?
3. What is the temperature difference between being in the sun and in the shade?
4. The sun has many weapons it can send our way: _____, _____ and _____
5. What is one of the best ways to understand what is happening in the center of Earth?
6. Mount Nyiragongo is an active stratovolcano with an elevation of 3,470 m in the Virunga Mountains in the Democratic Republic of Congo. It is located at 2 S, 29 E. Mark it on your map on the last page.
7. How hot is the lava coming out of Mt. Nyiragongo?
8. What radioactive elements can you find in lava?
_____ and _____
9. Which two metals does the molten inside of Earth consist of: _____ and _____
10. What does the churning metal create?
11. What does Earth's magnetic field protect us against?
12. Some of the Sun's radiation enters earth's atmosphere near the poles. We call it _____
13. What is it in sunlight which is dangerous to our skin?
14. In space you need an expensive spacesuit to protect the astronauts from the sun, while on Earth we only need some _____?
15. What percentage of the damaging UV radiation from the sun reaches the surface of the Earth?
16. UV radiation breaks down DNA and turns healthy cells _____
17. What is the name of our second shield against the Sun?



"Hole"

18. "Who" caused the **whole** in the ozone layer?
19. What does the glider use to reach extraordinary heights?
20. The **whole** in the ozone layer is slowly healing up (True/False).
21. Without the ozone layer, the human race wouldn't be here. (True/False)
22. Before the ozone layer was formed, where on Earth was life able to exist?
23. What happens to oxygen as it rises up into the atmosphere?
24. Approximately how **long** ago do we think vertebrates moved on to land?



25. That was one small step for _____ kind and one giant step for _____ on Earth.
26. Mount Bromo is an active volcano in East Java, Indonesia. It is located at 8 S, 113 E. Mark it on your map on the last page.
27. Why is the Tengger people giving offerings to the mountain?

28. Why is CO₂ from volcanoes considered a killer?
29. Venus is the hottest planet in the solar system because it is the **closest** planet to the Sun (True/False)
30. When rain comes down, CO₂ is dissolved/not dissolved in the rain (Circle one)

31. Where does all the water, silt and **locked-up** CO₂ eventually end up?

32. The Xiaolangdi Dam is a dam in Jiyuan, Henan Province, China. It generates up to 5.1 TWh annually. It is located at 35 N, 112 E. Mark it on your map on the last page.



33. What would happen if the dam didn't open up?

34. Over millions of years the cycle of rain, rivers and volcanoes has helped _____ the CO₂ in our atmosphere.

35. Right now humans are pumping _____ times more CO₂ into our atmosphere than volcanoes and there isn't enough time for Earth's _____ system to correct the problem.

36. The planet is getting hotter/colder? (Circle one)

37. What happens when a star die?

38. What will happen to Earth towards the end of our Sun's lifecycle?