1. **Select the correct statement(s)**

- [x] AM0 refers to the spectrum outside the atmosphere

Correct
That is correct

AM0 is equvilant to the light as it has traveled 0 times through the atmosphere.

- [x] AM1.5 refers to the the radiation spectrum when the light has traveled 1.5 times the vertical height of the atmosphere

Correct
That is correct

AM1.5 is equivalent to the light as it has traveled 1.5 times through the atmosphere and is equivalent to the atmosphere thickness at solar zenith angle of 48.2 degrees.

- [ ] AM1.0G is used for all standardized testing of terestial solar cells

- [ ] AM stands for air measure

2. **Personal solar panel**

The average electricity consumption per person in Denmark is $6.12 \cdot 10^6$ Wh per year, meaning that an average Dane continuesly consumes **700 W**.

Please calculate the area of the solar panel needed for an average Dane if we assume **20% efficiency**, **1000 W/m^2 of illumination**, and **8 hours of sunlight per day**.

Please provide the answer in square meters (m^2), do not write the units (example answer 8.5).

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Correct
That is correct

The solar panel for each Dane would have to be 10.5 m^2 .

3. **Which challenges can you predict if we want to cover the world's energy need with only solar cells?**

It is five to eleven times more expensive to produce electricity from the sun that is from coal.hydro or nuclear sources. Solar panels use expensive semiconductor material to generate electricity directly from sunlight.

✓ **Correct**

There are many potential challenges with trying to implement solar cells on such a large scale that we can produce 15 TW of energy. Here is a list of some of them

- Solar energy is sporadic since energy production is dependent on day/night cycles, seasons, and weather. Solutions could including battery storage, smart energy system, and better power interconnections across borders, etc.
- Depending on the solar cell technology, we must consider if we have the sufficient abundance of the needed chemical elements.
- We will need to find suitable areas for the deployment of the solar cells. In some countries it may be problematic to find suitable areas with little other use.