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1. The frame rate reported by the program when the window is different sizes, specifically 1x1, 300x300 and full screen. Explain your results.

1x1: 59.952 fps
300x300: 59.940 fps
Full Screen: 59.952 fps

The frame rate is not affected by the screen size for the gears program since it is a simple program, but for a more complex program an inverse relationship occurs between the frame rate and the size of the window. The resolution, complexity of the graphics in the image, the process of generating the image called rendering, and the quality of the system's graphics card also affects the frame rate.

2. On some systems the frame rate is a small round number like 60 or 72 or 85 frames per second, and sometimes it is a large number, thousands or tens of thousands of frames per second. Explain why this occurs.

Systems have different graphics cards and CPU, which directly affects the frame rate. The higher the frame rate, the higher the CPU requirement. Systems with more sophisticated graphics card and a more powerful CPU will have a higher frame rate. The content type also can alter this value, high motion graphics require more resources and lowers the frame rate if the CPU is unable to handle the graphics. 60fps is the default when VSYNC is enabled, it holds 60fps as the strict upper limit because 60fps allows for a smooth and sharp video. When it is a large number, some of the frames are redundant and the VSYNC feature is disabled in the graphics card.

3. 45 minutes