

PART 1 PROBLEM 2 SOLUTION

EQUATION: \Rightarrow

SQ FT EARTH

$$5280^2 = 2.79(10^7) \frac{4^2}{mi^2}$$

$$\frac{ft^2}{EARTH} = 2.79(10^7)(3.73(10^7))$$

$$= 16.0(10^{14})$$

BRAIN TWIST SOLUTION

HOW MANY DOUBLINGS WILL HAPPEN TILL POP =
n. SQ FT EARTH?

$$\left(\frac{\text{SQ FT ON EARTH}}{\text{CURRENT POPULATION}} \right) \times 2^n$$

$$16.0(10^{14}) = 7.8(10^9) \times 2^n$$

$$\frac{16.0(10^{14})}{7.8(10^9)} = 2^n$$

$$2.05(10^5) = 2^n$$

$$205,000 = 2^n$$

$$\log 205,000 = \log 2^n$$

$$\frac{\log 205,000}{\log 2} = n = \frac{5.31}{.301} = 17.6 \text{ DOUBLINGS}$$

$$17.6 \times 53 = \boxed{933 \text{ YE}}$$