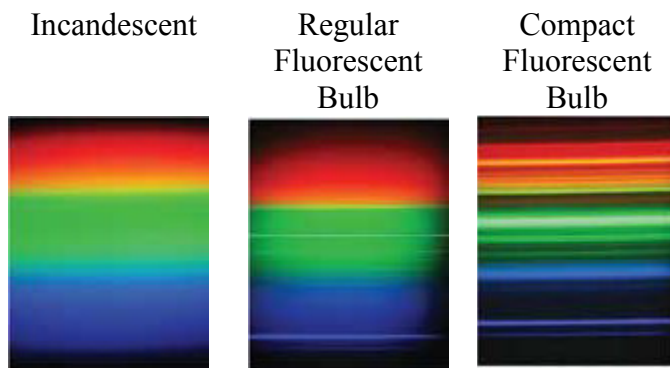


## Appendix 3: Observing Continuous Spectra and Line Spectra

### Answers

#### 1. Spectra of light bulbs



2. A continuous spectrum has all colors (there are no missing gaps) whereas a line spectrum only has specific color lines.
3. Continuous: glowing filament; Line: elements
4. a) Sunlight, incandescent light bulb; b) Sodium, nitrogen, etc.; c) Nothing
5. Common: electrons are excited and give off light when they are “de-excited.”  
Differ: different energy levels for the electrons.
6. It contains all of the colors.
7. The energy levels of the electrons.
8. They have different numbers of electrons with different energy levels
9. The electrons in the atoms release energies associated with yellow light.
10. The electrons drop from one energy level to another. Atoms can drop from different energy levels and arrive at different energy levels.
11. Large elements produce more lines. If there are more electrons then there is the possibility of more energy levels and an increased number of possible transitions.
12. Every element has its own unique line spectrum just like people have their own unique fingerprints. Just like fingerprints can be used to identify people, line spectra can be used to identify elements.