

Motivating Question: Transport Service

Suppose that Transport Service must produce a certain output of cargo and passenger service per year. The service is confronted with the following combinations of HC100 aircraft and mechanics which can be used to yield this required output over its route pattern and meet schedule requirements.

Combination Number	Number of Aircraft	Number of Mechanics
1	60	1,000
2	61	920
3	62	850
4	63	800
5	64	760
6	65	730
7	66	710

- If Transport Service is using 60 aircraft and 1,000 mechanics, how many mechanics can it dispense with and still maintain its output if it acquires an additional HC100?
- If the annual cost resulting from the operation of another HC100 is \$250,000 and if mechanics cost Transport Service \$6,000 each annually, should the service acquire a sixty-first HC100?
- Which combination of aircraft and mechanics should Transport Service use to minimize its costs?
- Suppose the annual cost of an HC100 drops to \$200,000 and the cost of mechanics rises to \$7,000 per year. What combination should now be employed to minimize annual costs?
- Can you say with certainty using the data above that the marginal product of labor is diminishing? Why or why not?