Question 1

Consider the following sources of light. Each produces light of one wavelength:

	Wavelength	**Power**
Source A	$650\,\text{nm}$	$10\,\text{W}$
Source B	$650\,\text{nm}$	$20\,\text{W}$
Source C	$500\,\text{nm}$	$10\,\text{W}$
Source D	$500\,\text{nm}$	$20\,\text{W}$

Which of the following best ranks these in terms of the energy per photon?

1. $\text{A} = \text{B} > \text{C} = \text{D}$
2. $\text{A} = \text{B} < \text{C} = \text{D}$
3. $\text{A} = \text{C} > \text{B} = \text{D}$
4. $\text{A} = \text{C} < \text{B} = \text{D}$

Question 2

Consider the following sources of light. Each produces light of one frequency:

	Frequency	**Power**
Source A	4.0×10^{14} Hz	30 W
Source B	8.0×10^{14} Hz	15 W

Let N_A be the number of photons produced by A every second and similar N_B that produced by B every second. Which of the following is true?

1. $N_A = \frac{1}{4} N_B$
2. $N_A = \frac{1}{2} N_B$
3. $N_A = N_B$
4. $N_A = 2N_B$
5. $N_A = 4N_B$