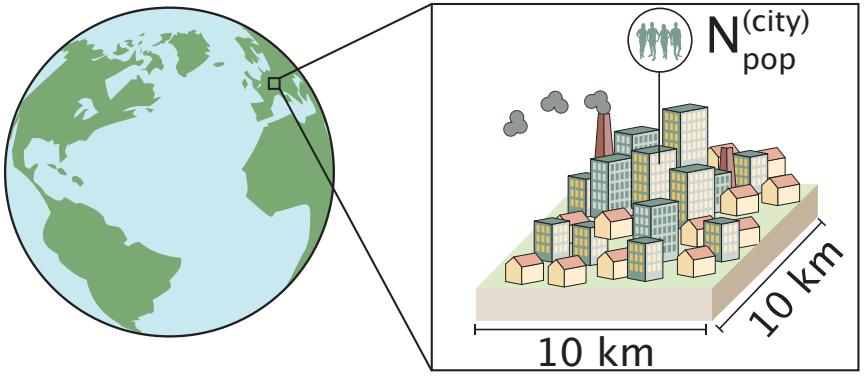
(A) URBAN LAND USE



typical population, $N_{pop} \approx 10^5$

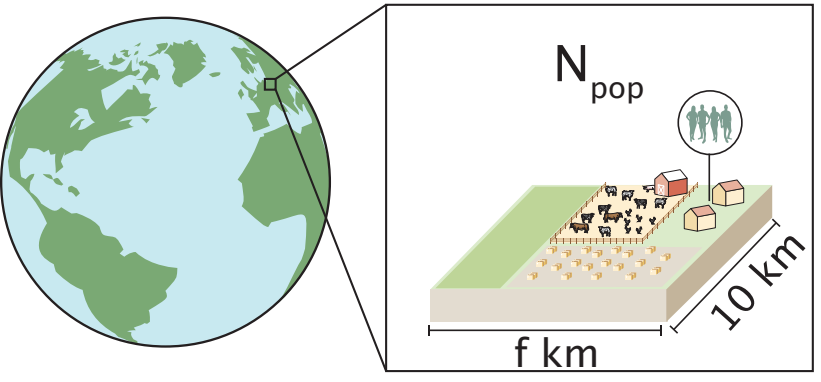
typical area, $A \approx 10^2$ km^2

typical density, $\rho \approx \frac{N_{pop}}{A} \approx \frac{10^5 \text{ people}}{10^2 \text{ km}^2}$

$\approx 10^3$ people/km^2

total urban land area, $A_{urban} \approx \frac{N_{pop}^{(urban)}}{\rho} \approx \frac{f \times 10^9 \text{ people}}{10^3 \text{ people/km}^2} \approx f \times 10^6$ km^2

(B) RURAL LAND USE



typical population, $N_{pop} \approx f \times 10^3$

typical area, $A \approx f \times 10$ km^2

typical density, $\rho \approx \frac{N_{pop}}{A} \approx \frac{f \times 10^3 \text{ people}}{f \times 10 \text{ km}^2}$

$\approx 10^2$ people/km^2

total rural land area, $A_{rural} \approx \frac{N_{pop}^{(rural)}}{\rho} \approx \frac{f \times 10^9 \text{ people}}{10^2 \text{ people/km}^2} \approx f \times 10^7$ km^2