Deriving Labor and Costs Exercise: Answers

Firm R, which produces a good, finds a new technology that boosts the productivity of its workers. The firm's fixed costs are $4,000 per unit of output and it hires workers and pays them a wage of $2,000 per worker.

Quantity of Labor Employed	Total Product	Average Product of Labor	Marginal Product of Labor	Total Variable Cost	Total Fixed Cost	Total Cost	Average Variable Cost	Average Cost	Marginal Cost
0	0	XX	XX	0	4,000	4,000	XX	XX	XX
1	120	120	120	2,000	4,000	6,000	16.67	50	16.67
2	360	180	240	4,000	4,000	8,000	11.11	22.22	8.33
3	540	180	180	6,000	4,000	10,000	11.11	18.52	11.11
4	672	168	132	8,000	4,000	12,000	11.90	17.86	15.15
5	756	151.2	84	10,000	4,000	14,000	13.23	18.52	23.81
6	792	132	36	12,000	4,000	16,000	15.15	20.20	55.55

Note Equations:

$$MP_L = \frac{\Delta TP}{\Delta L} \qquad AP_L = \frac{TP}{L} \qquad TC = TVC + TFC \qquad MC = \frac{\Delta TC}{\Delta Q} = \frac{\Delta TVC}{\Delta Q} \qquad AC = \frac{TC}{Q} \qquad AVC = \frac{TVC}{Q}$$