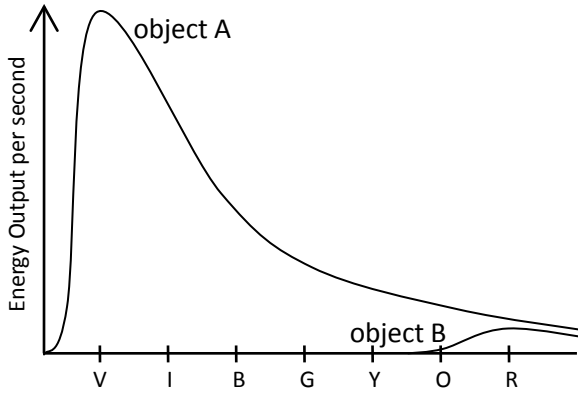
Astronomy Ranking Task:
Blackbody Radiation

Exercise #4

Description: The graph below shows the amounts of energy given off by objects A and B each second versus the wavelengths of light in the visible spectrum. The colors of the visible spectrum are labeled with the letters *ROY G BIV*.



A. Ranking instructions: Rank the energy output per second of the colors in the visible spectrum given off by object A.

Ranking Order: Most 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ Least

Or, object A gives off the same amount of each color in the visible spectrum per second. ☐
(indicate with a check mark)

Carefully explain your reasoning for ranking this way:

_____

_____

_____

_____

_____

B. Ranking instructions: Rank the energy output per second of the colors in the visible spectrum given off by object B.

Ranking Order: Most 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ Least

Or, object B gives off the same amount of each color in the visible spectrum per second. ☐
(indicate with a check mark)

© 2009-12 Rica Sirbaugh French; idea credit = Center for Astronomy Education (CAE), University of Arizona

Carefully explain your reasoning for ranking this way:

_____

_____

_____

_____

_____

C. Which object gives off the most red light per second? Explain.

D. Which object gives off the most blue light per second? Explain.

E. What color does object A appear? Explain.

F. What color does object B appear? Explain.

G. Ranking instructions: Rank the wavelengths of peak output of objects A and B.

Ranking Order: Longer 1 _____ 2 _____ Shorter

Or, objects A and B have the same wavelength of peak output. ☐ (indicate with a check mark)

© 2009-12 Rica Sirbaugh French; idea credit = Center for Astronomy Education (CAE), University of Arizona

Carefully explain your reasoning for ranking this way:

_____

_____

_____

_____

_____

H. Ranking instructions: Rank the temperatures of objects A and B.

Ranking Order: Hotter 1 _____ 2 _____ Cooler

Or, objects A and B are the same temperature. ☐ (indicate with a check mark)

Or, there is not enough information to determine the temperatures of objects A and B. ☐ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

_____

_____

_____

_____

_____

I. Ranking instructions: Rank the <u>total</u> energy output by objects A and B.

Ranking Order: Least 1 _____ 2 _____ Most

Or, objects A and B have the same total energy output. ☐ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

_____

_____

_____

_____

_____

© 2009-12 Rica Sirbaugh French; idea credit = Center for Astronomy Education (CAE), University of Arizona

J. Ranking instructions: Rank the surface areas of objects A and B.

Ranking Order: Smaller 1 _____ 2 _____ Larger

Or, objects A and B have the same surface area. ☐ (indicate with a check mark)

Or, there is not enough information to determine the surface areas of objects A and B. ☐ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

_____

_____

_____

_____

_____

© 2009-12 Rica Sirbaugh French; idea credit = Center for Astronomy Education (CAE), University of Arizona