2004 PA State Science Olympiad: Reach for the Stars Team Number B - _____

Participants: _____ &_____

Directions:

A. Do not bend or write on the maps!
B. Always include units (m, °, N, S, E, or W) with number value responses.
C. Reference only the East longitude coordinates … those printed in **black type**.
D. During Part 2 of the Reach for the Stars Event, you will be working with two large-sized maps of Mars. Sheet 1 displays a Topographic Map; sheet 2 displays a Color Coded Contour Map. The specific sheet(s) to use in answering the questions under each topic has been identified after each topic heading.
E. You need not spend time reading the text at the top center of each map.

MAP SURVEY (Map Sheet 1)

1. For whom are a majority of Martian craters named? Be specific. _____
2. Which surface features rise to the highest elevations? _____
3. Which surface features have the lowest elevations? _____
4. What projection was used to create the circular-shaped maps? _____

   _____
5. Does the region surrounding the **North** or **South Polar Region** have the youngest surface? _____
6. State an observation or hypothesis supporting your reasoning for Question 5. _____

   _____
7. The large rectangular map was drawn using the Mercator Projection. On the Mercator Projection, is distortion greatest at 0°, +30°, or – 57°? _____

MAP RELIEF (Map Sheets 1 and 2)

8. Name the specific feature that rises to the highest elevation. _____
9. What is the elevation of the feature, identified in number 8, at its highest point?

   _____
10. Name the specific feature having the lowest elevation. _____
11. What is the elevation of the feature, identified in number 10, at its lowest point?

    _____
12. A map's relief is defined as the difference between its highest and lowest points in elevation. Calculate the relief of the large rectangular map. _____

(Turn page to continue.)

RELATIVE AGING OF CRATERS (Map Sheet 1)

13. Locate the craters **Luzin**, **Cassini**, and **Tikhonravov** between 10˚ N 30˚ E and 30˚ N 40˚ E. Which of these three craters is oldest? _____

14. State two observations to support your response to question 13.

    A. _____

    _____

    B. _____

    _____

15. Which of these three craters is youngest? _____

16. State two observations to support your response to question 15.

    A. _____

    _____

    B. _____

    _____

ROBOTIC EXPLORATION OF THE MARTIAN SURFACE (Map Sheet 1)

17. Which earlier Martian mission landed at 19˚N 326.5˚E? _____

18. Which earlier Martian mission landed at 47.5˚N 134˚E? _____

19. The Spirit rover landed at 15˚S 175˚E. What Martian feature is at this location?

    _____

20. The Opportunity rover landed at 2˚S 355˚E. What Martian feature is at this location?

    _____

21. Both the Spirit and the Opportunity rovers were solar-powered. While one was active, the other was inactive. Explain why. _____

    _____