

1. Given that Jupiter is 5.2 times farther from the Sun than the Earth, what is the intensity of direct sunlight on Jupiter? For ease of comparison assume that the intensity of direct sunlight on Earth is 1 unit.

2. The average temperature on the surface of the Earth is 15°C (288 K). Why doesn't the Earth glow at night? Hint: a calculation is necessary to answer this question.

- 3a. A planet receives an average of 342 Wm^{-2} of insolation at the top of its atmosphere. What is the average temperature of this planet? Express your answer in Kelvin (K).

- b. Suppose the Sun's insolation is increased by 2%. What is the new average temperature of the planet? Express your answer in Kelvin.

- c. What do these results tell you about the sensitivity of the average temperature of this planet to changes in insolation?