Define Production Efficiency.

**ANSWER.** From Parkin: “We achieve production efficiency if we cannot produce more of one good without producing less of some other good. When production is efficient, we are at a point on the PPF. If we are at a point inside the PPF, production is inefficient because we have some unused or misallocated resources or both.”

Some Remarks.

1. There is a broader notion, simply called *efficiency* or *Pareto efficiency*. If a system is behaving efficiently, it means that it would be impossible to make somebody better off without making somebody else worse off. Parkin splits this notion into two ideas *production* and *allocative* efficiency. Note that division here is along the lines of two of the “big question” we ask in economics. *Production* efficient is on the “What?” and “How?” side while *allocative* efficiency is on the “How Much” and “To Whom?” side.

Hence if a system is inefficient in the overall Pareto sense, it means that something can be done to make some people better off without making others worse off. That something may be a change in how inputs are allocated to various productive processes or it may be a change in how the output from those productive processes are distributed among the population. Note that

- production efficiency \( \leq \) Pareto Efficiency
- allocative efficiency \( \leq \) Pareto Efficiency

That is, production efficiency is a *necessary* condition to achieve overall Pareto Efficiency, but not a *sufficient* condition. Similarly for allocative efficiency. However

production efficiency + allocative efficiency \( \iff \) Pareto Efficiency.

2. Parkin cites one reason we might inside the PPF is that some resources are going “unused”. This may be true, but one must be careful here. For example, if you sitting around at home and not working, are you one of the “unused” units of labor being referred to? No! You might be misallocated, but sitting around at home is *leisure* and
that is something people value. Land provides another example. If a farmer decides to not develop a parcel of his land into cropland - leaving it forest or marsh - is that land “unused”? Again, probably not. It is likely used to produce ecological services which society values - water quality, biological diversity, etc - services which would be degraded if that land were put into tillage. In fact, true examples of totally unused resources are difficult to find - though gross misallocation or even destructive use is not so uncommon.