

## Appendix B

### GENERAL INSTRUCTIONS – PART A

Please read the following instructions carefully. When you are done, you may ask questions. There will also be some practice runs to give you a better idea about how the game works. It is important that you understand how to play the game, so do not hesitate to ask questions after reading the instructions or during the practice runs.

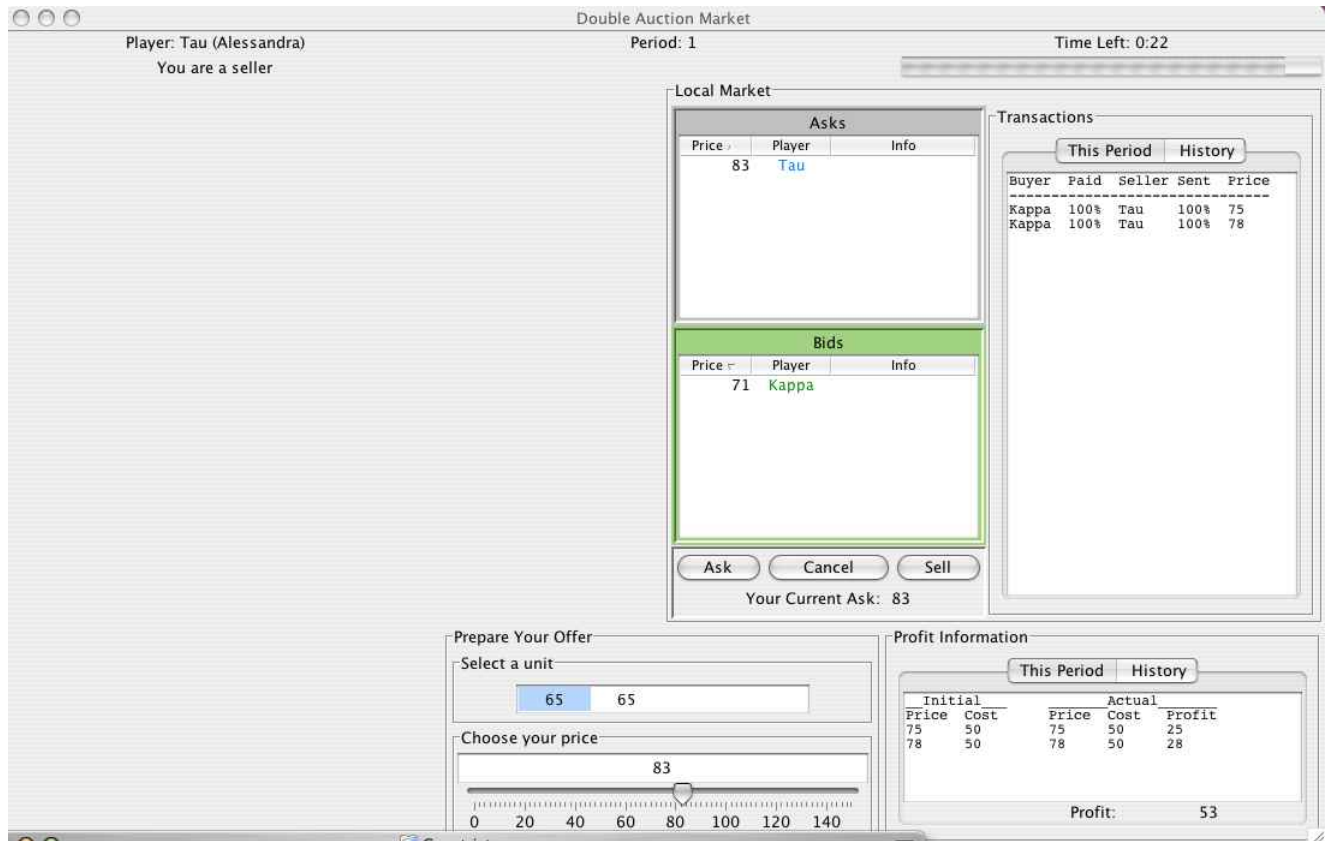
In today's experiment there are two markets. You will be in one local market containing four buyers and four sellers, and there is also a distant market with four more buyers and four more sellers. You will be one of these 16 traders, and will have the opportunity to make money by buying or selling units of the commodity.

There will be a sequence of trading periods. The prices at which you buy or sell will determine your earnings. Your total earnings over all trading periods will be paid to you, privately, in cash at the end of today's session. These earnings are in addition to a \$5 show-up fee.

The following instructions explain trading and earnings for *both* sellers *and* buyers. However, today you will be *either* a buyer *or* a seller for the entire session. When the experiment begins, your computer screen will tell you which role you will play and will give you additional information.

## INSTRUCTIONS FOR SELLERS

An example of a seller's screen is shown in the Figure below. The top-left portion of the screen shows your private login name (Alessandra in the Figure); the public ID or "nickname" (**Tau**) seen by other traders; and your role, buyer or seller. To help you spot yourself, your nickname (**Tau**) will always appear colored in blue as you play.



### “Local Market” Panel

The **Local Market** panel contains a green-edged box for buyers' **Bids**, a gray-edged box where you can see the other sellers' **Asks**, and the **Transactions** box. The **Transactions** box, located on the top right corner, shows all transactions taking place in your **Local Market**, including the nicknames of the buyers and sellers, the transaction price, and whether or not they paid 100% of the price or shipped the item with 100% value (more on this below). Clicking on the **History** tab in the **Transactions** box allows you to review the transactions and the profits from the previous periods.

Remember that there are two markets operating at the same time. In the Figure the **Local Market** box appears on the right hand side of the screen. In the other market, with the other eight traders, the Local Market box appears on the left side of the screen.

### **“Prepare Your Offer” Panel**

In each trading period, a seller may sell up to four “units”. Each unit sold has a cost in the amount listed under **Select a unit**. In the Figure, **Tau** has already sold two units (in the **Transactions** box **Tau** shows up two times) so she is left with two more units to sell whose costs are both 65.

When there is more than one unit to sell, **Tau** can choose which one of these units to sell by clicking on the corresponding cost. Then **Tau** chooses an asking price (83 in the Figure) by dragging the slider or just typing into the box, and then clicking the **Ask** or **Sell** button near the bottom of the Local Market box. Each period a seller may sell zero, one, two, three, or all four units.

### **“Profit Information” box**

This box is in the lower right corner of the main window, and it allows you to keep track of your profits (or losses). The first unit **Tau** sold had a cost of 50 but the price she sold it for was 75. So her profit was  $75 - 50 = 25$ . The second unit had again a cost of 50, but was sold at 78, so the realized profit was 28. This box is updated after each unit is sold.

## **How do sellers make money?**

**Sellers earn money by selling units at prices that are above their costs.**

As shown in the **Profit Information** box, the profit on each unit sold is its transaction price minus its unit cost. Total earnings for the period are the sum of profits on all units sold.

In the example above, **Tau**'s profits are:

First unit:  $75(\text{price}) - 50(\text{cost}) = 25(\text{profit})$

Second unit:  $78(\text{price}) - 50(\text{cost}) = 28(\text{profit})$

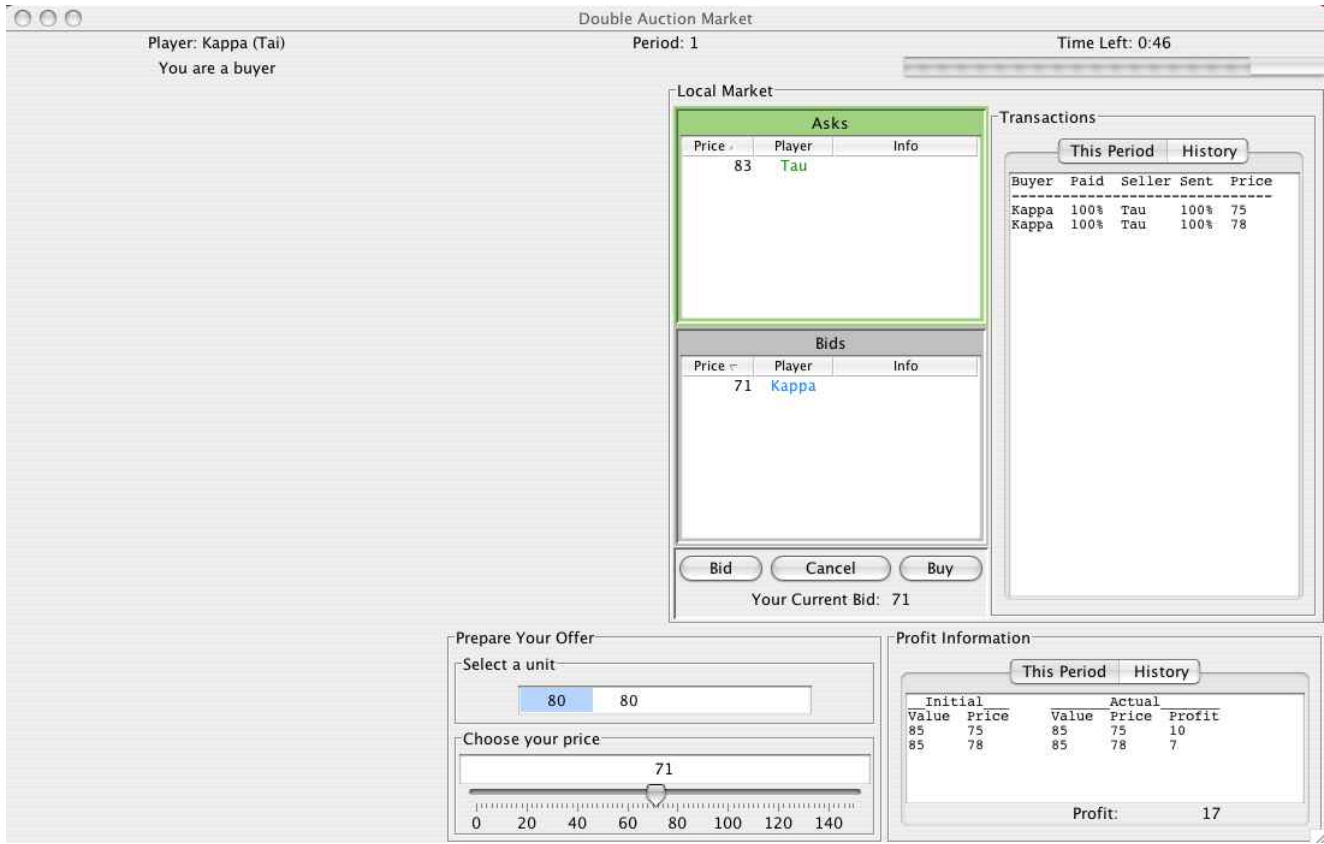
Total Profits this period (so far):  $25+28=53$

Two very important points. First, a seller does not incur the cost for a unit until it is sold. Thus, the profit on each unsold unit is zero. Second, you earn negative profits (i.e., lose money) whenever you sell a unit below its cost.

At the end of the experiment, we will add up your profits for all periods and pay them to you in cash at the exchange rate announced before the session starts.

## INSTRUCTIONS FOR BUYERS

An example of a buyer’s screen is shown in the Figure below. The top-left portion of the screen shows your private login name (Tai in the Figure); the public ID or “nickname” (**Kappa**) seen by other traders; and your role, buyer or seller. To help you spot yourself, your nickname (**Kappa**) will always appear colored in blue as you play.



### “Local Market” Box

The **Local Market** box contains a green-edged box for sellers’ **Asks**, a gray-edged box where you can see the other buyers’ **Bids** and the **Transactions** box. The **Transactions** box, located on the top right corner, shows all transactions taking place in your **Local Market**, including the nicknames of the buyers and sellers, the transaction price, and whether or not they paid 100% of the price or shipped the item with 100% value (more on this below). Clicking on the **History** tab in the **Transactions** box allows you to review the transactions and the profits from the previous periods.

Remember that there are two markets operating at the same time. In the Figure the **Local Market** box appears on the right hand side of the screen. In the other market, with the other eight traders, the Local Market box appears on the left side of the screen.

Since in this example, both buyer (Kappa) and seller (Tau) belong to the same market, both their **Local Market** boxes appear on the right hand side of the screen.

### **“Prepare Your Offer” box**

In each trading period, a buyer may buy up to four “units”. Each unit purchased has a value in the amount listed under **Select a unit**. In the Figure, **Kappa** has already bought two units (in the **Transactions** box **Kappa** shows up two times) so he is left with two more units to buy whose values are both 80.

When there is more than one unit to buy, **Kappa** can choose which one of these units to buy by clicking on the corresponding value. Then **Kappa** chooses a bidding price (71 in the Figure) by dragging the slider or just typing into the box, and then clicking the **Bid** or **Buy** button near the bottom of the Local Market box. Each period the buyer may buy zero, one, two, three, or all four units.

### **“Profit Information” box**

This box is in the lower right corner of the main window, and it allows you to keep track of your profits (or losses). The first unit **Kappa** bought had a value of 85 but the price he paid for it was 75. So his profit was  $85 - 75 = 10$ . The second unit **Kappa** bought had again a value of 85, but was bought at 78, so the realized profit was  $85 - 78 = 8$ . This box is updated after each unit is bought.

## **How do buyers make money?**

**Buyers earn money by buying units at prices that are below their values.**

As shown in the **Profit Information** box, the profit on each unit bought is its unit value minus its transaction price. Total earnings for the period are the sum of profits on all units purchased.

In the example above, **Kappa**'s profits are:

First unit:  $85(\text{value}) - 75(\text{price}) = 10(\text{profit})$

Second unit:  $85(\text{value}) - 78(\text{price}) = 8(\text{profit})$

Total Profits this period (so far):  $10+8=18$

Two very important points. First, a buyer does not receive the value for a unit until the unit is bought. Thus, the profit on each un-bought unit is zero. Second, you earn negative profits (i.e., lose money) whenever you buy a unit above its value.

At the end of the experiment, we will add up your profits for all periods and pay them to you in cash at the exchange rate announced before the session starts.

## TRADING RULES - PART A

Each trading period lasts 4 minutes. You can keep track of the remaining time in each period by looking at the field denoted “**Time Left**” located on the top right of you screen.

### In part A, the two local markets are separate

Each buyer can only buy from sellers in his own **Local Market**, and each seller can only sell to buyers in her own **Local Market**. The names of the players (of opposite role) in one’s own **Local Market** are colored in green.

Both local markets operate in the same way with the same rules. Here are more details on making and accepting bids and asks.

- ❖ **Buyers.** At any time during the period, each buyer (who has not already bought 4 units) may make a **bid** to buy a unit at a specified price. To do this, he 1) clicks the desired unit (or goes with the default unit already highlighted), then 2) drags the slider to the desired price (or types it in), and 3) clicks the button **Bid**. Everyone in the market will see his bid along with his nickname. Alternatively, a buyer may buy a unit from a seller who already entered an ask price. To do so he 1) selects the desired unit among those listed under **Asks** (the box has a green edge for his convenience) and 2) clicks on **Buy**. The buyer and seller then are asked to confirm the trade. As soon as they both do so, the trade takes place and their profits are updated.
- ❖ **Sellers.** At any time during the period, each seller (who has not already sold 4 units) may make an **ask** to sell a unit at a specified price. To do this, she 1) clicks the desired unit (or goes with the default unit already highlighted), then 2) drags the slider to the desired price (or types it in), and 3) clicks the button **Ask**. Everyone in the market will see her ask along with her nickname. Alternatively, a seller may sell a unit to a buyer who already entered a bid price. To do so she 1) selects the desired unit among those listed under **Bids** (the box has a green edge for her convenience) and 2) clicks on **Sell**. The buyer and seller then are asked to confirm the trade. As soon as they both do so, the trade takes place and their profits are updated.

All bids and asks pertain to a single unit; it is not possible to offer several units at the same moment.

The “nicknames” of the players making the offers are shown next to the amounts bid and asked. If you are a buyer you will see the Asks box rimmed in green and the nicknames of the sellers colored in green. If you are a seller you will see the Bids box rimmed in green and the nicknames of the buyers colored in green.

**EXAMPLE:** If player **Kappa** is a buyer and wants to submit a bid of 71 for his unit valued 85, she has to first select his 85 unit by clicking on it and then move the slider till the value \$71 appears in the field (or simply type 71) and click on **Bid**. This information will be immediately recorded in the box “**Bids**” of his Local market. Alternatively, he can accept the 83 Ask by **Tau** by clicking on her and then on **Buy**.

**EXAMPLE:** If Seller **Tau** decides to offer her unit costing 65 for sale at 83, she has to first select that unit by clicking on 65 and then scroll the slider till 83 appears on her screen (or simply type 72) and click on **Ask**. This information will be immediately available to everyone in the field denoted “**Asks**” of her Local market. Alternatively, she can accept the 71 bid by **Kappa** by clicking on him and then on **Sell**.

**PLEASE KEEP QUIET DURING THE TRADING PERIODS!**

**Thank you in advance for your cooperation.**

Are there any questions?

# TRADING RULES - PART B

For part B, everything remains the same as before except that now each player can participate in both markets with either one or two units. The “other” market is denoted **Distant Market**.

Double Auction Market  
 Player: Kappa (Tai)  
 You are a buyer  
 Period: 2  
 Time Left: 1:57

**Distant Market**

Asks		
Price	Player	Info

Transactions				
This Period		History		
Buyer	Paid	Seller	Sent	Price
Alpha	100%	Tau	100%	58

Bids		
Price	Player	Info
50	Kappa	

Buttons: Bid, Cancel, Buy  
 Your Current Bid: 50

**Local Market**

Asks		
Price	Player	Info
61	Tau	

Transactions				
This Period		History		
Buyer	Paid	Seller	Sent	Price
Kappa	100%	zeta	100%	32
Alpha	100%	zeta	100%	30

Bids		
Price	Player	Info

Buttons: Bid, Cancel, Buy  
 Your Current Bid: NONE

**Prepare Your Offer**

Select a unit:

Choose your price:

Slider: 0 20 40 60 80 100 120 140

**Profit Information**

This Period		History	
Initial Value	Price	Actual Value	Profit
85	32	85	53

Profit: 53

Double Auction Market  
 Player: Zeta (Dan)  
 You are a seller  
 Period: 2  
 Time Left: 2:14

**Local Market**

Asks		
Price	Player	Info

Transactions				
This Period		History		
Buyer	Paid	Seller	Sent	Price
Alpha	100%	Tau	100%	58

Bids		
Price	Player	Info
50	Kappa	

Buttons: Ask, Cancel, Sell  
 Your Current Ask: NONE

**Distant Market**

Asks		
Price	Player	Info
61	Tau	

Transactions				
This Period		History		
Buyer	Paid	Seller	Sent	Price
Kappa	100%	zeta	100%	32
Alpha	100%	zeta	100%	30

Bids		
Price	Player	Info

Buttons: Ask, Cancel, Sell  
 Your Current Ask: NONE

**Prepare Your Offer**

Select a unit:

Choose your price:

Slider: 0 20 40 60 80 100 120 140

**Profit Information**

This Period		History		
Initial Price	Cost	Actual Price	Cost	Profit
32	10	32	10	22
30	10	30	10	20

Profit: 42

When **part B** of the game starts, you will see your screen divided in two parts: the **Local Market** in the same position as before and the **Distant Market** on the other side. Notice that what for you is **Distant Market**, is also the **Local Market** for some other participants. Since both markets function in the same way, the same rules apply to both markets.

At any time during the period, any buyer is free to make bids to buy units at a specified price on **either** markets. To do this, the buyer has to first select the unit, then move the slider arrow till the correct amount (or type it in), and click the button **Bid** of the **desired market** (either **Local** or **Distant**). Alternatively, a buyer may wish to purchase a unit from a seller who already posted his asking price on either market. To do so the buyer has to first **select the unit in the desired market**, then click the **Buy** button in the **desired market**.

Now you can have two units active, one in each market. In the example below, with time left 1:57, the buyer Kappa is bidding 50 for her “85” unit in the **Distant Market**. From the **Profit Information** box and the **Transactions** box we know Kappa has already bought an 85 unit at 32 in his **Local Market** making 53 of profit. At time 2:14, Seller Zeta from the **Distant Market** (Zeta’s **Local Market**) has already sold 2 units in Kappa’s **Local Market** (Zeta’s **Distant Market**) making a total profit of 42.

Similarly, any seller can make an offer to sell a unit at a specified price in each market. To do so, the seller selects a unit to sell, moves the slider arrow to the chosen price and clicks **Ask** in the **desired market**. Alternatively, a seller can sell a unit to a buyer who already posted his bid. To do so the seller selects the unit in the **desired market**, then **clicks** the button **Sell** of the **desired market**.

In the example below, at time left 1:22, Seller **Tau** already sold one unit in the **Distant Market** to buyer **Alpha** at 58 making 8 of profits. At the same time, she is posting an offer of 61 in her own market. Distant buyer **Alpha** at time left 2:32 has already bought a 45 unit at 56 in her **Local market** (**Tau**’s **Distant Market**) making a loss of 13, and a 45 unit at 30 in her **Distant Market** (**Tau**’s **Local market**) making a profit of 15.

You can always check the history window in any market.

Double Auction Market  
 Player: Tau (Alessandra)  
 You are a seller  
 Period: 2  
 Time Left: 1:22

**Distant Market**

Asks		
Price	Player	Info
50	Kappa	

**Bids**

Price	Player	Info
58	Alpha	

Ask Cancel Sell  
 Your Current Ask: NONE

**Transactions**

This Period					History				
Buyer	Paid	Seller	Sent	Price	Buyer	Paid	Seller	Sent	Price
Alpha	100%	Tau	100%	58					

**Local Market**

Asks		
Price	Player	Info
61	Tau	

**Bids**

Price	Player	Info

Ask Cancel Sell  
 Your Current Ask: 61

**Transactions**

This Period					History				
Buyer	Paid	Seller	Sent	Price	Buyer	Paid	Seller	Sent	Price
Kappa	100%	Zeta	100%	32					
Alpha	100%	Zeta	100%	30					

**Prepare Your Offer**

Select a unit:

Choose your price:

0 20 40 60 80 100 120 140

**Profit Information**

This Period					History				
Initial Price	Cost	Price	Actual Cost	Profit	Initial Price	Cost	Price	Actual Cost	Profit
58	50	58	50	8					

Profit: 8

Double Auction Market  
 Player: Alpha (Patricia)  
 You are a buyer  
 Period: 2  
 Time Left: 2:32

**Local Market**

Asks		
Price	Player	Info

**Bids**

Price	Player	Info
50	Kappa	

Bid Cancel Buy  
 Your Current Bid: NONE

**Transactions**

This Period					History				
Buyer	Paid	Seller	Sent	Price	Buyer	Paid	Seller	Sent	Price
Alpha	100%	Tau	100%	58					

**Distant Market**

Asks		
Price	Player	Info
61	Tau	

**Bids**

Price	Player	Info

Bid Cancel Buy  
 Your Current Bid: NONE

**Transactions**

This Period					History				
Buyer	Paid	Seller	Sent	Price	Buyer	Paid	Seller	Sent	Price
Kappa	100%	Zeta	100%	32					
Alpha	100%	Zeta	100%	30					

**Prepare Your Offer**

Select a unit:

Choose your price:

0 20 40 60 80 100 120 140

**Profit Information**

This Period					History				
Initial Value	Price	Value	Actual Price	Profit	Initial Value	Price	Value	Actual Price	Profit
45	30	45	30	15	45	58	45	58	-13

Profit: 2

Are there any questions?

# TRADING RULES - PART C

For part C, everything is the same as in Part B except for two things:

- ❖ You will no longer be able to see the nicknames of the **Distant Market** players. Similarly, in the **Distant Market**, they won't be able to see your nickname either. Instead, interrogation marks (??) will appear in place of the distant players' nicknames.

**Player: Tau (Alessandra) - You are a seller**

Period: 3, Time Left: 0:02

**Distant Market**

Price	Player	Info
93	??	

Price	Player	Info
35	??	
16	??	

Your Current Ask: NONE

**Local Market**

Price	Player	Info
93	??	

Price	Player	Info
35	??	
16	Kappa	

Your Current Ask: NONE

**Transactions**

Buyer	Paid	Seller	Sent	Price
??	.	??	.	71

**Prepare Your Offer**

Select a unit: 50 65 65

Choose your price: 75

**Profit Information**

Initial Price	Cost	Actual Price	Cost	Profit
75	50	75	50	25

Profit: 25

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**Player: Alpha (Patricia) - You are a buyer**

Period: 3, Time Left: 0:34

**Local Market**

Price	Player	Info
93	Zeta	

Price	Player	Info
35	Alpha	
16	??	

Your Current Bid: 35

**Distant Market**

Price	Player	Info
93	??	

Price	Player	Info
35	Alpha	
16	??	

Your Current Bid: 35

**Transactions**

Buyer	Paid	Seller	Sent	Price
??	.	??	.	71
Alpha	100%	??	100%	75

**Prepare Your Offer**

Select a unit: 45 20 20

Choose your price: 35

**Profit Information**

Initial Value	Price	Actual Value	Price	Profit
45	75	45	75	-30

Profit: -30

- ❖ Whenever a player decides to sell or buy from a **Distant Market** player (whose nickname will show as **??**) a new prompt will appear after one hits the **Sell** or **Buy** buttons asking whether one wants to cancel, ship (or buy) at 50% or at 100%. After the first trader decides on an action, the second trader is notified of that choice and now is her time to decide:



In particular:

- Buyers will be asked to decide what percentage of the price they want to pay. If a buyer clicks on 100%, her cash will be reduced by the stated price and the seller will receive 100% of the price. If she clicks on 50%, her cash will be reduced by 50% of the stated price and the seller will receive 50% of the price.
- Sellers will be asked to decide what percentage of the unit's value they want to ship to the buyer. If he replies 100%, the buyer will receive the unit whose worth is 100% of the value (this information is private to the buyer). If he replies 50%, the seller will send a unit whose cost is 50% the original cost, and the buyer will receive a unit whose worth is 50% of the original value.

Four scenarios are now possible:

1. When both buyer and seller decide, respectively, to pay 100% and to send 100%: the buyer receives the original value for that unit and her cash decreases by the agreed price; the seller receives the specified price amount and his cost stays at the original amount.
2. When the buyer decides to pay 50% and the seller decides to send 100%: the buyer receives the original value for that unit but her cash does decrease by 50% of the agreed amount; the seller receives 50% of the specified price but his cost stays the same.
3. Similarly, when the buyer decides to pay 100% and seller decides to send 50%: the buyer receives 50% of the value for that unit but her cash decreases by the agreed price; the seller receives the specified price but his cost is 50% of the original amount.
4. Finally, when the buyer decides to pay 50% and the seller decides to send 50%: the buyer receives 50% of the original value for that unit and her cash decreases by 50% of the agreed price; the seller receives 50% of the specified price and his unit costs 50% of the original amount.

Note that the profit information box shows both the initial prices and costs (or values) as well as the actual prices and costs (or values) that prevail after the transaction is completed.

Remember that when buying or selling in your **Local Market**, buyers have to pay 100% and sellers have to send 100% of the unit. Are there any questions?