

Solar Scientist: \_\_\_\_\_

Date: \_\_\_\_\_

## Sunspots

### Researcher Qualifications

1. Why are sunspots cooler than the surrounding solar surface areas?
2. Describe the umbra and penumbra of a sunspot and tell what makes each part a different color.
3. How long does it take a photon to migrate from the Sun's core to its surface, and why?
4. Where is 99.8% of the solar system's mass, and what two elements is it made of (mostly)?
5. Draw a diagram of the Sun's interior, labeling four major zones. Describe what is happening in each.
6. What happens in the convection zone, and why?
7. What is the sunspot cycle? How long is it? What happens?
8. What role do sunspots play in solar flares and coronal mass ejections (CMEs)?
9. How can geomagnetic storms affect satellites and communications on Earth?
10. Might sunspot activity affect the Earth's weather patterns? What are your reasons for the answer you gave?