In the present work, the reflected light scattering from a rough surface is studied in the Fresnel diffraction limit, by using a square grating. It is shown theoretically that the scattered light intensity depends on some statistical properties of the rough surface: the light incident angle, the grating period and a geometric coefficient related to the ratio of distance of the rough surface and the observation plane from the grating. At Talbot distances of the grating, the surface height difference function is the modulation transfer function (MTF) of the scattering in reflection from the rough surface. If the multiplication is larger than twice the surface correlation length, the height difference function is constant for different spatial frequencies. Therefore, the square wave is reproduced with smaller contrast. The surface roughness can be obtained by measuring the contrast at different incident angles. It is also shown that the contrast measurements in both reflection and transmission, provide the refractive index of transparent samples with a rough surface. In experimental studies the roughness of three metal standard rough surfaces are determined in different incident angles. Also, the refractive index of a sheet glass with a rough surface is obtained. The results are quite consistent.