Consider a uniform and isotropic gas for which the number density of gas particles with velocity between **v** and **v** + d**v** is $f(v)dv_x dv_y dv_z$. Focus on an area element dA that is perpendicular to the z-axis and on the wall of the gas container. Let theta be the angle between **v** and the +z-direction and phi be the associated azimuthal angle. Which of the following is the correct expression for the number of particles with velocity between **v** and **v** + d**v** that hit the area element over a time interval dt?

- f(v)(v_z)(dv_z)(dA)(dt)
- f(v)(v)(dv)(dA)(dt)
- f(v)(v)(dv_x)(dv_y)(dv_z)(dA)(dt)
- f(v)(v^3)(cos theta)(sin theta)(dv)(d theta)(d phi)(dA)(dt)
- f(v)(v^3)(sin theta)(dv)(d theta)(d phi)(dA)(dt)