Dividing the two equations

$$\frac{N_1}{N_2} = \frac{\sigma(30°)}{\sigma(60°)} \frac{\Delta\Omega_1}{\Delta\Omega_2}$$

Let a_1 and a_2 be the areas of the two detectors
Let d_1 and d_2 be the distances of the two detectors from the scattering center

$$\Delta\Omega_1 = \frac{a_1}{d_1^2} \qquad \Delta\Omega_2 = \frac{a_2}{d_2^2}$$

$$\frac{N_1}{N_2} = \frac{\sigma(30°)}{\sigma(60°)} \cdot \frac{a_1}{d_1^2} \frac{d_2^2}{a_2}$$

$$\frac{\sigma(30°)}{\sigma(60°)} = \frac{N_1}{N_2} \frac{a_2}{a_1} \frac{d_1^2}{d_2^2} = \frac{2\ 10^4}{10^2} \frac{5}{1} \frac{1}{4} = \frac{1}{4}\ 10^3$$

$$\boxed{\frac{\sigma(30°)}{\sigma(60°)} = 250}$$