Cost and Production Practice
Fall, 2004

Use the information on the table below to answer the questions that follow. You may want to fill in at least some of the table to get the answers needed, but you may not have to fill in the whole thing (except for practice).

The following shows production per week in a factory. Assume that the weekly input price (wage) of each unit of labor is $300, and that fixed costs are $1000 per week. Assume that materials costs are not important.

Labor Input	Output (total product)	Marginal Product	Average Product	Marginal Cost	Average Variable Cost	Average Fixed Cost	Average Total Cost
0	0						
1	10	10	10	30.00	30.00	100.00	130.00
2	30	20	15	15.00	20.00	33.33	53.33
3	60	30	20	10.00	15.00	16.67	31.67
4	100						
5	150						
6	210						
7	280						
8	360						
9	450						
10	535						
15	935						
20	1310						
25	1660						
30	1985						
35	2285						
40	2560						
45	2805						
50	3015						
55	3195						
60	3345						
65	3460						
70	3540						

1. At what level of input (labor) dodiminishing returns to labor first appear?
2. What is the dollar amount of marginal cost at its lowest value on the table, and at what output does it occur?
3. What is the minimum of average variable cost that you calculate using numbers on the table?
4. At what level of output is average variable cost minimized (between which outputs listed on the table)?
5. At what level of output is average total cost minimized (between which outputs listed on the table)?
6. If the price of the factory's products were $4.00 each, how many units of output should the factory make?
7. If the price of the factory's products were $5.00 each, how many units of output should the factory make?
8. What would be the factory's profit if the product price was $5.00?
9. If the price of the factory's products were $10.00 each, how many units of output should the factory make?
10. What would be the factory's profit if the product price was $10.00?

Cost and Production Answers
Fall, 2004

Labor Input	Output (total product)	Marginal Product	Average Product	Marginal Cost	Average Variable Cost	Average Fixed Cost	Average Total Cost
0	0						
1	10	10	10	30.00	30.00	100.00	130.00
2	30	20	15	15.00	20.00	33.33	53.33
3	60	30	20	10.00	15.00	16.67	31.67
4	100	40	25	7.50	12.00	10.00	22.00
5	150	50	30	6.00	10.00	6.67	16.67
6	210	60	35	5.00	8.57	4.76	13.33
7	280	70	40	4.29	7.50	3.57	11.07
8	360	80	45	3.75	6.67	2.78	9.44
9	450	90	50	3.33	6.00	2.22	8.22
10	535	85	53.5	3.53	5.61	1.87	7.48
15	935	80	62.3333	3.75	4.81	1.07	5.88
20	1310	75	65.5	4.00	4.58	0.76	5.34
25	1660	70	66.4	4.29	4.52	0.60	5.12
30	1985	65	66.1667	4.62	4.53	0.50	5.04
35	2285	60	65.2857	5.00	4.60	0.44	5.03
40	2560	55	64	5.45	4.69	0.39	5.08
45	2805	49	62.3333	6.12	4.81	0.36	5.17
50	3015	42	60.3	7.14	4.98	0.33	5.31
55	3195	36	58.0909	8.33	5.16	0.31	5.48
60	3345	30	55.75	10.00	5.38	0.30	5.68
65	3460	23	53.2308	13.04	5.64	0.29	5.92
70	3540	16	50.5714	18.75	5.93	0.28	6.21

1. At what level of input (labor) dodiminishing returns to labor first appear? **10**
2. What is the dollar amount of marginal cost at its lowest value on the table, and at what output does it occur? **$3.33**
3. What is the minimum of average variable cost that you calculate using numbers on the table? **$4.52**
4. At what level of output is average variable cost minimized ? **between 1660 and 1985**
5. At what level of output is average total cost minimized? **between 2285 and 2560**
6. If the price of the factory's products were $4.00 each, how many units of output should the factory make? **None, since this price is below AVC minimum**
7. If the price of the factory's products were $5.00 each, how many units of output should the factory make? **MC is $5.00 at an output of 2285, so make 2285.**
8. What would be the factory's profit if the product price was $5.00? **-$68.55**
9. If the price of the factory's products were $10.00 each, how many units of output should the factory make? **3345**
10. What would be the factory's profit if the product price was $10.00? **$14,450.50**