Astronomy Ranking Task:
Doppler Shift

Exercise #4

Description: An important line in the absorption spectrum of stars occurs at a wavelength of 656nm for stars at rest. Imagine that you study five stars (A-E) from Earth and discover that this absorption line is observed at the wavelength shown in the table below for each of the five stars.

STAR	Observed Wavelength of Absorption line
A	**650 nm**
B	**663 nm**
C	**656 nm**
D	**657 nm**
E	**646 nm**

A. Ranking instructions: Rank the size of the Doppler shift (from largest to smallest) observed tonight for the light from each star (A – E).

Ranking Order: Largest 1 ____ 2 ____ 3 ____ 4 _____ 5 _____ Smallest

Or, the Doppler shift of the light from the stars would all be the same. ☐ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

_____
_____
_____
_____

B. Ranking instructions: As observed tonight, rank the speed of the stars (A – E) from moving fastest toward the Earth, through not moving at all, to moving fastest away from Earth.

Ranking Order:

Moving fastest toward 1 ____ 2 ____ 3 ____ 4 _____ 5 _____ Moving fastest away

Or, all the stars would have the same speed ☐ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

_____
_____
_____

C. Ranking instructions: Rank the distances of the stars (A – E) from closest to farthest away from Earth.

Ranking Order:

Closest to Earth 1 ____ 2 ____ 3 ____ 4 _____ 5 _____ Farthest from Earth

Or, there is not enough information to determine distances. _____ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

_____
_____
_____
_____