Prob

$$P = \frac{E}{}$$ $$P =$$

Use the following situation for the next two problems.

Monochromatic light of wavelength of 180×10^{-9} m and power 1.0×10^{-3} W strikes a metal surface with a work function of 0.69×10^{-18} J. The mass of an electron is 9.1×10^{-31} kg.

$$E = hf = h \cdot \frac{c}{\lambda}$$

3. (5 points) What is the maximum kinetic energy of the emitted electrons?

   A) 0.41×10^{-18} J
   B) 1.10×10^{-18} J
   C) 1.79×10^{-18} J
   D) 0.93×10^{-3} J
   E) 1.86×10^{-3} J

$$E = hf = K_{max} + E_0$$

$$\frac{1}{2}mv^2$$

$$\frac{h^2}{m\lambda^2}$$

$$E = hf = h \cdot \frac{c}{\lambda} = \frac{6.626 \times 10^{-34} \times 3 \times 10^{8}}{180 \times 10^{-9}}$$

4. (5 points) If the intensity of the light is increased, what will happen to the ejection rate and maximum energy of the electrons?

   A) Greater ejection rate; same maximum energy.
   B) Same ejection rate; greater maximum energy.
   C) Greater ejection rate; greater maximum energy.
   D) Same ejection rate; same maximum energy