

Name: _____

“Magnetic Storm” Discussion Questions

Go to the following URL's and watch the videos (about 22 min total). Answer the questions below. **Note:** For maximum credit, be explicit and descriptive in your responses!

Is Earth's Magnetic Field Reversing

<https://www.youtube.com/watch?v=51usJ74pPP8>

How Solar Storms Could Knock Out Our Power Grid

<https://www.youtube.com/watch?v=7nkC8SXzHls>

The Mid-Atlantic Ridge

<https://www.geolsoc.org.uk/Plate-Tectonics/Chap3-Plate-Margins/Divergent/Mid-Atlantic-Ridge>

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1. What special conditions had to be present for the Earth to generate a magnetic field?
 2. Why doesn't Mars have a global magnetic field?
 3. What protective function does the Earth's magnetic field serve?
 4. Where do most of the charged particles bombarding the Earth come from?
 5. Describe how the auroras (the northern and southern lights) are produced.

6. How does the Mid-Atlantic Ridge provide information about the behavior of the Earth's magnetic field over time

7. When did the last geomagnetic reversal occur?

8. What experiments have been conducted to verify the existence of geomagnetic reversals?

9. How many times has the Earth undergone a geomagnetic reversal in the past 84 million years?

10. Based on your answer above, calculate how often, on average, a geomagnetic reversal occurs? (Show your calculation.)

11. How long would the Earth be unprotected during a geomagnetic reversal?

12. What evidence do we have that a geomagnetic reversal may be starting?

13. Is any particular alignment of the Earth's magnetic field preferred over the another?
- A) Yes. B) No.
14. Do scientists expect that a geomagnetic reversal is likely to occur within our lifetimes?
- A) Yes. B) No.
15. Do the locations of the Earth's north and south magnetic poles align to the geographic poles?
- A) Yes. B) No.
16. What affect does the movement of the Earth's north and south magnetic poles cause for navigation by compass?
17. How could a coronal mass ejection (CME) cause a shutdown of the power grid?
18. How could a coronal mass ejection (CME) impact navigation?
19. How long does it take the first particles to arrive at the Earth after a solar flare?
20. (Open-ended.) Is there anything we can do to prevent the collapse of the Earth's magnetic field? If so, what? If not, why not?