9. (a) If $K_i$ is the kinetic energy of the flake at the edge of the bowl, $K_f$ is its kinetic energy at the bottom, $U_i$ is the gravitational potential energy of the flake-Earth system with the flake at the top, and $U_f$ is the gravitational potential energy with it at the bottom, then $K_f + U_f = K_i + U_i$. Taking the potential energy to be zero at the bottom of the bowl, then the potential energy at the top is $U_i = mgr$ where $r = 0.220$ m is the radius of the bowl and $m$ is the mass of the flake. $K_i = 0$ since the flake starts from rest. Since the problem asks for the speed at the bottom, we write $\frac{1}{2}mv^2$ for $K_f$. Energy conservation leads to

$$mgr = \frac{1}{2}mv^2 \implies v = \sqrt{2gr} = \sqrt{2(9.8)(0.220)} = 2.08 \text{ m/s} .$$

(b) We note that the expression for the speed ($v = \sqrt{2gr}$) does not contain the mass of the flake. The speed would be the same, 2.08 m/s, regardless of the mass of the flake.

(c) The final kinetic energy is given by $K_f = K_i + U_i - U_f$. Since $K_i$ is greater than before, $K_f$ is greater. This means the final speed of the flake is greater.