

PEAK Class 101: Glossary of Basic Graphics Terms



► Refresh Rate

Computer simulates motion on the monitor by displaying a series of images. Monitor's refresh rate is the amount of times that the graphics card will update the image. A refresh rate of 65 Hz means that the monitor is refreshing the image 65 times per second. Refresh rate problems normally arise in a video game when the computer is processing frames faster than the monitor. For example, if the computer process 100 frames per second and the monitor's refresh rate is 75 Hz, there will be times when a frame is displayed halfway on the monitor and cause the image to be unreadable on the screen. As a solution, V-sync (short for vertical synchronization) can be enabled. This limits the frames on the computer processing faster than the refresh rate of the monitor.

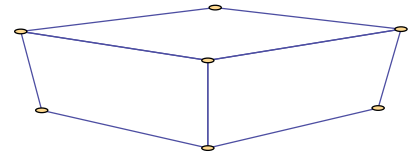
► Pixel



A Pixel stands for "picture element." It is a small dot of graphical information on the display - the representation of a color. If screen resolution is 1024x768, the screen shows a grid of 1024 pixels wide by 768 pixels high. The displayed content updates between 60 and 120 times per second depending on your display type and the amount of data generated by the graphics card and output.

► Vertex

Objects in a 3D scene are made of vertices. A vertex is the point in 3D space with X, Y, Z coordinates. When multiple vertices joined together, a polygon can build, like a triangle. The 3D cube pictured above is made up of eight vertices. More complex objects may appear to have curved shapes, which can be achieved by using very large amounts of vertices.



► Shader



Pixel Shaders create ambiance with materials and surfaces that mimic reality. Currently there are two forms of shaders: vertex shaders and pixel shaders. Vertex shaders deform or transform 3D elements. Pixel shaders can change pixel colors based on complex input. Pixel shaders are frequently used for complex effects in video games. For example, a shader could make the effect like above picture.

Fill Rates

The fill rate is generally referred to as the rate at which a graphics processor can draw pixels. The texture fill rate is calculated differently by ATI and Nvidia. Nvidia multiplies the number of pixel pipelines by the clock frequency while ATI multiplies the number of texture units by the clock frequency. Both are correct methods.

