Appendix 5

Drake Equation:

$$N = R_* f_p n_e f_\ell f_i f_c L$$

N	=	number of communicable civilizations in our galaxy.
R_*	=	rate at which stars form.
f_p	=	fraction of stars that have planetary systems.
n_e	=	number of planets, per planetary system, that are suitable for life.
f_ℓ	=	fraction of planets suitable for life on which life actually arises.
f_i	=	fraction of life-bearing planets where intelligence develops.
f_c	=	fraction of planets with intelligent life that develop a technological phase during which there is capability for and interest in interstellar communication.
L	=	average lifetime of communicable civilizations.
r	=	average distance to nearest civilization.

	R_*	f_p	n_e	f_ℓ	f_i	f_c	L	N	r
Estimate									
Birthrate									

if N > 8000 $\quad r = \dfrac{10^4 \text{ l.y.}}{N^{1/3}}$

if N < 8000 $\quad r = \dfrac{5 \times 10^4 \text{ l.y.}}{N^{1/2}}$