Colorblindness

Overview
Colorblindness is better described as a color-deficiency because in the vast majority of people with the condition they can see colors, but lack the ability to perceive them the way most people do. By far most people with colorblindness have a red-green deficiency. When a colorblind person looks at a red apple, they will say it is red because they know it is red, but will perceive the actual color differently. It is an inherited trait that mainly affects men because it is an X-linked recessive gene. There is no treatment for the condition. However, a red contact lens can be used to help with detecting different hues. It may limit some in the career choices they make.

Signs & Symptoms
A person that is colorblind will not notice any symptoms because they just view colors differently. However, they may read tests or items that require accurate color perception incorrectly.

Causes
Colorblindness is an inherited trait and is caused by an alteration in the gene that codes for the photopigment in cone cells. Cone cells are what allow us to have detailed and color vision. In colorblind individuals the photopigment functions differently and causes a different color perception. The gene that codes for colorblindness is located on the X chromosome and is recessive (X-linked recessive). Because of this it affects men much more commonly than women. Men have one X chromosome and get the condition when they have the gene. Women have two X chromosomes and require two of the genes to be colorblind, which is quite rare. Between 2% -6% of men are colorblind and 0.5% of women are colorblind. Women are typically carriers. Below is a pedigree chart that demonstrates the inheritance patterns most commonly seen.
Testing & Evaluation
Testing for colorblindness is usually done with pseudoisochromatic plates that display certain patterns or numbers. People with colorblindness are unable to see the number or pattern as those without colorblindness do. Below is an example.

Management
There is no treatment for colorblindness. Special contact lenses can be used to help some people with colorblindness distinguish the difference between colors. Some careers require good color perception like being a lab technician who needs to interpret tests results based color or an electrician who needs to tell the difference between different colored wires. Because of this those with colorblindness may need to limit their career options. In children it is important to know of colorblindness so teachers can adjust their lessons to provide a better learning environment.
Websites

All About Vision:  http://www.allaboutvision.com/conditions/colordeficiency.htm

American Optometric Association:  http://www.allaboutvision.com/conditions/colordeficiency.htm