

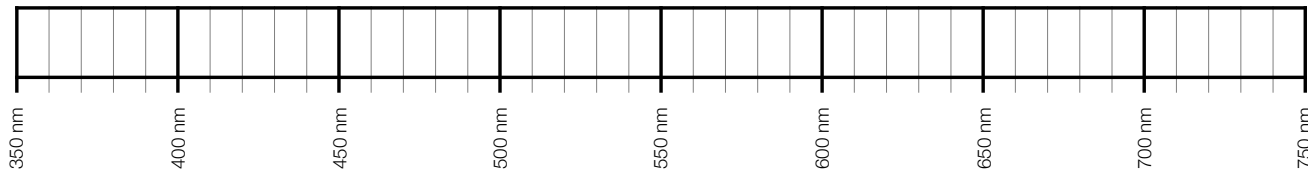
Name \_\_\_\_\_

Date \_\_\_\_\_ Period \_\_\_\_\_

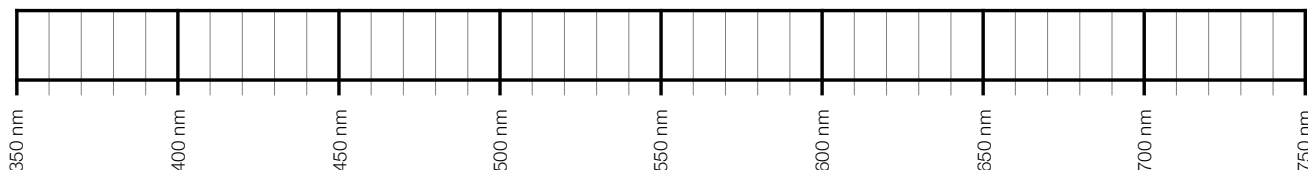
LAB ACTIVITY  
The Doppler Shift of Galaxies

Please visit [www.hmxearthscience.com/doppler\\_shift\\_lab.html](http://www.hmxearthscience.com/doppler_shift_lab.html) and complete the activity using the space below.

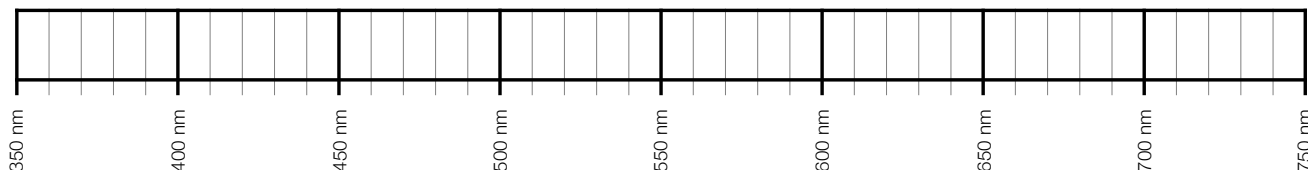
STANDARD SPECTRUM



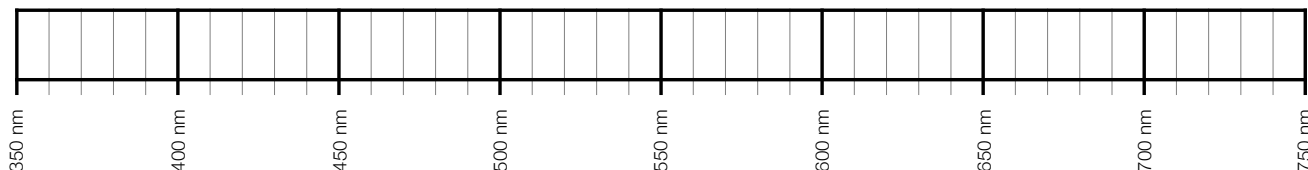
VIRGO A GALAXY



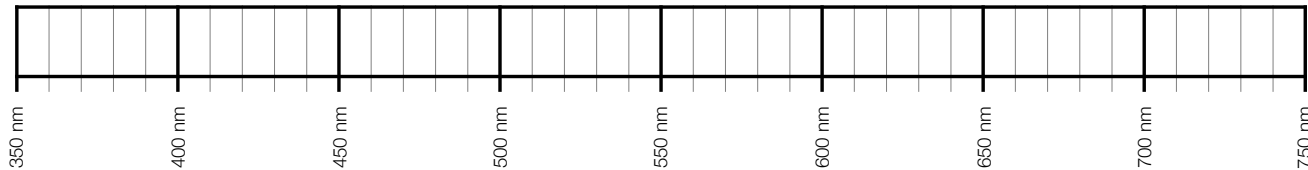
COMA PINWHEEL GALAXY



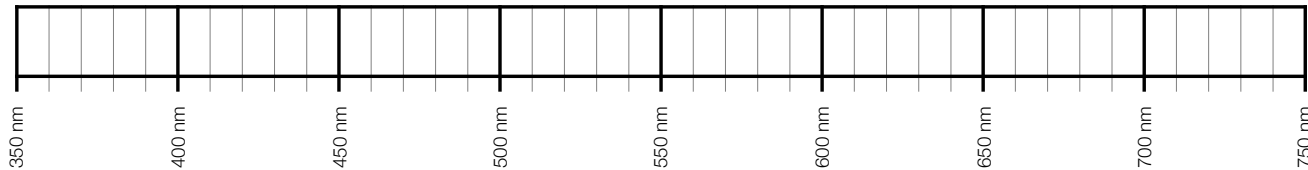
ANDROMEDA GALAXY



CETUS A GALAXY



M65 SPIRAL GALAXY IN LEO



## Conclusion Questions

1. When the wavelength of spectral lines emitted from an object increases, which end of the visible light spectrum does it move toward, and what is the object's motion relative to Earth?
2. When the wavelength of spectral lines emitted from an object decreases, which end of the visible light spectrum does it move toward, and what is the object's motion relative to Earth?
3. What did the results of your analysis of the spectral lines of the five galaxies reveal about their motion relative to Earth?
4. How does the Andromeda galaxy differ from the other four galaxies you examined.
5. What is the relationship between how red-shifted a spectrum is and how fast the object is moving away?
6. Do the results of your study of galactic motion suggest that the universe is currently in motion, and if so, is it expanding or contracting and why?