Dynamic Programming – Integer Knapsack Worksheet

Read the information presented on http://www.ship.edu/~thb/csc500/knapsack.html

Item	1	2	3	4	5	6
Sizes	5	8	9	7	9	13
Values	7	9	8	8	10	12

What value would you get from the greedy approach? _____

Use the pseudo-code presented there to fill in the values of the following table. *Assume the knapsack has a capacity of "15"*

Items> Capacity		i:1 7/5	i:2 9/8	i:3 8/9	i:4 8/7	i:5 10/9	i:6 12/13
0							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

According to the table:
What is the maximum value that can be achieved with this knapsack? _____

What is the smallest knapsack that can achieve the same value?:_____

What items are in your knapsack? _____

Dynamic Programming – Integer Knapsack Solution

Read the information presented on http://www.ship.edu/~thb/csc500/knapsack.html

Item	1	2	3	4	5	6
Sizes	5	8	9	7	9	13
Values	7	9	8	8	10	12

What value would you get from the greedy approach? 12

Use the pseudo-code presented there to fill in the values of the following table. *Assume the knapsack has a capacity of "15"*

Items> Capacity		i:1 7/5	i:2 9/8	i:3 8/9	i:4 8/7	i:5 10/9	i:6 12/13
0	0<	0<	0<	0<	0<	0<	0<
1	0<	0<	0<	0<	0<	0<	0<
2	0<	0<	0<	0<	0<	0<	0<
3	0<	0<	0<	0<	0<	0<	0<
4	0<	0<	0<	0<	0<	0<	0<
5	0<	**7^**	7<	7<	7<	7<	7<
6	0<	7^	7<	7<	7<	7<	7<
7	0<	7^	7<	7<	8^	8<	8<
8	0<	7^	9^	9<	9<	9<	9<
9	0<	7^	9^	9<	9<	10^	10<
10	0<	7^	9^	9<	9<	10^	10<
11	0<	7^	9^	9<	9<	10^	10<
12	0<	7^	9^	9<	15^	15<	15<
13	0<	7^	16^	16<	16<	16<	16<
14	0<	7^	16^	16<	16<	17^	17<
15	0<	7^	16^	16<	17^	**17^**	17<

According to the table:

What is the maximum value that can be achieved with this knapsack? **17**

What is the smallest knapsack that can achieve the same value?: **14**

What items are in your knapsack? 1 and 5