Socket vs. Solar: Student worksheet

Energy data (Watts)			Solar supply (Watts)	
Fan on <u>low speed</u>			**Morning**	75
Fan on <u>high speed</u>			**Midday**	300
1 fan = single household **25 fans = a suburb**			**Night**	0

Part A: Write algebraic expressions

Q1. Write an algebraic formula for the energy used by one household (1 fan) after X hours in:

- Slow Speed

- High Speed

Q2. Scale up to a suburb of 25 fans. Write a formula for the total energy use after X hours in

- Slow Speed

- High Speed

Part B: Substitution practice

Q3. If all fans run for <u>3 hours</u>, calculate the total energy used in:

- Slow Speed

- High Speed

Q4. What is the maximum number of fans running at <u>slow speed</u> that can be fully powered by 1200W of solar power at midday?

Part C: Energy supply

Q5. If we want to have 25 fans running, how much of that energy will be covered by the solar panels at each of the following times of day? Give your answer in watts:

a) Morning

b) Midday

c) Evening

Part D: Extensions

Q6. At midday, how many people would have to turn their high-powered fans off for energy demand to be fully covered by solar?

Q7. In the evening, solar provides 0 W.
What are two other renewable solutions that could meet demand without fossil fuels?

1.

2.

Q8. Besides running fans at lower speeds, what other actions could households take to lower their energy use?