Answer on Question #44112 – Economics – Microeconomics

The amount of fish caught per week on a trawler is a function of the crew size assigned to operate the boat. Based on past data, the following production schedule was developed:

CRRW SIZE(Number of workers) Amount of Fish caught per week (Hundreds of LBS)

Supposed the owner of the trawler can sell all the fish caught for $75 per 100 pound and can hire as many crew members as desired by paying them $150 per week. Assuming that the owner of the trawler is interested in maximising profits, determine the optimal crew size.

Solution

N, workers	Q, hundreds of LBS	MP, hundreds of LBS	AP, hundreds of LBS	TR=$75*Q	TC=$150*N	TP=TR-TC
2	3	-	1.5	$225.00	$300.00	-$75.00
3	6	3	3	$450.00	$450.00	$0.00
4	11	5	5.5	$825.00	$600.00	$225.00
5	19	8	9.5	$1 425.00	$750.00	$675.00
6	24	5	12	$1 800.00	$900.00	$900.00
7	28	4	14	$2 100.00	$1 050.00	$1 050.00
8	31	3	15.5	$2 325.00	$1 200.00	$1 125.00
9	33	2	16.5	$2 475.00	$1 350.00	$1 125.00
10	34	1	17	$2 550.00	$1 500.00	$1 050.00
11	34	0	17	$2 550.00	$1 650.00	$900.00
12	33	-1	16.5	$2 475.00	$1 800.00	$675.00

P = $75 per 100 LBS, w = $150 per worker.

Total profit equals: TP = TR – TC, TC = N*w, TR = P*Q, where TR – total revenue, TC – total cost, P – price, Q – hundreds of LBS, w – fisher salary, N – number of workers.

The maximal profit is $1125, when 8 or 9 workers are used. To avoid access costs using additional workers and assuming that the owner of the trawler is interested in maximizing profits, the optimal crew size is 8 workers, when the profit equals $1125.