Congratulations! You passed!
TO PASS 60% or higher

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Fractional Knapsack

TOTAL POINTS 3

1. You have a knapsack of capacity 10kg and three items. First item has weight 20kg and value 20, second item has weight 5kg and value 10. Third item has weight 4 kg and value 20. You want to maximize the total value of the fractions of items that fit into your knapsack. What is the safe move? **1 / 1 point**

- ○ Take the whole first item.
- ○ Take 2kg of third item and 8 kg of first item.
- ○ Take the whole second item.
- ○ Take 10 kg of the first item.
- ◉ Take the whole third item.

Correct
Third item has value 5 per 1kg of weight, while first item has value 1 per 1 kg of weight and second item has value 2 per 1 kg of weight. So, safe move is to take the item with the largest value per 1 kg of weight - the third item. You can take the whole third item, because it fits into the knapsack.

2. What is the next safe move in the previous problem? **1 / 1 point**

- ○ Take the whole first item.
- ○ Take the whole third item.
- ○ Take 6 kg of the first item.
- ○ Take 10 kg of the first item.
- ◉ Take the whole second item.

Correct
The third item is already in the knapsack. The second item has value 2 per 1 kg of weight, and the first item has value 1 per 1 kg of weight, so it is safe to take the second item, because it has higher value per 1 kg of weight. The knapsack capacity is 10 kg, you've already put 4 kg of the third item in the knapsack, and the second item is only 5 kg, so the whole second item still fits in the knapsack.

3. What is the last move? **1 / 1 point**

- ○ Take 10 kg of the first item.
- ○ Take the whole second item.
- ○ Take the whole third item.
- ○ Take 1 kg of the second item.
- ◉ Take 1 kg of the first item.

Correct
You've already took the whole first item and the whole second item, their total weight is 9 kg, and the knapsack capacity is 10 kg. You have 1 kg left to use, and you take 1 kg of the first item.