Let $\deg f = d_1$ & $\deg g = d_2$. $\Rightarrow$ By Bezout's theorem, $f \cdot g$ have at most $d_1 d_2$ simultaneous solutions, i.e. $\exists$ at most $d_1 d_2$ points satisfying $f=0$ & $g=0$, which means $\#(\{f=0\} = C \cap \{g=0\} = D) \leq d_1 d_2$.

The degree also behaves well with respect to the geometric operations of projection and coning. Clearly, if $V \subset \mathbb{P}^n$ is any variety, $p \in \mathbb{P}^n$ any point not on V, and $\pi_p : V \longrightarrow \mathbb{P}^{n-1}$ the projection onto a hyperplane, then $\deg(V) = \deg(\pi_p(V))$:
the number of points of intersection of $\pi(V)$ with a generic $(n-k-1)$-plane $\mathbb{P}^{n-k-1}$ in $\mathbb{P}^{n-1}$ is just the number of points of intersection of V with the $(n-k)$-plane $\mathbb{P}^{n-k} = \overline{\mathbb{P}^{n-k-1}, p}$ in $\mathbb{P}^n$; since by Bertini the generic $\mathbb{P}^{n-k}$ through p meets V transversely, this is just the degree of V.

I don't think that $\deg(V) = \deg(\pi_p(V))$ is correct. Here is a trivial counterexample.

$V = \{[1,1,2], [1,1,3]\} \subset \mathbb{P}^2$

$p = [0,0,1] \Rightarrow$ Obviously, $p \notin V$.

$$\pi_p : V \longrightarrow \mathbb{P}^1$$
$$[1,1,2] \longmapsto [1,1,0] \qquad \Rightarrow \qquad \pi_p(V) = \{[1,1,0]\}$$
$$[1,1,3] \longmapsto [1,1,0].$$

$\Rightarrow$ The number of points of intersection of $\pi_p(V)$ with a generic 1-plane $\mathbb{P}^1$ in $\mathbb{P}^1$ is 1, while the # of points of intersection of V with 2-plane $\mathbb{P}^2 = \overline{\mathbb{P}^1, p}$ in $\mathbb{P}^2$ is 2.
(See Mumford, Algebraic Geometry I. Complex Projective Geometry p72, Proposition (5.5))

The set S of all hyperplanes through p in $\mathbb{P}^n$ forms a