The Ascending Bid Auction Experiment:

This is an experiment in the economics of decision making. The instructions are simple, and if you follow them carefully and make good decisions, you may earn a considerable amount of money that will be paid to you in cash at the end of this experiment.

It is important that you read these instructions carefully, both so that you can understand the game that you are about to play, and because we will ask you a series of review questions after you have finished reading these instructions. We will pay you up to $5 for answering the questions correctly, so it is in your best interest to read these instructions carefully. You will be allowed to refer to the instructions as you answer the questions and as you participate in the experiment.

In this experiment, you will participate in a simulation of an auction environment. The computer will be the auctioneer, and there will be two automated bidders. You will only be interacting with these two automated bidders, **not** with the other human bidders in the room. We will refer to the two automated bidders as "robots." During the course of this experiment, you will take part in ________ different auctions. In each auction, there are four items for sale, which are named **A**, **B**, **C**, and **D**. As a participant, you will bid on packages that include combinations of these four items. For example, you might bid on the package **AD**, or the package **C**, or the package **ABD**. Each package is worth a certain amount to you, which is called your **value** of the package. The automated bidders may have different values for the packages than you do. If you win a package at the end of an auction, your profit will be the difference between your value and the price you pay for the package. If you do not win any package, your profit will be zero. If you win a package at the end of an auction,

your profit = your value – your final price.

You will be paid based on your total profit. The exchange rate is

$1 = £________,

where £ is the fictitious currency used in the experiment.

Menus and Bidding

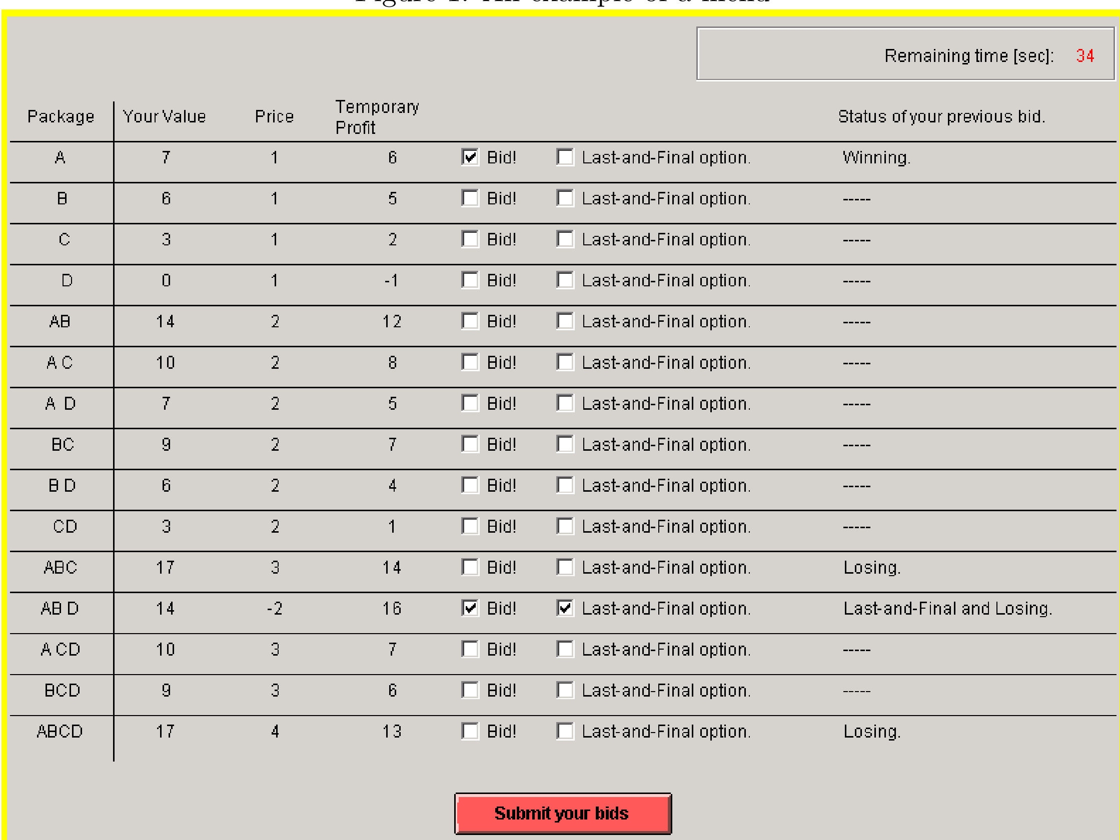
Each auction takes place in several rounds. At the beginning of each round, you will be asked to choose which packages to bid on. You will be given a menu to help you make your choices. An example of a menu is shown in **Figure 1** on the following page. The menu will show both your value of each package and the price at which that package is being sold. As mentioned above, your values may be different from those of other bidders. The initial price of each package will be the same as the number of items included in that package. For example, the initial price of **ABC** would be £3, since that package contains 3 items. In subsequent rounds, different bidders may face different prices. The pricing system will be explained in more detail later on.

The menu will also list for you your temporary profit, which is just the difference between your value of the package and the price at which the package is being offered to you. So,

your temporary profit = your value – your current price.

Finally, the menu will tell you whether the bids you made in the last round were winning or losing. If you have made a winning bid in a previous round, you are obligated to bid on that

Figure 1: An example of a menu



Remaining time [sec]: 34

Package	Your Value	Price	Temporary Profit			Status of your previous bid.
A	7	1	6	☑ Bid!	☐ Last-and-Final option.	Winning.
B	6	1	5	☐ Bid!	☐ Last-and-Final option.	-----
C	3	1	2	☐ Bid!	☐ Last-and-Final option.	-----
D	0	1	-1	☐ Bid!	☐ Last-and-Final option.	-----
AB	14	2	12	☐ Bid!	☐ Last-and-Final option.	-----
A C	10	2	8	☐ Bid!	☐ Last-and-Final option.	-----
A D	7	2	5	☐ Bid!	☐ Last-and-Final option.	-----
BC	9	2	7	☐ Bid!	☐ Last-and-Final option.	-----
B D	6	2	4	☐ Bid!	☐ Last-and-Final option.	-----
CD	3	2	1	☐ Bid!	☐ Last-and-Final option.	-----
ABC	17	3	14	☐ Bid!	☐ Last-and-Final option.	Losing.
AB D	14	-2	16	☑ Bid!	☑ Last-and-Final option.	Last-and-Final and Losing.
A CD	10	3	7	☐ Bid!	☐ Last-and-Final option.	-----
BCD	9	3	6	☐ Bid!	☐ Last-and-Final option.	-----
ABCD	17	4	13	☐ Bid!	☐ Last-and-Final option.	Losing.

Submit your bids

package, at the same price, in the next round. The computer will complete this process for you, by automatically re-submitting your winning bid, if you have one. If, however, you submit a losing bid, you will not be required to bid on that package later. Once your bid is losing, you have no further commitment to bid on that package, although you can continue to bid on that package if you choose to. The menu will have spaces for you to choose whether or not to bid on each package.

You can choose to bid on as many or as few packages as you want, and you can bid on a single item multiple times, by bidding on several packages that contain that item. It is OK to not bid on anything. No matter how many packages you bid on, you will never win more than one package. Once you have submitted a bid for a package, you must be prepared to pay the listed price.

> Example: Suppose that Bidder 1 bids for package **ABCD** at price £70 and for **AB** at price £50, Bidder 2 bids for package **CD** at price £40, and Bidder 3 bids for **CD** at price £30, as summarized in Table 1.

Table 1: Submitted bids.

	Package	Price
Bidder 1	**ABCD**	£70
Bidder 1	**AB**	£50
Bidder 2	**CD**	£40
Bidder 3	**CD**	£30

> In this example, Bidder 1 bids for items **A** and **B** twice, in package **ABCD** and package **AB**. However, the auctioneer cannot sell items **A** and **B** to Bidder 1 twice, as she has only one unit of each, so Bidder 1 cannot get both **ABCD** and **AB**. Bidder 1 might get **ABCD**, or **AB**, or nothing.

Winning bid determination

There are two phases to determining an auction's outcome. Phase 1 determines the allocation of the packages. Phase 2 determines the final prices that the winners pay for these packages. At some point, the auction will move from Phase 1 to Phase 2, but you will not be alerted when this happens. Once the auction has moved to Phase 2, it will not go back to Phase 1.

Phase 1:

In order to describe the auction, two definitions are necessary.

A bid for a package is **competitive** if the same bidder does not bid on a smaller package at the same price.

> Example: Suppose that bidders submit the following bids:

	Package	Price		status
Bidder 1	**ABCD**	£50	not competitive	losing
Bidder 1	**AB**	£50	competitive	winning
Bidder 2	**ABC**	£60	competitive	losing
Bidder 2	**AB**	£40	competitive	losing
Bidder 3	**CD**	£60	competitive	winning

- Bidder 1's bid for **ABCD** is not competitive, because he also bids for **AB**, a smaller package than **ABCD**, at the same price of £50. Since **AB** is the smallest package he bids on, his bid for **AB** is competitive.
- Bidder 2's bid for **ABC** is competitive, since he does not bid on any smaller packages at the price of £60. His bid for **AB** is also competitive, even though Bidder 1 is bidding for the same package, **AB**, at the higher price of £50. As you can see, other players' bids do not affect whether or not Bidder 2's bids are competitive.
- Bidder 3's bid is competitive, simply because it is the only bid he makes.

Note that a competitive bid is not always a winning bid. In this example, the winning bids are Bidder 1's bid for **AB** and Bidder 3's bid for **CD**, but some other competitive bids do not win.

A bidder is called **competitive-but-losing** if he makes a competitive bid, but he does not win any package. In the example above, Bidder 2 is competitive-but-losing, since he submits competitive bids on **ABC** and **AB**, but he does not win any package.

With these definitions, we can now describe the auction mechanism. As mentioned previously, each auction takes place in rounds, and you will be presented with a menu at the beginning of each round. Once all bidders have submitted their bids in that round, the auctioneer will choose the combination of submitted bids that yields the highest revenue. The auctioneer only has one unit of each item to sell, and will never give more than one package to each bidder. For example, the auctioneer will not give both **AB** and **D** to Bidder 1, because Bidder 1 can only win one package, and the auctioneer will not give **AB** to Bidder 1 and **B** to Bidder 2, since she only has one unit of **B** to sell.

<u>Example</u>: In the example presented on the previous page, we will examine how the auctioneer would choose winning bids. Consider the three possible assignments of the four goods:

1). Sell package **ABCD** to Bidder 1. The revenue is £70.

Bidder 1	**ABCD**	£70

2). Sell package **AB** to Bidder 1 and **CD** to Bidder 2. The revenue is £90.

Bidder 1	**AB**	£50
Bidder 2	**CD**	£40

3). Sell package **AB** to Bidder 1 and **CD** to Bidder 3. The revenue is £80.

Bidder 1	**AB**	£50
Bidder 3	**CD**	£30

As the 2nd assignment yields the highest revenue (£90), the **winning bids** are Bidder 1's bid for **AB** and Bidder 2's bid for **CD**.

If two or more combinations tie for the highest revenue, one of them will be selected based on the following criteria, which are used in decreasing order of importance:

1 An assignment containing a bid that was winning in the previous round;
2 An assignment maximizing the number of winners;

3 An assignment chosen randomly using a fair lottery.

Once a combination of bids has been chosen, the auctioneer will check if there are any competitive-but-losing bidders. If there are, Phase 1 continues with a new round. In the new round, the auctioneer will increase by £5 the price of the packages that the competitive-but-losing bidder placed bids on. These price increases will **only** affect the prices offered to the competitive-but-losing bidder, while all other bidders will face the same prices they faced in the previous round. Each bidder will be shown a new menu, and will be asked to choose what packages to bid on. Bids that were winning at the end of the previous round will automatically be re-submitted in the next round. Rounds will continue in this way until the assignment that maximizes revenue has no competitive-but-losing bidder. This is the final allocation of the packages. At this point, the auction moves to Phase 2. The bidders who placed bids that won in the last round of Phase 1 are the "winning bidders" of the auction.

Before we continue, are there any questions on the instructions so far?

Phase 2

Phase 2 changes only the final prices that are paid by the bidders, not the allocation of the packages. Once the auction moves to Phase 2, bidders will continue to see menus as before, and will not be notified of the phase change. At the beginning of Phase 2, the auctioneer will choose one of the winning bidders from the last round of Phase 1 as a **pivotal bidder**. The auctioneer then examines the bids that were made in the final round of Phase 1, but excludes (ignores) the bids of the pivotal bidder. The auctioneer determines the allocation of goods that maximizes revenue, using the same rules as Phase 1, but not considering any bids placed by the pivotal bidder. Once this new allocation has been determined, the auctioneer checks whether there is a competitive-but-losing bidder. If there is, the auctioneer will increase prices for the competitive-but-losing bidder, just as in Phase 1, until there are no competitive-but-losing bidders. At this point, a new pivotal bidder is chosen from among the winning bidders, and the process is repeated. This continues until there are no pivotal bidders left to choose. At this point, the auction terminates. This may sound complicated, but the following example may help you understand more fully.

Example: Suppose that bidders submit the following bids, just as in the previous example:

	Package	Price
Bidder 1	**ABCD**	£70
Bidder 1	**AB**	£50
Bidder 2* (pivotal bidder)	**CD**	£40
Bidder 3	**CD**	£30

Let Bidder 2 be the pivotal bidder in this round. Thus, the auctioneer will exclude all of Bidder 2's bids when she considers all possible assignments.

1). Sell package **ABCD** to Bidder 1. The revenue is £70.

Bidder 1	**ABCD**	£70

2). Sell package **AB** to Bidder 1 and **CD** to Bidder 2. The revenue is £90.

~~Bidder 1~~	~~**AB**~~	~~£50~~
~~Bidder 2~~	~~**CD**~~	~~£40~~

3). Sell package **AB** to Bidder 1 and **CD** to Bidder 3. The revenue is £80.

Bidder 1	**AB**	£50
Bidder 3	**CD**	£30

The 2nd assignment is not available, because the auctioneer should exclude the bid of the pivotal bidder, Bidder 2. In this case, the 3rd assignment yields the highest revenue. Therefore, the winning bids are Bidder 1's bid for **AB** and Bidder 3's bid for **CD**. As bidders are not informed that they are in Phase 2, the pivotal bidder is informed that his package is the one he received at the end of Phase 1. In the example, the pivotal bidder, Bidder 2, is informed that his bid on **CD** was winning. Meanwhile, Bidder 1 is informed that his bid on **AB** is winning and Bidder 3 is informed that his bid on **CD** is winning.

Price Adjustments

The amount that the winning bidders are required to pay at the end of the auction depends on the additional revenue that each bidder generated, which is calculated by comparing the revenue obtained by the auctioneer with the allocation at the end of Phase 1, versus the revenue obtained by the auctioneer in the allocation when the given bidder was pivotal.

Example: Suppose that the auction terminates with the following bids:

	Package	Price	status
Bidder 1	**AB**	£50	winning
Bidder 2	**CD**	£40	winning
Bidder 3	**ABCD**	£60	
Bidder 3	**AB**	£30	

As shown in the table, the bids from Bidder 1 and 2 become the winning bids at the end, because they generate the highest revenue £50 + £40 = £90.

However, the auctioneer does not ask Bidder 1 to pay £50. Suppose that Bidder 1 were chosen as a pivotal bidder, and so her bids are ignored. The winning bids then become Bidder 2's bid on **CD** and Bidder 3's bid on **AB**

	Package	Price	status
~~Bidder 1~~	~~**AB**~~	~~£50~~	~~winning~~
Bidder 2*	**CD**	£40	winning
Bidder 3	**ABCD**	£60	
Bidder 3*	**AB**	£30	winning

Then the auctioneer calculates the revenue that those winning bids would generate, which is £40 + £30 = £70. Thus, the additional revenue that Bidder 1 generates is £20, since £90 - £70 = £20. This £20 is the price adjustment for Bidder 1. Therefore, Bidder 1 pays £50 and receives £20 back. His final price is £30.

Similarly, Bidder 2 might not have to pay £40. Suppose that, when Bidder 2 is the pivotal bidder, the winning bid is Bidder 3's bid on **ABCD**, and that there are no competitive-but-losing bidders with this allocation.

	Package	Price	status
Bidder 1	**AB**	£50	~~winning~~
~~Bidder 2~~	~~**CD**~~	~~£40~~	~~winning~~
Bidder 3*	**ABCD**	£60	winning
Bidder 3	**AB**	£30	

The revenue would be £60, if Bidder 3's bid on **ABCD** was a winning bid at the end of the auction. Therefore, the additional revenue that Bidder 2 generates is £30, since £90 - £60 = £30. The price adjustment for Bidder 2 is £30. Bidder 2 pays £40 and receives the adjustment of £30. Thus, Bidder 2's final price is £10.

Notice that your final price depends on other bidders' bids, which you cannot observe during the auction.

Some notes

- **Price Consistency** When the prices offered to the competitive-but-losing bidder are increased, it may be necessary to increase prices on packages other than those on which the bidder has placed a bid. The reason for this is that a larger package must always have a price that is at least as high as the prices for any smaller packages.

  Example: Suppose that bidders submit the following bids:

	Package	Price		status
Bidder 1	**ABCD**	£40	not competitive	losing
Bidder 1	**AB**	£40	competitive	losing
Bidder 2	**ABC**	£60	competitive	losing
Bidder 2	**AB**	£50	competitive	winning
Bidder 3	**CD**	£60	competitive	winning

  Bidder 1 is a competitive-but-losing bidder, as he makes competitive bids and does not win any package in this round. The auctioneer increases Bidder 1's price for package **AB** by £5.

  In the example above, for Bidder 1, the auctioneer raises the price of both **AB** and **ABCD** from £40 to £45. Otherwise, the price for **ABCD** would remain £40, which is lower than the new price for **AB**, £45. The auctioneer checks in a similar way the prices of all other packages that contain **AB**. That is, the prices for **ABC** and **ABD** must also be at least as high as the price for **AB**, £45.

- **Last-and-Final Option** On your menu, you will see a place that you can select the option "Last-and-Final." If you choose this option, you will get a £5 discount on your bid. Once you choose the Last-and-Final option, your Last-and-Final bid will be automatically resubmitted at the same price in every round until the auction terminates. Therefore, even if the price for that package increases, you cannot increase your bid. A Last-and-Final bid that does not win will **not** be considered competitive-but-losing.

- **Time limit** In each round, bidders have to submit their bids within sixty seconds. There is a count-down clock at the top-right corner of the menu window.

- **Negative profit** If you bid on a package that has a price that is higher than your value of that package, then your profit (value - final price) may be negative. If you bid on packages for which your value is higher than the price, you will never have negative profit.

Value Determination

At the beginning of each auction, the values that each bidder (including you) gives to the different items will be randomly selected from {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10}. Each value is equally likely to be drawn. For you, **A** and **B** are goods that give you greater value when they are bought together. For example, if your value of **A** is £3 and your value of **B** is £5, your value of **AB** might be £9. As you can see, your value of **AB** is greater than the sum of your values of **A** and **B**.[1]

In a similar way, your value of **ABC** would be greater than the sum of your values of **A**, **B**, and **C**. This relationship does not exist for you between any other goods. So, for example, your value of **AD** is just the sum of your values of **A** and **D**. For you, only packages that include both **A** and **B** have this added value. During this auction, one of the robots will also derive greater value from packages that contain both **A** and **B**, while the other robot will get added value from packages that contain both **C** and **D**.

The automated bidders

While you won't know the individual bids of the robots, you will know a little bit about their strategies. The robots that you will be interacting with will use two different strategies.

When **Robot 1** examines his menu, he first looks for any packages for which he has a negative temporary profit. For those packages that have a negative profit, he adds £5 to his temporary profit, because he knows that he can buy the package with a £5 discount using the Last-and-Final option. He does not change his temporary profits for packages for which he currently has a positive profit. He then examines the revised temporary profits for all packages, and finds the package that gives him the greatest revised temporary profit. There are two possibilities:

1) If his greatest possible profit is greater than or equal to £5, he will bid on all packages that give him a revised temporary profit of within £5 of the maximum temporary profit. For example, if one package gives him a temporary profit of £17, and no package gives him a profit of more than £17, then he will bid on all packages that give him a temporary profit of at least £17 − £5, or £12.
2) If his greatest possible profit is less than £5, he will make bids only on those packages that have a revised temporary profit of greater than or equal to £0.

Robot 2 examines his menu and looks for packages for which he has an original temporary profit of greater than −£5. For those packages that do, he flips a coin to decide whether or not to place a bid on that package.

Both of the robots will choose the Last-and-Final option for any packages they make bids on that have an original temporary profit that is negative.

Conclusion

As mentioned before, your profit is given as follows:

$$\textbf{your profit} = \textbf{your value} - \textbf{your final price}.$$

[1] Specifically, the values of packages that contain **AB** are given as follows:

value of **AB** $= ((\text{value of } \mathbf{A})^\rho + (\text{value of } \mathbf{B})^\rho)^{1/\rho}$
value of **ABC** $= ((\text{value of } \mathbf{A})^\rho + (\text{value of } \mathbf{B})^\rho)^{1/\rho} + (\text{value of } \mathbf{C})$
value of **ABD** $= ((\text{value of } \mathbf{A})^\rho + (\text{value of } \mathbf{B})^\rho)^{1/\rho} + (\text{value of } \mathbf{D})$
value of **ABCD** $= ((\text{value of } \mathbf{A})^\rho + (\text{value of } \mathbf{B})^\rho)^{1/\rho} + (\text{value of } \mathbf{C}) + (\text{value of } \mathbf{D})$

For each auction, ρ is a fixed number between 0 and 1.

In a moment, we will ask you to complete a few review questions, and we will pay you according to the number that you answer correctly, in addition to the money that you earn during the auction itself.

Are there any questions before we begin the review questions?

Review Questions:

Remember that you are free to use the instructions to answer these questions, and that we will pay you for your correct answers.

Q.1 Winning Bids

Let us find winning bids, given the following submitted bids.

	Package	Price
Bidder 1	**A**	£50
Bidder 2	**B**	£20
Bidder 2	**AB**	£60
Bidder 3	**CD**	£50

Hint: There are 2 assignment patterns. These assignments are marked below, with the winning bids marked with an asterisk (*). Which assignment gives the highest revenue?

	Package	Price
Bidder 1*	**A**	£50
Bidder 2*	**B**	£20
Bidder 2	**AB**	£60
Bidder 3*	**CD**	£50

Revenue = £________.

	Package	Price
Bidder 1	**A**	£50
Bidder 2	**B**	£20
Bidder 2*	**AB**	£60
Bidder 3*	**CD**	£50

Revenue = £________.

Which of the following is the set of winning bids?

a) Bidder 1's **A**, Bidder 2's **B** and Bidder 3's **CD**.
b) Bidder 2's **AB** and Bidder 3's **CD**.

Q.2 Phase Changes and Price Increases

Q.2.1 What is required before the auction moves to Phase 2?

a) There are no winning bidders left to choose as pivotal bidders.
b) There is no competitive-but-losing bidder given the winning bids.

Q.2.2 If the condition above were not satisfied, what would the auctioneer do next?

a) The auctioneer uses a tie-breaker.
b) The auctioneer chooses another pivotal bidder.
c) The auctioneer increases the price of some package for each competitive-but-losing bidder.

Q.2.3 Rules for price increases. True or False?

T/F If a bidder wins a package in a round, he will be offered the same price in the next round.
T/F The auctioneer may raise prices on packages for which you have never made bids.

Q.3 Bidding rules

Q.3.1 What is the advantage of Last-and-Final bid option?

a) You can bid at a discounted price.
b) The bid always wins in any tie-breaker.

Q.3.2 What is the disadvantage of Last-and-Final bid option?

a) The bid always loses in any tie-breaker.
b) You can no longer increase your bid for the package.
c) There is no disadvantage.

Q.4 Price adjustment and Payments

Suppose that the auction terminates with the following bids.

	Package	Price
Bidder 1 (winning)	**A**	£15
Bidder 2	**AB**	£15
Bidder 2	**ABC**	£30
Bidder 3 (winning)	**BCD**	£40
Bidder 3	**D**	£20

Q.4.1 How much is the revenue to the auctioneer without any price adjustment?

The revenue to the auctioneer is £____ + £____ = £____

Q.4.2 How much is the price adjustment to Bidder 1?

When Bidder 1 was a pivotal bidder and excluded, the winning bids were Bidder 2's bid on **ABC** and Bidder 3's bid on **D**. They were indicated by the asterisks * in the table below.

	Package	Price
~~Bidder 1 (winning)~~	~~**A**~~	~~£15~~
Bidder 2	**AB**	£15
Bidder 2*	**ABC**	£30
Bidder 3 (winning)	**BCD**	£40
Bidder 3*	**D**	£20

If Bidder 1's bid was ignored, then the highest revenue would be £____+£____=£______.

Then, subtract the amount from £55. That is, £55 − £____ = £____.
This is the price adjustment to Bidder 1.

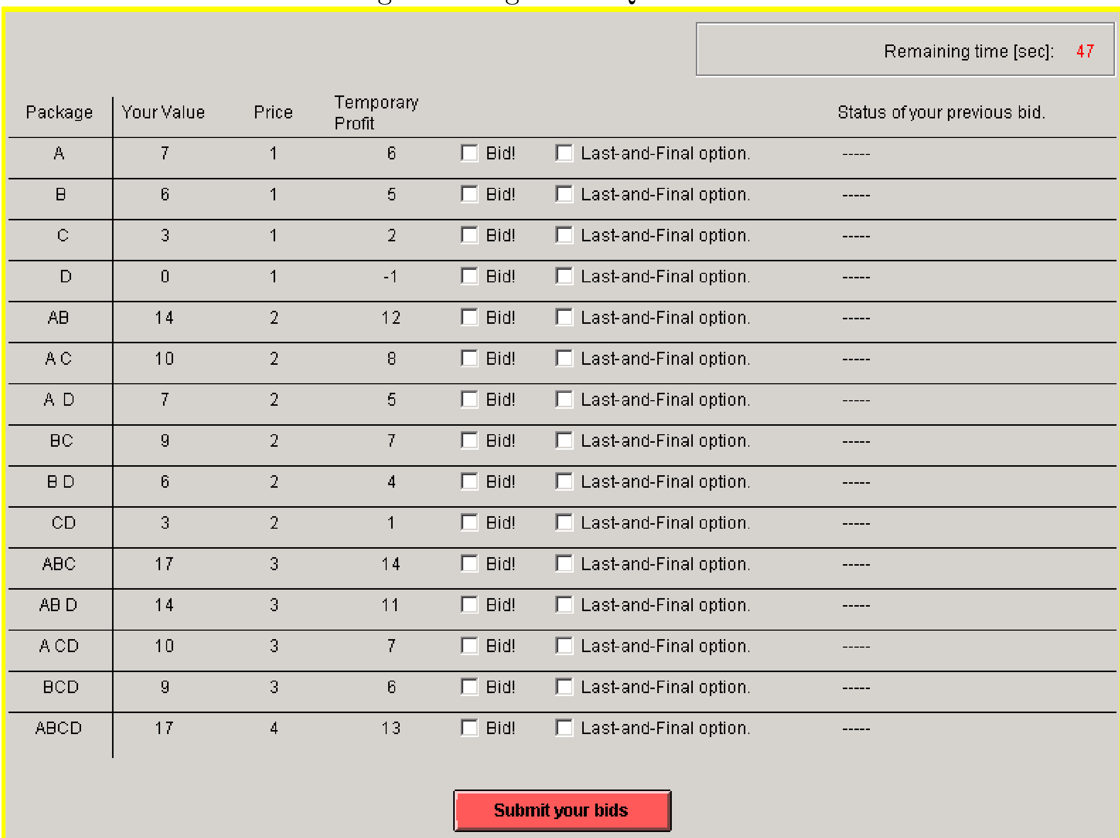
Q.4.3 How much is the final price that Bidder 1 pays in the end?

Hint: He pays the price and then receives the price adjustment.

He pays £____ as the price for **A** and receives £____ as the price adjustment.

Thus, Bidder 1's final price is £____ − £______ = £______.

Figure 2: Figure for Question 5.2



Remaining time [sec]: 47

Package	Your Value	Price	Temporary Profit			Status of your previous bid.
A	7	1	6	Bid!	Last-and-Final option.	-----
B	6	1	5	Bid!	Last-and-Final option.	-----
C	3	1	2	Bid!	Last-and-Final option.	-----
D	0	1	-1	Bid!	Last-and-Final option.	-----
AB	14	2	12	Bid!	Last-and-Final option.	-----
A C	10	2	8	Bid!	Last-and-Final option.	-----
A D	7	2	5	Bid!	Last-and-Final option.	-----
BC	9	2	7	Bid!	Last-and-Final option.	-----
B D	6	2	4	Bid!	Last-and-Final option.	-----
CD	3	2	1	Bid!	Last-and-Final option.	-----
ABC	17	3	14	Bid!	Last-and-Final option.	-----
AB D	14	3	11	Bid!	Last-and-Final option.	-----
A CD	10	3	7	Bid!	Last-and-Final option.	-----
BCD	9	3	6	Bid!	Last-and-Final option.	-----
ABCD	17	4	13	Bid!	Last-and-Final option.	-----

Submit your bids

Q.5 Value Determination

Q.5.1 Which of the following is true?

a) My value of **AB** is more than the sum of my values of **A** and **B**.
b) My value of **CD** is more than the sum of my values of **C** and **D**.
c) Any package that contains **AB** is worth more to me than any package that does not contain **AB**.
d) None of the above

Q.5.2 Given the values and prices listed in the menu at the top of this page (the same menu you saw previously), which packages would Robot 1 bid on?

____

Answer Sheet

Your name:______________________

Your PC # (See the top of the monitor): ___________ Date:___________

For multiple choice and True/False questions, please just circle the most correct answer. For the free-response questions, please write your answer neatly in the space provided. Illegible answers will not receive credit. You may notice that there are some blank spaces on the questions sheet that do not have blanks on the answer sheet. These extra blanks are just to help you find the answer, but you only need to record the answers that this answer sheet asks for. Only this answer sheet will be graded, so please record on this sheet all answers that you want graded.

Q1 (a) (b)

Q2.1 (a) (b)

Q2.2 (a) (b) (c)

Q2.3 True / False

True / False

Q3.1 (a) (b)

Q3.2 (a) (b) (c)

Q4.1 The total revenue is ________.

Q4.2 The price adjustment to Bidder 1 is ________.

Q4.3 Bidder 1's final price is ________.

Q5.1 (a) (b) (c) (d)

Q5.2 The package(s):____.