

# Electricity from Sunlight: The Van Allen Probes' Solar Panels

NASA's Van Allen Probes were launched in 2012. The figure to the right shows the octagonal spacecraft body and the location of the surrounding four solar panel "wings" that provide power to the spacecraft instruments. The small blue rectangles within each of the four solar panels show the locations of the solar cells used to power the spacecraft. As the spacecraft orbits Earth, the four solar panels continuously face the sun to provide constant power.

## Problem 1:

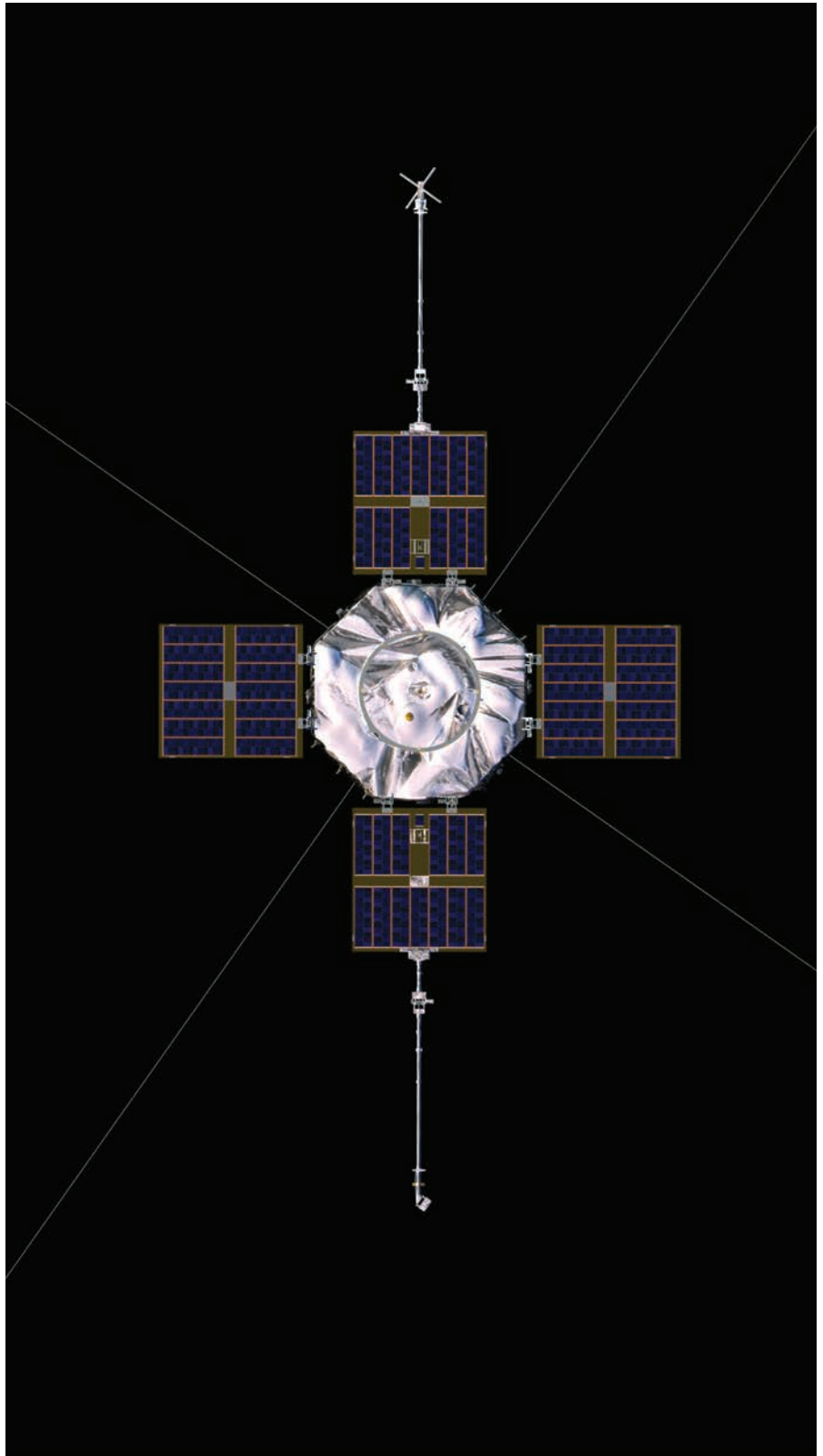
Each of the four solar panels measures  $94\text{ cm} \times 98\text{ cm}$ . What is the area of each solar panel in square centimeters?

## Problem 2:

What is the total area of the four solar panels to the nearest tenth of a square meter?

## Problem 3:

The amount of electrical power generated by a solar panel is  $0.03\text{ W/cm}^2$ . What is the total power generated by the four solar panels on one Van Allen Probes spacecraft to the nearest hundred watts?



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To see how these answers were derived, log onto: <http://vanallenprobes.jhuapl.edu/education/teachers/mathProblems.php>.

**Answer Key**  
**Problem 1**  
Answer: 9,212  $\text{cm}^2$   
**Problem 2**  
Answer: 3.7  $\text{m}^2$   
**Problem 3**  
Answer: 1,100 W