Set 42 Suppose that you look after a wind farm with 20 wind turbines, among which 5 turbines are in location A and the remaining 15 turbines are in another location B. Calculate the mean time to failure of the entire wind farm when you only know that the mean time to failure of the turbines in location A is 6 months, and in location B is 4 months.

$$MTTF = \mathbb{E}[T|A]\mathbb{P}(A) + \mathbb{E}[T|B]\mathbb{P}(B)$$

$$MTTF = 6 * \frac{5}{20} + 4 * \frac{15}{20}$$

$$MTTF = \frac{3}{2} + 3$$

$$MTTF = 4.5$$