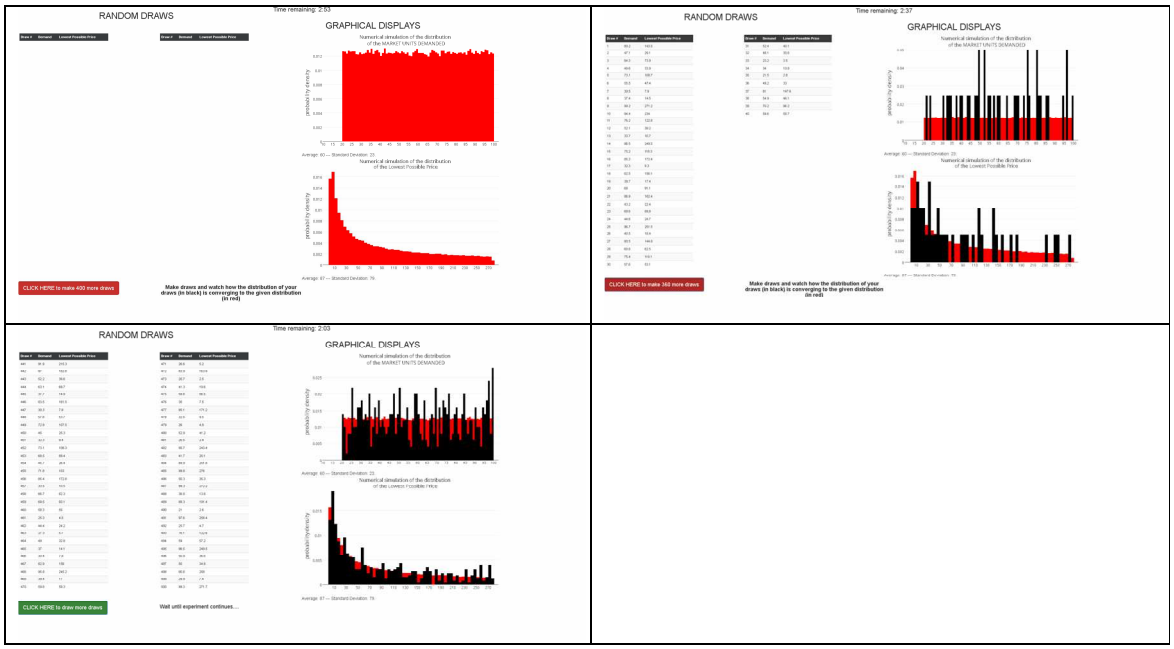
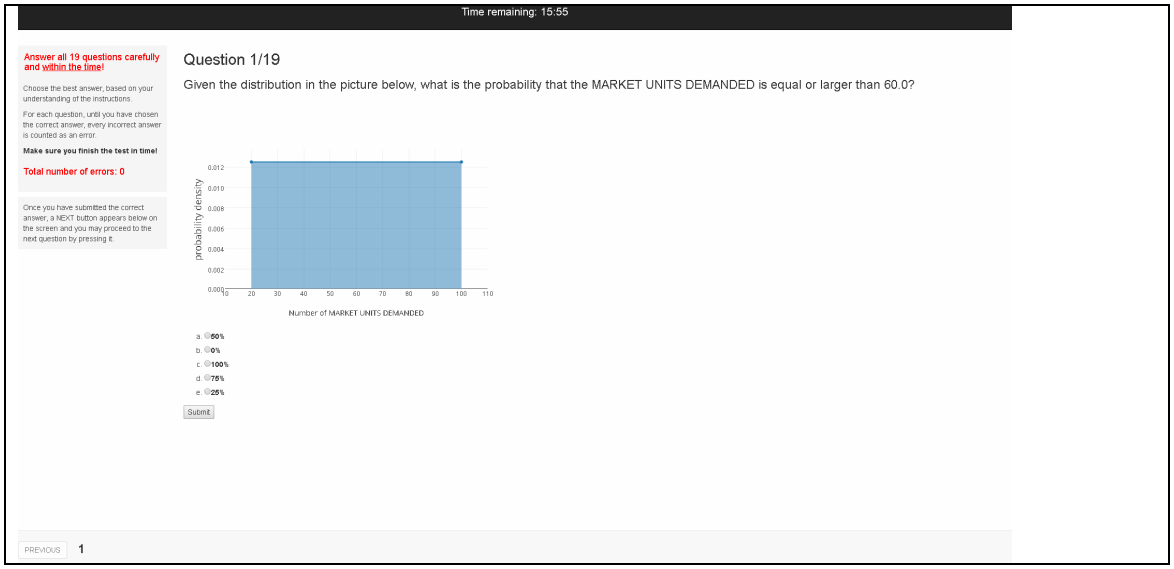
8. Appendix B

B1. Snapshots of the simulations to induce demand and price expectations



B1. The full comprehension test



Time remaining: 15:14

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 0

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 2/19

When drawing the MARKET UNITS REQUIRED from the distribution below, what is the probability that an outcome between 40.00 and 80.00 is chosen?

a. 60%
b. 30%
c. 80%
d. 20%
e. 40%

Submit

PREVIOUS 1 **2**

Time remaining: 15:14

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 0

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 3/19

What is the expected number of MARKET UNITS DEMANDED for the distribution below? In other words, what is the average of MARKET UNITS DEMANDED if we drew this number many times randomly from the distribution below?

a. 73.3
b. 86.7
c. 46.7
d. 36.0
e. 60.0

Submit

PREVIOUS 1 2 **3**

Time remaining: 15:14

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

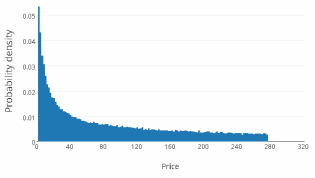
Make sure you finish the test in time!

Total number of errors: 0

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 4/19

What is approximately (allowing for a possible rounding error) the expected price for the distribution of prices below? In other words, what is the average of prices if we drew them many times randomly from the distribution below?



The distribution of price has an average of 87 with a standard deviation of 79.

a. 121
b. 62
c. 87
d. 17

Submit

PREVIOUS 1 2 3 **4**

Time remaining: 15:14

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 0

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 5/19

Look at the Offer Overview in the picture below. Given the offers at this moment, what is the cheapest price for which you can buy 1 unit?

Offers Overview

SELL

Price per Unit	Number of Units
10	5
8	1
7	2
6	1

BUY

Price per Unit	Number of Units
4	2
2	1

a. 2
b. 1
c. 6
d. 4
e. 8
f. 7

Submit

PREVIOUS 1 2 3 4 **5**

Time remaining: 15:14

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 1

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 6/19

Look at the Offer Overview in the picture below. Given the offers at this moment, what is the highest price for which you can sell 1 unit?

Offers Overview

SELL

Price per Unit	Number of Units
10	5
8	1
7	2
6	1

BUY

Price per Unit	Number of Units
4	2
2	1

a. 8
b. 7
c. 6
d. 4
e. 1
f. 2

Submit

PREVIOUS 1 2 3 4 5 **6**

Time remaining: 15:14

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 1

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 7/19

Look at the Offer Overview in the picture below. Given the offers at this moment, what is the cheapest price for which you can buy 1 unit?

Offers Overview

SELL

Price per Unit	Number of Units
5	2
4	1

BUY

Price per Unit	Number of Units
2	2
1	1

a. 5
b. 4
c. 2
d. 1

Submit

PREVIOUS 1 2 3 4 5 6 **7**

Time remaining: 15:14

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 1

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 8/19

Look at the Offer Overview in the picture below. Given the offers at this moment, what is the highest price for which you can sell 1 unit?

Offers Overview

SELL

Price per Unit	Number of Units
10	5
8	1
7	2
6	1

BUY

Price per Unit	Number of Units
4	2
2	1

a. 4
b. 1
c. 2
d. 5

Submit

PREVIOUS 1 2 3 4 5 6 7 **8**

Time remaining: 16:00

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 0

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 9/19

Look at the Offer Overview in the picture below. Given the offers at this moment, if I submit a SELL offer of 3 units for a price of 1, how many units do I sell?

Offers Overview

SELL

Price per Unit	Number of Units
5	2
4	1

BUY

Price per Unit	Number of Units
2	2
1	1

a. 1 unit
b. 3 units
c. 2 units

Submit

PREVIOUS 1 2 3 4 5 6 7 8 **9**

Time remaining: 16:00

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 0

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 9/19

Look at the Offer Overview in the picture below. Given the offers at this moment, if I submit a SELL offer of 3 units for a price of 1, how many units do I sell?

Offers Overview

SELL

Price per Unit	Number of Units
5	2
4	1

BUY

Price per Unit	Number of Units
2	2
1	1

After I submitted the offer, the table will look like the one below. Please make sure that you understand this. If you do not, raise your hand.

Offers Overview

SELL

Price per Unit	Number of Units
5	2
4	1

BUY

Price per Unit	Number of Units

a. 1 unit
b. 3 units

True The price for which you make your SELL offer is equal or lower than all the three offers in the BUY column of the Offers Overview. You thus indeed sell all your 3 units.

c. 2 units

Submit

PREVIOUS 1 2 3 4 5 6 7 8 **9** 10 NEXT

Time remaining: 16:00

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 0

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 10/19

Look at the Offer Overview in the picture below. Given the offers at this moment, we determined before that if I submit a SELL offer of 3 units for a price of 1, I will sell 3 units. For what price(s) will I sell these 3 units?

Offers Overview

SELL

Price per Unit	Number of Units
5	2
4	1

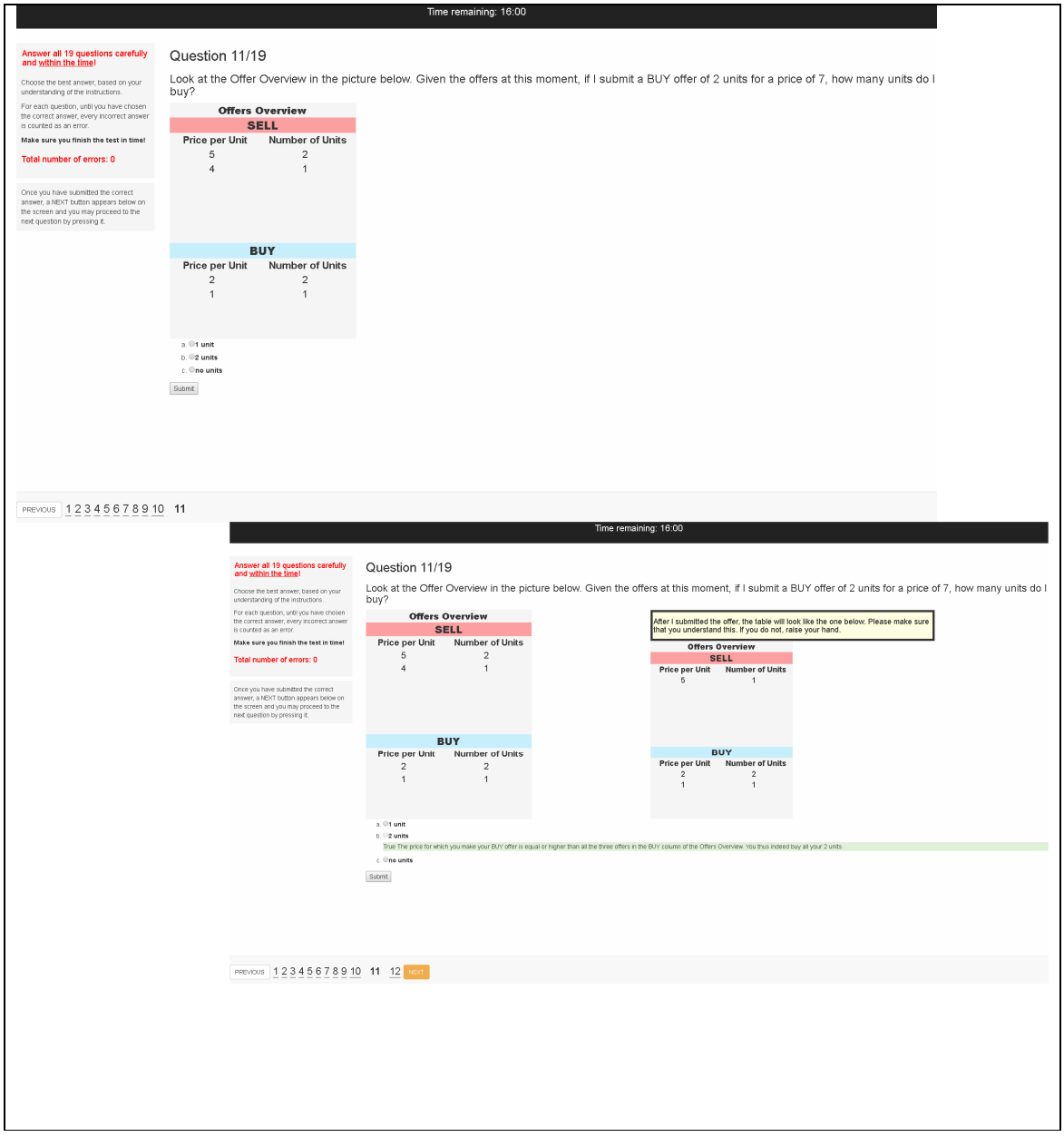
BUY

Price per Unit	Number of Units
2	2
1	1

a. **1 unit for a price of 1 and 2 units for a price of 2**
b. **for a price of 2**
c. **2 units for a price of 1 and 1 unit for a price of 2**
d. **for a price of 1**

Submit

PREVIOUS 1 2 3 4 5 6 7 8 9 **10**


Time remaining: 16:00
Answer all 19 questions carefully and within the time!
Choose the best answer, based on your understanding of the instructions.
For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.
Make sure you finish the test in time!
Total number of errors: 0
Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.
Question 11/19
Look at the Offer Overview in the picture below. Given the offers at this moment, if I submit a BUY offer of 2 units for a price of 7, how many units do I buy?
Offers Overview
SELL
Price per Unit
Number of Units
5
2
4
1
BUY
Price per Unit
Number of Units
2
2
1
1
a. 1 unit
b. 2 units
c. no units
Submit
PREVIOUS 1 2 3 4 5 6 7 8 9 10 11
Time remaining: 16:00
Answer all 19 questions carefully and within the time!
Choose the best answer, based on your understanding of the instructions.
For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.
Make sure you finish the test in time!
Total number of errors: 0
Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.
Question 11/19
Look at the Offer Overview in the picture below. Given the offers at this moment, if I submit a BUY offer of 2 units for a price of 7, how many units do I buy?
Offers Overview
SELL
Price per Unit
Number of Units
5
2
4
1
BUY
Price per Unit
Number of Units
2
2
1
1
After I submitted the offer, the table will look like the one below. Please make sure that you understand this. If you do not, raise your hand.
Offers Overview
SELL
Price per Unit
Number of Units
5
1
BUY
Price per Unit
Number of Units
2
2
1
1
a. 1 unit
b. 2 units
True The price for which you make your BUY offer is equal or higher than all the three offers in the BUY column of the Offers Overview. You thus indeed buy all your 2 units.
c. no units
Submit
PREVIOUS 1 2 3 4 5 6 7 8 9 10 11 12 NEXT

Time remaining: 16:00

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 0

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 12/19

Look at the Offer Overview in the picture below. Given the offers at this moment, we determined before that if I submit a BUY offer of 2 units for a price of 7, I will buy 2 units. For what price(s) will I buy these 2 units?

Offers Overview

SELL

Price per Unit	Number of Units
5	2
4	1

BUY

Price per Unit	Number of Units
2	2
1	1

a. for a price of 5
b. for a price of 4
c. for a price of 7
d. 1 units for a price of 4 and 1 unit for a price of 5

Submit

PREVIOUS 1 2 3 4 5 6 7 8 9 10 11 **12**

Time remaining: 16:00

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 0

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 13/19

Look at the Offer Overview in the picture below. Given the offers at this moment, if I submit a BUY offer of 5 units for a price of 7, what will be the result?

Offers Overview

SELL

Price per Unit	Number of Units
5	2
4	1

BUY

Price per Unit	Number of Units
2	2
1	1

a. I buy the 3 units on offer.
b. I buy the 3 units on offer and I post a BUY offer for 2 units for a price of 7.
c. I post a BUY offer for 5 units for a price of 7.

Submit

PREVIOUS 1 2 3 4 5 6 7 8 9 10 11 12 **13**

Time remaining: 16:00

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 0

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 13/19

Look at the Offer Overview in the picture below. Given the offers at this moment, if I submit a BUY offer of 5 units for a price of 7, what will be the result?

Offers Overview

SELL

Price per Unit	Number of Units
5	2
4	1

BUY

Price per Unit	Number of Units
2	2
1	1

After I submitted the offer, the table will look like the one below. Please make sure that you understand this. If you do not, raise your hand.

Offers Overview

SELL

Price per Unit	Number of Units

BUY

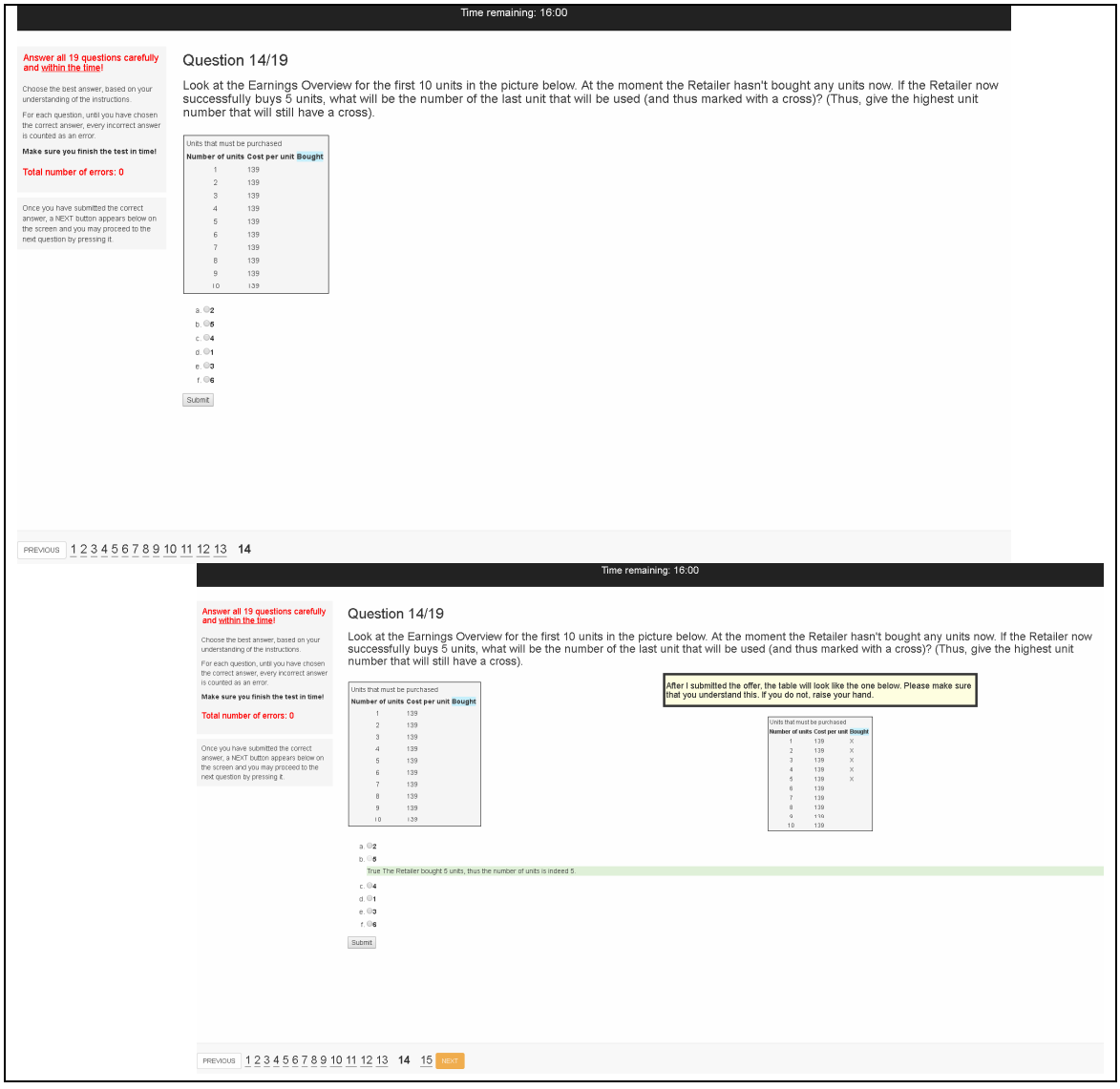
Price per Unit	Number of Units
7	2
2	2
1	1

a. I post a BUY offer for 5 units for a price of 7.
b. I buy the 3 units on offer.
c. I buy the 3 units on offer and I post a BUY offer for 2 units for a price of 7.

True You submit a BUY offer for 5 units, while there are only 3 units in total in the SELL column. You thus buy 3 units and the two units that are left over a put into the Offer Overview for a price of 7.

Submit

PREVIOUS 1 2 3 4 5 6 7 8 9 10 11 12 **13** 14 NEXT


Time remaining: 16:00
Answer all 19 questions carefully and within the time!
Choose the best answer, based on your understanding of the instructions.
For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.
Make sure you finish the test in time!
Total number of errors: 0
Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.
Question 14/19
Look at the Earnings Overview for the first 10 units in the picture below. At the moment the Retailer hasn't bought any units now. If the Retailer now successfully buys 5 units, what will be the number of the last unit that will be used (and thus marked with a cross)? (Thus, give the highest unit number that will still have a cross).
Units that must be purchased
Number of units Cost per unit Bought
1 139
2 139
3 139
4 139
5 139
6 139
7 139
8 139
9 139
10 139
a. 2
b. 5
c. 4
d. 1
e. 3
f. 6
Submit
PREVIOUS 1 2 3 4 5 6 7 8 9 10 11 12 13 14
Time remaining: 16:00
Answer all 19 questions carefully and within the time!
Choose the best answer, based on your understanding of the instructions.
For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.
Make sure you finish the test in time!
Total number of errors: 0
Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.
Question 14/19
Look at the Earnings Overview for the first 10 units in the picture below. At the moment the Retailer hasn't bought any units now. If the Retailer now successfully buys 5 units, what will be the number of the last unit that will be used (and thus marked with a cross)? (Thus, give the highest unit number that will still have a cross).
Units that must be purchased
Number of units Cost per unit Bought
1 139
2 139
3 139
4 139
5 139
6 139
7 139
8 139
9 139
10 139
After I submitted the offer, the table will look like the one below. Please make sure that you understand this. If you do not, raise your hand.
Units that must be purchased
Number of units Cost per unit Bought
1 139 X
2 139 X
3 139 X
4 139 X
5 139 X
6 139
7 139
8 139
9 139
10 139
a. 2
b. 5
True The Retailer bought 5 units, thus the number of units is indeed 5.
c. 4
d. 1
e. 3
f. 6
Submit
PREVIOUS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 NEXT

Time remaining: 16:00

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 0

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 15/19

Look at the Production Cost for the first 10 units in the picture below. If the Producer now successfully BUYS 2 units, what will be the number of the last unit that will be used (and marked with a cross)? (Thus, give the highest unit number that will still have a cross).

Units that can be sold

Number of units	Cost per unit	Sold
1	0	X
2	0.1	X
3	0.3	X
4	0.7	X
5	1.7	X
6	3	
7	4.9	
8	7.5	
9	11	
10	14.8	

a. 4
b. 3
c. 1
d. 5
e. 2

Submit

PREVIOUS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 **15**

Time remaining: 16:00

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 0

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 15/19

Look at the Production Cost for the first 10 units in the picture below. If the Producer now successfully BUYS 2 units, what will be the number of the last unit that will be used (and marked with a cross)? (Thus, give the highest unit number that will still have a cross).

Units that can be sold

Number of units	Cost per unit	Sold
1	0	X
2	0.1	X
3	0.3	X
4	0.7	X
5	1.7	X
6	3	
7	4.9	
8	7.5	
9	11	
10	14.8	

After I submitted the offer, the table will look like the one below. Please make sure that you understand this. If you do not, raise your hand.

Units that can be sold

Number of units	Cost per unit	Sold
1	0	X
2	0.1	X
3	0.3	X
4	0.7	
5	1.7	
6	3	
7	4.9	
8	7.5	
9	11	
10	14.8	

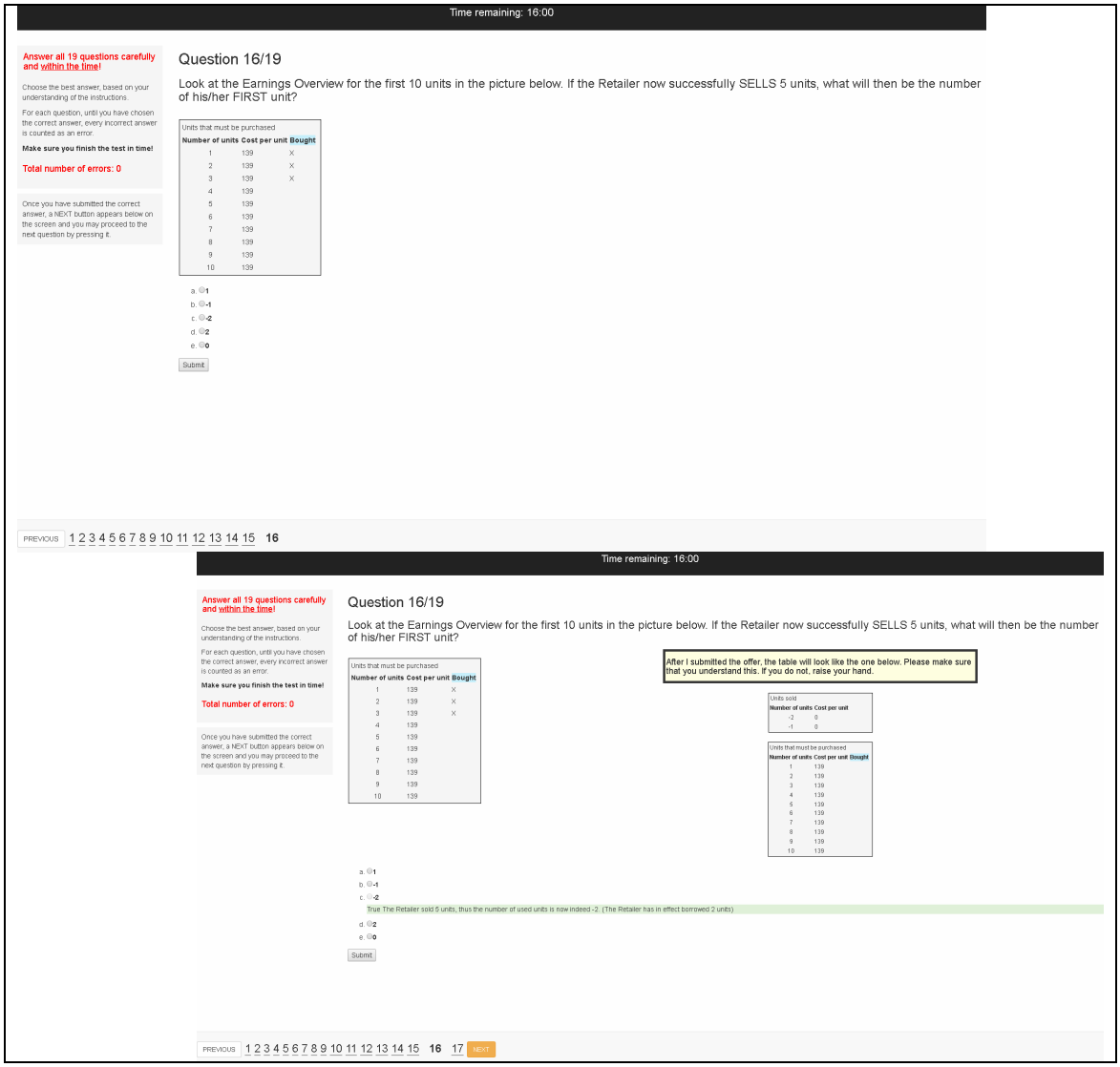
a. 4
b. 3

True. The Producer bought 2 units, thus the number of used units is now indeed 3.

c. 1
d. 5
e. 2

Submit

PREVIOUS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 **15** 16 NEXT


Time remaining: 16:00
Answer all 19 questions carefully and within the time!
Choose the best answer, based on your understanding of the instructions.
For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.
Make sure you finish the test in time!
Total number of errors: 0
Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.
Question 16/19
Look at the Earnings Overview for the first 10 units in the picture below. If the Retailer now successfully SELLS 5 units, what will then be the number of his/her FIRST unit?
Units that must be purchased
Number of units Cost per unit Bought
1 139 X
2 139 X
3 139 X
4 139
5 139
6 139
7 139
8 139
9 139
10 139
a. 1
b. -1
c. -2
d. 2
e. 0
Submit
PREVIOUS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Time remaining: 16:00
Answer all 19 questions carefully and within the time!
Choose the best answer, based on your understanding of the instructions.
For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.
Make sure you finish the test in time!
Total number of errors: 0
Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.
Question 16/19
Look at the Earnings Overview for the first 10 units in the picture below. If the Retailer now successfully SELLS 5 units, what will then be the number of his/her FIRST unit?
Units that must be purchased
Number of units Cost per unit Bought
1 139 X
2 139 X
3 139 X
4 139
5 139
6 139
7 139
8 139
9 139
10 139
After I submitted the offer, the table will look like the one below. Please make sure that you understand this. If you do not, raise your hand.
Units sold
Number of units Cost per unit
-2 0
-1 0
Units that must be purchased
Number of units Cost per unit Bought
1 139
2 139
3 139
4 139
5 139
6 139
7 139
8 139
9 139
10 139
a. 1
b. -1
c. -2
True The Retailer sold 5 units, thus the number of used units is now indeed -2. (The Retailer has in effect borrowed 2 units)
d. 2
e. 0
Submit
PREVIOUS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 NEXT

Time remaining: 16:00

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 0

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 17/19

Look at the Earnings Overview for the first 10 units in the picture below. If the Retailer now successfully buys 5 units, what will be the number of the last unit that will be used (and marked with a cross)? (Thus, give the highest unit number that will still have a cross).

Units sold

Number of units	Cost per unit
-2	0
-1	0

Units that must be purchased

Number of units	Cost per unit	Bought
1	139	
2	139	
3	139	
4	139	
5	139	
6	139	
7	139	
8	139	
9	139	
10	139	

a. -1
b. 3
c. 0
d. 2
e. 1

Submit

PREVIOUS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 **17**

Time remaining: 16:00

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 0

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

Question 17/19

Look at the Earnings Overview for the first 10 units in the picture below. If the Retailer now successfully buys 5 units, what will be the number of the last unit that will be used (and marked with a cross)? (Thus, give the highest unit number that will still have a cross).

Units sold

Number of units	Cost per unit
-2	0
-1	0

Units that must be purchased

Number of units	Cost per unit	Bought
1	139	
2	139	
3	139	
4	139	
5	139	
6	139	
7	139	
8	139	
9	139	
10	139	

a. -1
b. 3
c. 0
d. 2
e. 1

Submit

After I submitted the offer, the table will look like the one below. Please make sure that you understand this. If you do not, raise your hand.

Units that must be purchased

Number of units	Cost per unit	Bought
1	139	X
2	139	X
3	139	X
4	139	
5	139	
6	139	
7	139	
8	139	
9	139	
10	139	

True The Retailer bought 5 units, thus the number of used units is now indeed 3. Two out of the 5 units are used to give back the borrowed two units (unit number 0 and number -1). Only the remaining three units contribute to the Earnings

PREVIOUS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 **17** 18 NEXT

Time remaining: 16:00

Answer all 19 questions carefully and within the time!

Choose the best answer, based on your understanding of the instructions.

For each question, until you have chosen the correct answer, every incorrect answer is counted as an error.

Make sure you finish the test in time!

Total number of errors: 0

Once you have submitted the correct answer, a NEXT button appears below on the screen and you may proceed to the next question by pressing it.

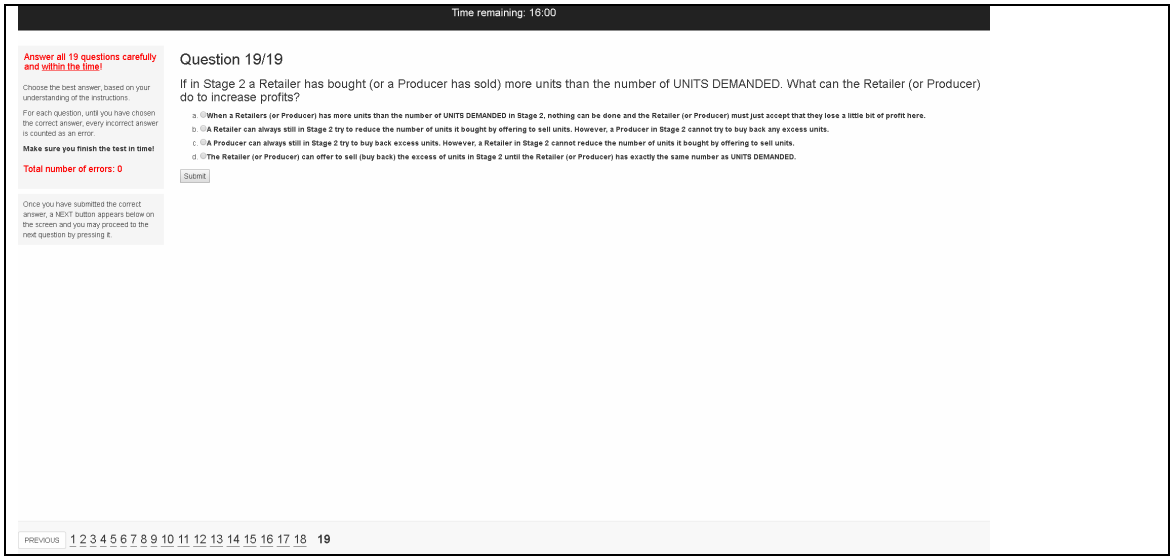
Question 18/19

If in a round the MARKET UNITS DEMANDED is equal to 42, and there are four Retailers, what will be the UNITS DEMANDED for the Retailers?

a. **each Retailer has 10 as UNITS DEMANDED.**
b. **The UNITS DEMANDED cannot be determined in this case**
c. **two Retailers each have 10 and the two remaining Retailers each 11 as UNITS DEMANDED.**
d. **one Retailer has zero and the three remaining Retailers have 14 as UNITS DEMANDED.**

Submit

PREVIOUS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 **18**



B3. Full instructions

Section 1 *t_1, au_4551794 Rendered on 11th March 2019 20:01:01*

INSTRUCTIONS

Soon the experimental session for which you signed up will take place. It will feature a Trading Experiment involving advanced trading software. If you study the following instructions carefully before you come to the experimental session, you can earn a substantial amount of money. Your participation in the Trading Experiment is conditional on you passing a comprehension test based on these instructions.

1. Introduction

We will first explain to you your expected earnings.

At the start of the experimental session, you will take a comprehension test with 19 questions on the trading rules as described in these instructions. You will have 16 minutes for this test.

When you are selected for the Trading Experiment, your average expected earnings are about CZK 700 (including the show-up fee of CZK 50) for a session of two hours and for studying the instructions before the session. When you are not selected for the Trading Experiment, you will receive the show-up fee of CZK 200 for taking the test and studying the instructions at home.

However, if you make more than 16 errors in the test or if you do not finish the test within the time, we will assume that you did not study the instructions before the session and pay you only a small show-up fee of CZK 50.

Note that reviewing studying the instructions for about 60 minutes will make it highly unlikely that you would make more than 16 errors in the test.

Once you have been selected for participation in the experimental session, your earnings will depend on your choices, the choices of the participants you will be paired with, and the randomly drawn values of UNITS DEMANDED. A good understanding of the detailed experimental instructions that follow below will help you to be able to make profitable choices.

Your earnings will be paid to you in cash at the end of the experimental session.

Textbox 1: General rules at the experimental session

If you have a question, raise your hand and one of the experimenters will come to your desk to answer it.

You are not allowed to communicate with other participants during the experiment. If you violate this rule, you will be asked to leave the experiment and will not be paid (not even your show-up fee).

In addition to the show-up fee of CZK 50 you will receive a start capital equal to CZK 300 for the experiment. It is possible to make losses and even to go bankrupt (lose you show-up fee) when making decisions that are poorly thought through. Please note that there are strategies that, if used, guarantee that you will not go bankrupt and, instead, increase your start capital.

You are allowed to write on the instructions, or on the blank piece of paper provided.

Section 2

The experimental session consists of five parts, as listed in Table 1.

Table 1

1. Summary instructions
2. Distribution information
3. Comprehension test
4. Trading Experiment
5. Questionnaire

In part 1, "Summary instructions", we will give you 10 minutes to read a summary of the rules for part 4, the "Trading Experiment". The full instructions are contained in the present document.

In part 2, "Distribution information", we will give you information regarding the distribution of the MARKET UNITS DEMANDED on the computer screen.

In part 3, "Comprehension test", we will test your understanding of the instructions and so determine if you will be allowed to continue with the Trading Experiment.

In part 4, "Trading Experiment", you will make decisions in a laboratory market context and earn money in Experimental Currency Units (abbreviated ECU).

In part 5, "Questionnaire", we ask you to answer some demographic questions.

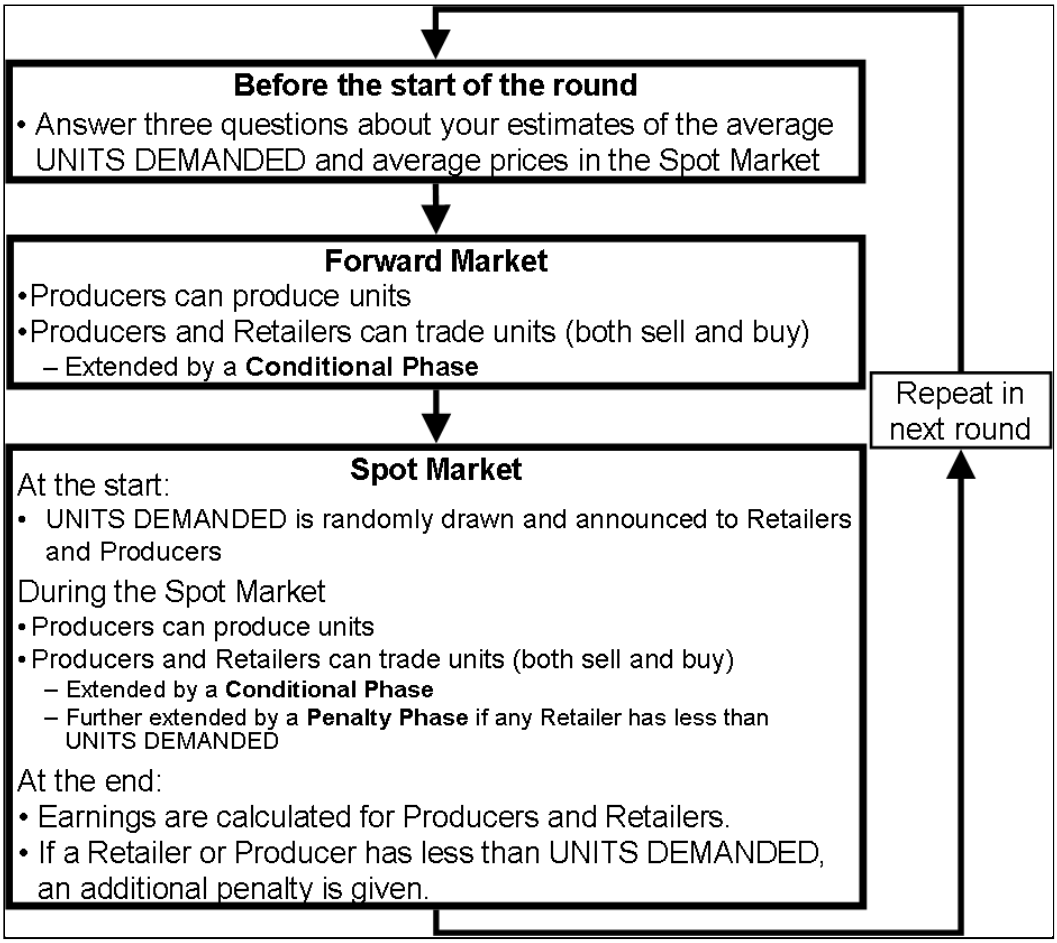
At the end of the experiment, ECUs will be converted into cash.

Section 3

2. Explanation of the Trading Experiment

2.1 Basic information

Figure 1: Rounds and stages in the Trading Experiment



You will be a member of a group. Including you, there will be **eight participants in your group**. Group membership is assigned randomly. You will not know who is in the group with you and none of your group members will know that you are in his or her group. In other words, group membership is anonymous. You will not interact with members of other groups. Your group membership stays fixed for the experiment.

In the Trading Experiment, each member of the group will make decisions in a market. There will be 10 rounds in total. One of the rounds will be selected at random and the earnings of this round will be paid to you at the end of the experiment.

In each round there will be two market stages, first Stage 1 and then Stage 2. The time in a stage can be extended by a **CONDITIONAL TIME PERIOD** and, in Stage 2, by a **PENALTY TIME PERIOD**. We explain the extending time periods in detail below.

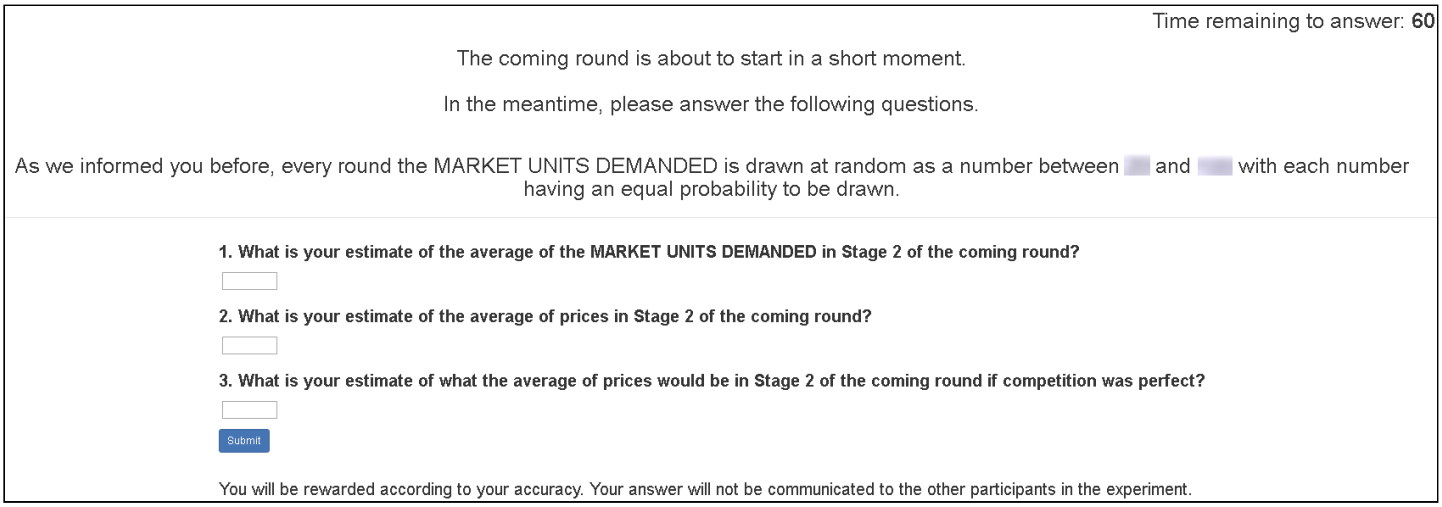
Figure 1 gives an overview of how each round will transpire; please study this figure now before proceeding.

Section 4

Every two rounds, before a round starts, you are asked to answer three questions. A screen like the one in Figure 2 below will be projected on top of your screen. Please answer the questions as well as you can and within 60 seconds.

We will select one of the rounds with questions at random. We will make sure that this will be a different round than the round selected to pay your other earnings. We then select one of your answers of this round at random and then calculate your accuracy as a percentage. **We then add the percentage accuracy times 100 CZK to your earnings.**

Figure 2: Questions before each round is about to start



Section 5

Figure 3: the CONDITIONAL TIME PERIOD indication in Stage 1

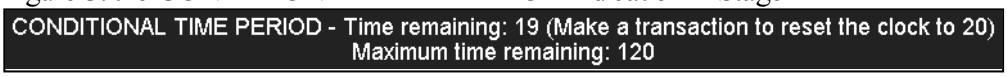


Figure 4: the CONDITIONAL TIME PERIOD indication in Stage 2

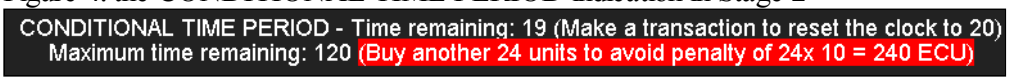
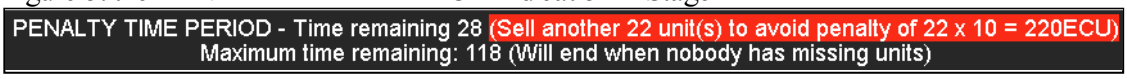


Figure 5: the PENALTY TIME PERIOD indication in Stage 2



Stage 1

Stage 1 starts with a fixed-time phase that lasts 45 seconds. When the time has expired, the market is extended by a **"CONDITIONAL TIME PERIOD"** for maximally 180 seconds. **However, within 30 seconds at least one new transaction must be made by some participants**, otherwise the CONDITIONAL TIME PERIOD ends.

It will always be clearly indicated in the middle on the top of your screen how much time you have left. Figure 3 shows an example in Stage 1 of the indication on the top of your screen for the CONDITIONAL TIME PERIOD.

When the CONDITIONAL TIME PERIOD in the Stage 1 has ended, Participants have a short break of 20 seconds to review their choices.

Stage 2

Stage 2 also starts with a fixed-time phase that lasts 45 seconds. When the time has expired, the market is also extended by a **"CONDITIONAL TIME PERIOD"** for maximally 180 seconds**. Again, every 30 seconds at least one new transaction must be made by some participants**, otherwise the CONDITIONAL TIME PERIOD ends. It will always be clearly indicated in the middle on the top of your screen how much time you have left.

Figure 4 shows an example of this indication in Stage 2 for the case that the participant is a Retailer who bought 24 units less than the UNITS DEMANDED.

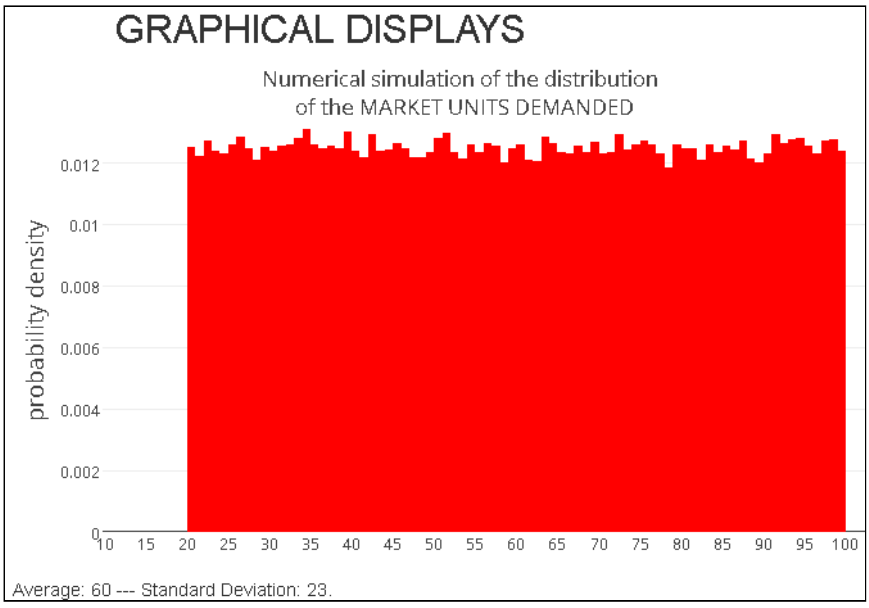
When the CONDITIONAL TIME PERIOD in the Stage 2 ends, and not all Retailers in the group have bought a number of units equal or larger than UNITS DEMANDED, the market trading is still further extended by a **"PENALTY TIME PERIOD"** for a maximum of 120 seconds. We describe the rules of the PENALTY TIME PERIODs in detail in the next sections. Once all Retailers have bought a number of units equal or larger than UNITS DEMANDED, or if the time has expired, Stage 2 finishes.

Figure 5 shows an example in Stage 1 of the indication on the top of the screen for a Retailer who bought 24 units less than the UNITS DEMANDED. Producers can see a likewise indication if they have sold less units than the UNITS DEMANDED.

Details regarding UNITS DEMANDED are explained in the next section.

Section 6

Figure 6: GRAPHICAL DISPLAYS - Numerical simulation of the distribution of MARKET UNITS DEMAND



Textbox 2: Calculate UNITS DEMANDED from MARKET UNITS DEMANDED

Thus if, for example, the MARKET UNITS DEMANDED is equal to 60 in a particular round, then the UNITS DEMANDED is equal to 15 for each Retailer in that round (as the number of Retailers in this experiment will be equal to 4).

If, for example, the MARKET UNITS DEMANDED is equal to 63 in a particular round, then the UNITS DEMANDED is equal to 16 for three retailers and equal to 15 for one Retailer in that round. The remainder after a division is always assigned to Retailers at random.

In each group, **four** group members will be Producers of a commodity and **four** will be Retailers.

Retailers

At the end of each round, Retailers will have to hold a number of units referred to as "**UNITS DEMANDED**". UNITS DEMANDED is obtained by drawing first **the MARKET UNITS DEMANDED at random as an integer number between 20 and 100** with each number having the same probability of being chosen. **The MARKET UNITS DEMANDED thus have an average of 60 and a standard deviation of approximately 23.1**. See Figure 6 for a numerical simulation of the distribution of MARKET UNIT DEMANDS. We drew 200.000 times an integer number beween 20 and 100 at random and plotted the results in a histogram.

We then divide the MARKET UNITS DEMANDED by the number of Retailers (four) and round it to the nearest integer to get the UNITS DEMANDED. **The "UNITS DEMANDED" is thus an integer number between 5 and 25** with every number having the same probability of being chosen. See Textbox 2 for an example how we calculate the UNITS DEMANDED from a drawn value of the MARKET UNITS DEMANDED.

Thus, as the average of the MARKET UNITS DEMANDED is equal to 60 and the number of retailers to 4, the average of UNITS DEMANDED for each Retailer is equal to 60/4 = 15 and the standard deviation approximately to 23.1/4 = 5.77.

Retailers and Producers are shown UNITS DEMANDED at the start of Stage 2. During Stage 1, UNITS DEMANDED will be not be known.

Section 7

Table 2: Retailers earnings

Units that must be bought		
Number of Unit	**Earn of Unit**	**Bought**
1	139	
2	139	
3	139	
4	139	
5	139	
6	139	
7	139	
8	139	
9	139	
10	139	
...	139	
UNITS DEMANDED	139	
UNITS DEMANDED+1	0	
UNITS DEMANDED+2	0	
UNITS DEMANDED+3	0	

Retailers need to buy units from Producers. Retailers also are allowed to trade: they may buy, but also sell units. At the end of Stage 2, Retailers must hold a total of units at least equal to UNITS DEMANDED. Retailers will be credited the net trading revenues which will be shown in Experimental Currency Units (ECUs) as calculated over Stage 1 and Stage 2.

Retailers will also receive earnings for holding units at the end of the round. They will be credited with **139** ECUs for each unit that satisfies UNITS DEMANDED. Retailers receive no credits for units they hold in excess of UNITS DEMANDED. See Table 2 for the Retailers' earnings.

Section 8

Table 3: Producers and production costs

Units that can be sold	
Number of Unit	**Cost of Unit Sold**
1	0
2	0.1
3	0.3
4	0.7
5	1.7
6	3
7	4.9
8	7.5
9	11
10	14.8
11	21
12	27
13	35
14	44
15	54
16	66
17	80
18	94
19	115
20	130
21	155
22	175
23	205
24	230
25	260
26	295
27	330
28	370
29	415
30	455
31	500
32	560
33	610
34	670
35	730

At the end of each round, Producers will be asked to have sold a number of units equal to the "**UNITS DEMANDED**". Every round, Producers can produce units at a cost and sell these units. The more units a Producer produces and sells, the higher the cost of a unit. The costs are identical for all Producers. See Table 3 for the Producers' production costs.

As you can see, selling the 3rd Unit costs 0.3 ECU, the 4th Unit 0.7 ECU, the 5th Unit 1.7 ECU, and so on.

Producers also are allowed to trade: they may sell but also buy units. At the end of the round, Producers will be credited the net trading revenues minus the cost of production which will be shown in Experimental Currency Units (ECUs) as calculated over Stage 1 and Stage 2.

Section 9

2.2 Penalties for buying (Retailer)or selling (Producer) less than UNITS DEMANDED

2.2.1 Penalties in the PENALTY TIME PERIOD of Stage 2

Textbox 3: Calculating the penalty in the PENALTY TIME PERIOD

Example 1. If UNITS DEMANDED is equal to 17, and a Retailer has bought only 10 units, he is missing 7 units. In the PENALTY TIME PERIOD, the Retailer will thus get a penalty equal to 7 x 10 ECU = 70 ECU every 30 seconds as long as (s)he doesn't buy the missing 7 units.

Suppose the Retailer manages within the 30 seconds to buy 5 units. He or she then has only 2 missing units and pays 2 x 10 ECU = 20 ECU.

Example 2. If UNITS DEMANDED is equal to 13, and a Producer has sold only 10 units, (s)he is missing 3 units. In the PENALTY TIME PERIOD, the Producer will thus get a penalty equal to 3 x 10 ECU = 30 ECU every 30 seconds as long as (s)he doesn't sell the missing 3 units.

If, at the end of the CONDITIONAL TIME PERIOD of Stage 2, Retailers have less units than UNITS DEMANDED, Stage 2 is further extended by the PENALTY TIME PERIOD.

Every 30 seconds, Retailers that bought and Producers that sold less units than UNITS DEMANDED receive a penalty of 10 ECU for each unit they are missing. The PENALTY TIME PERIOD lasts maximally 120 seconds, and a participant can thus receive a penalty 4 times if (s)he does not buy (in the role of Retailer) or sell (in the role of Producer) the missing units. The last penalty is calculated differently. We explain the calculation of the last penalty below.

Notice that, as a result of these penalties, it is very costly to have missing units during the Penalty time period. We strongly recommend to avoid receiving penalties in the PENALTY TIME PERIOD. Also, if you have the role of Retailer, holding more units than necessary is costly. Thus make sure that, before the end of the CONDITIONAL TIME PERIOD in Stage 2, if you have the role of Retailer, you have bought a total of number of units EXACTLY equal to the NUMBER DEMANDED or, if you have the role of Producer, you have sold a total of number of units equal or larger than the NUMBER DEMANDED.

See Textbox 3 for an example

Once no Retailers have missing units anymore or time has run out, Stage 2 ends and participants have a short break of 45 seconds to review their choices and results.

Section 10

2.2.2 The additional penalty at the end of Stage 2

If, at the end of the Penalty Time in Stage 2, Retailers still have less units than UNITS DEMANDED, they receive an additional penalty for each unit that they are missing. In the case there is at least one Retailer with less units than UNITS DEMANDED, Producers that have sold less units than the UNITS DEMANDED will receive the same penalty per unit.

The algorithm to calculate the additional penalty is somewhat complicated. Simply said, we designed the algorithm in such a way that, together with the 4 penalties in the PENALTY TIME PERIOD, it is always best for the profits of a participant to buy (in the role of a Retailer) or sell (in the role of a Producer) all UNITS DEMANDED.

Studying the details of the algorithm of the additional penalty is optional: There will be no questions about the algorithm in the comprehension test. For completeness, we describe the algorithm in detail below, so that you can verify our claim yourself if you wish so.

2.2.3 Detailed description of the algorithm to calculate the additional penalty at the end of Stage 2

To calculate the penalty, we first define the term *YourMissingUnits* as UNITS DEMANDED minus the number of units the Retailer has.

We also define the term *AggregateMissingUnits* as UNITS DEMANDED for all Retailers together minus the number of units all Retailers in your group together have. We use this to calculate the *MarginalCostOfAggregateMissingUnits*. We explain in the next section how the *MarginalCostOfAggregateMissingUnits* is calculated.

The financial penalty for a Retailer is then calculated as *YourMissingUnits* times *MarginalCostOfAggregateMissingUnits* times 1.5.

For Producers, we define *YourMissingUnits* as UNITS DEMANDED minus the number of units the Producer sold. The financial penalty for a Producer is then also calculated as *YourMissingUnits* times *MarginalCostOfAggregateMissingUnits* times 1.5.

Section 11

The *MarginalCostOfAggregateMissingUnits* is calculated as follows. At the end of the round, the aggregate total of missing units over all Retailers in the group is calculated. We then calculate the cost of producing the last unit of the aggregate total of missing units if they were produced by the Producers in your group.

In other words, we divide the aggregate total of missing units over the Producers such that the total production of Producers is as equal as possible, keeping in mind the amount Producers already produced in the round. We then look at the cost of producing the last unit of the aggregate total of missing units. This cost we call the *MarginalCostOfAggregateMissingUnits*.

The financial penalty for Retailers and Producers are thus very large but can be avoided by buying (in the role of Retailer) or selling (in the role of Producer) a number of units equal to the number of UNITS DEMANDED.

Textbox 4: Calculating the penalty

For example, suppose there are two Retailers and two Producers, and the first Retailer misses 1 unit and the second Retailer 2 units, then the aggregate total of missing units is 3.

Also, suppose that the first Producer produced 10 units and the second Producer 11 units. See Table 4 below.

Table 4: At the end of the round

	Missing Units		**Produced**
Retailer 1	1	Producer 1	11
Retailer 2	2	Producer 2	10
Aggregate total of missing units	**3**		

We then find the *MarginalCostOfAggregateMissingUnits* by adding the missing units to the number of units Producers have produced in a way such that their total production is as equal as possible. See Table 5 below

Table 5: Adding the missing units to the production of Producers

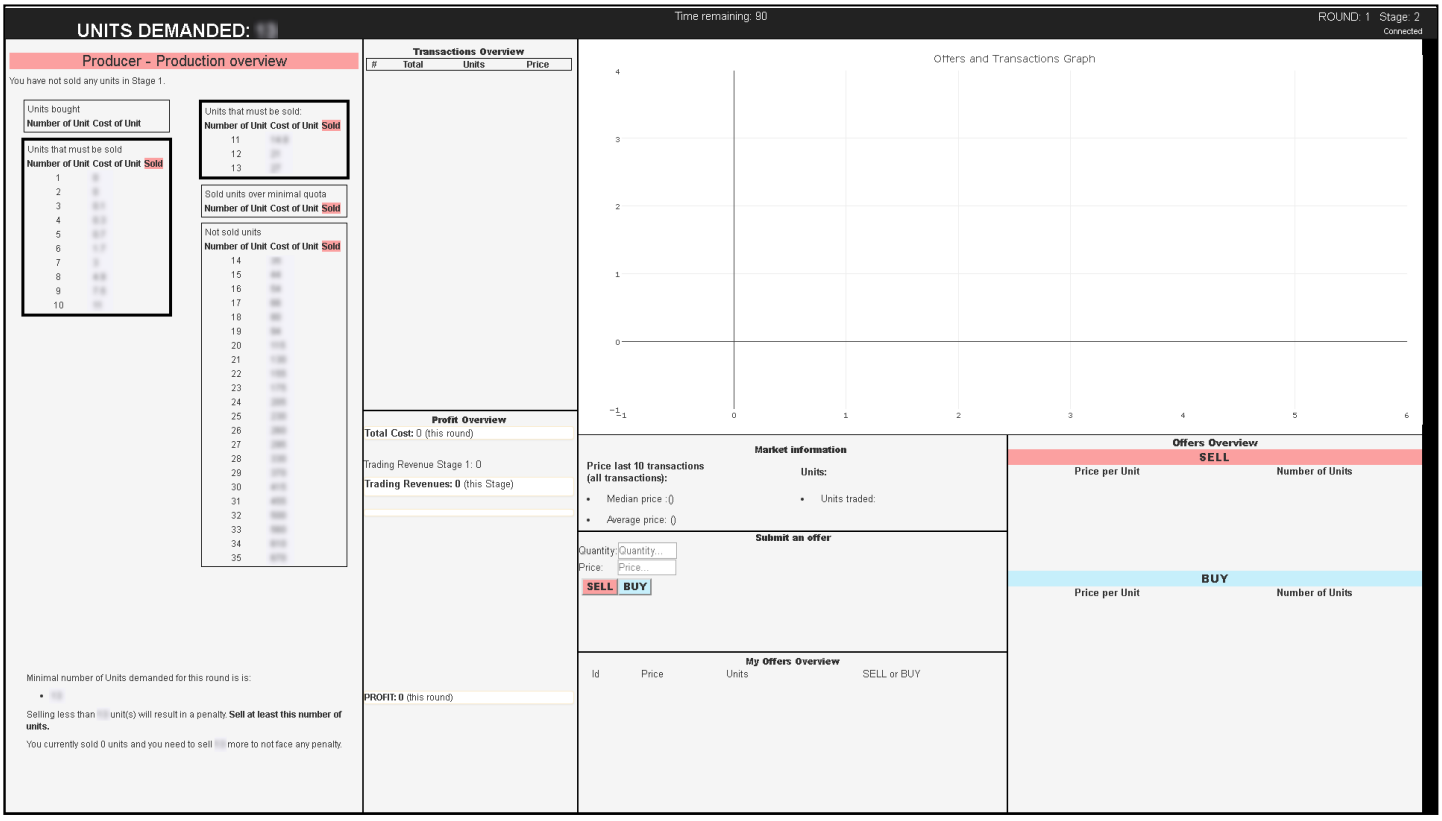
	Produced plus the missing units
Producer 1	12
Producer 2	12

We find the *MarginalCostOfAggregateMissingUnits* as the cost of the last unit that must be produced, which is unit number 12. We then look up the Producer's cost of unit 12 in a table such as Table 3. Using Table 3, verify that the Cost of Unit 12 is 27 ECU. Thus, in this example, the *MarginalCostOfAggregateMissingUnits* is equal to 27 ECU and the penalty per missing unit is 1.5 x 27 ECU = 40.

Section 12

3. Detailed explanation of the rules of trading

Figure 7: The Trading Screen for Producers in Stage 1 and Stage 2



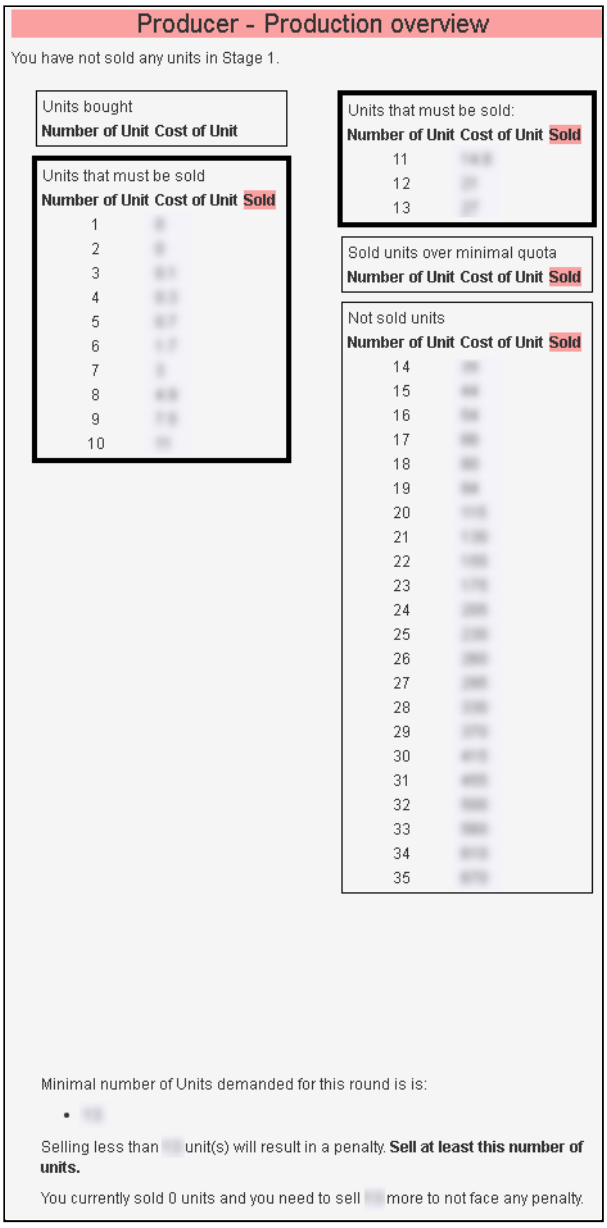
We will now further explain the trading rules, first for Producers, and then for Retailers.

3.1 Trading rules for Producers

Figure 7 shows the screen for Producers. The screen for the Producer is basically the same in Stage 1 and Stage 2. The screen shows the costs of production in the left column, labeled “Production Cost” (but the numbers have been blurred in this figure).

Section 13

Figure 8: The production cost



Production Cost

Figure 8 shows a close-up of the Production Cost for the Producer. The Units are numbered in the first column labeled "Number of Unit". The column labeled "Cost of Unit" shows the cost of each Unit (but the numbers have been blurred in this figure).

Section 14

Figure 9 a-b: Production Costs for different examples

Units that can be sold	
Number of Unit	**Cost of Unit Sold**
1	0
2	0.1
3	0.3
4	0.7
5	1.7
6	3
7	4.9
8	7.5
9	11
10	14.8

9.a

Units that can be sold		
Number of Unit	**Cost of Unit Sold**	
1	0	X
2	0.1	X
3	0.3	X
4	0.7	X
5	1.7	X
6	3	X
7	4.9	X
8	7.5	
9	11	
10	14.8	

9.b
Sold 7 Units

As soon as the Producer sells Units, the sold Units are marked with an "X" in the column Sold. Figure 9 gives an example to show how the selling and buying of Units is accounted and visualized on your screen.

Figure 9.a: The Producer has not sold anything yet.
At the start of a round, if the Producer hasn't sold anything yet, none of the Units are marked with an "X" in the column Sold.

Figure 9.b: The Producer has sold 7 Units.
When the Producer in Figure 9.a sells, for example, 7 Units, the Producer sells the first seven Units without an "X" , which are in this example the Units 1 to 7. These Units are then marked with an "X" in the column Sold to indicate that they have been sold. The column now looks as in Figure 9.b.

As you can see, the Producer has incurred a cost of 4.9 ECU for the last unit (Cost of Unit) and a total cost of 0 + 0.1 + 0.3 + 0.7 + 1.7 + 3 + 4.9 = 10.7 ECU

If the Producer in Figure 9.b would now like to sell one more Unit, the cost of selling the Unit is indicated by the Cost of Unit of the first Unit without "X", which is in this example Unit 8 with a Cost of Unit of 7.5 ECU.

Please make sure that you understand this.

Section 15

Figure 9 b - c: Production Costs for different examples

Units that can be sold		
Number of Unit	**Cost of Unit**	**Sold**
1	0	X
2	0.1	X
3	0.3	X
4	0.7	X
5	1.7	X
6	3	X
7	4.9	X
8	7.5	
9	11	
10	14.8	

9.b
Sold 7 Units

Units that can be sold		
Number of Unit	**Cost of Unit**	**Sold**
1	0	X
2	0.1	X
3	0.3	X
4	0.7	X
5	1.7	X
6	3	
7	4.9	
8	7.5	
9	11	
10	14.8	

9.c
Sold 7 Units
Bought 2 Units
Net: Sold 5 Units (7-2=5)

Figure 9.c: The Producer has sold 7 Units, and then bought 2 Units.
A Producer may also buy Units. Buying removes the "X" of Sold Units . Thus, if the Producer in the example in Figure 9.b buys 2 Units, the "X" marks of Units 6 and 7 disappear. The column now looks as in Figure 9.c.

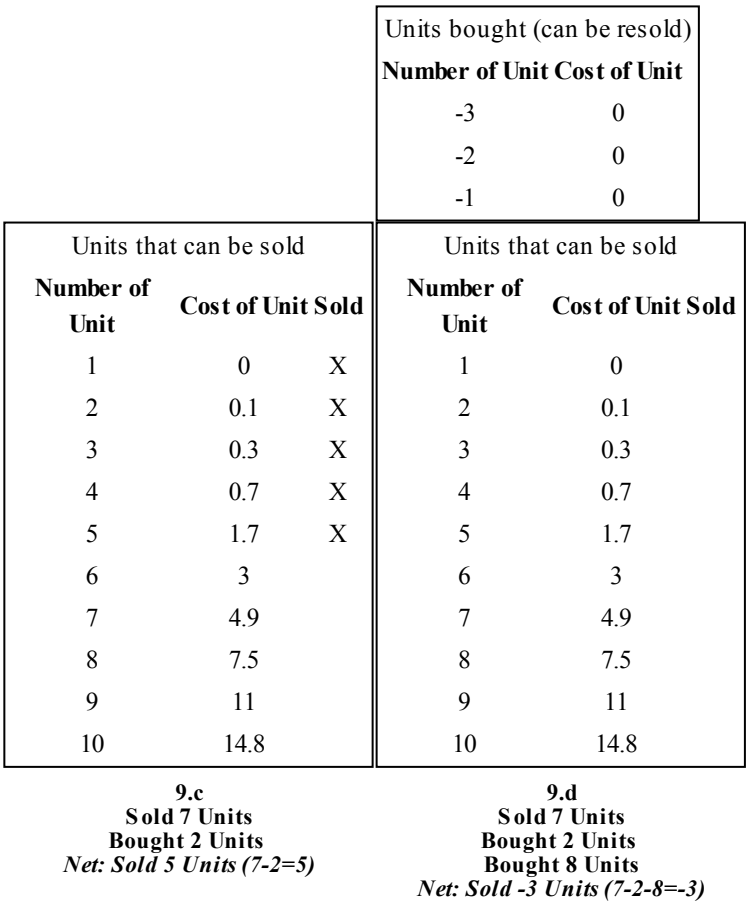
Units Number 6 and 7 now no longer contribute to the Total Cost. The total cost of the Producer is now 0 + 0.1 + 0.3 + 0.7 + 1.7 = 2.8. Verify this by inspecting Figure 9.c.

If the Producer in Figure 9.c would now like to sell one more Unit, the cost of selling the Unit is indicated by the Cost of Unit of the first Unit without "X", which is in this example Unit 6 with a Cost of Unit of 3 ECU.

Please make sure that you understand this.

Section 16

Figure 9 c - d: Production Costs for different examples



Units bought (can be resold)

Number of Unit	Cost of Unit
-3	0
-2	0
-1	0

Units that can be sold

Number of Unit	Cost of Unit	Sold
1	0	X
2	0.1	X
3	0.3	X
4	0.7	X
5	1.7	X
6	3	
7	4.9	
8	7.5	
9	11	
10	14.8	

9.c
Sold 7 Units
Bought 2 Units
Net: Sold 5 Units (7-2=5)

Units that can be sold

Number of Unit	Cost of Unit Sold
1	0
2	0.1
3	0.3
4	0.7
5	1.7
6	3
7	4.9
8	7.5
9	11
10	14.8

9.d
Sold 7 Units
Bought 2 Units
Bought 8 Units
Net: Sold -3 Units (7-2-8=-3)

Figure 9.d: The Producer has sold 7 Units, then bought 2 Units, and then bought another 8 Units.
If the Producer in Figure 8.c buys another 8 Units, (s)he will have bought in total more Units (10) than (s)he had sold (7). This results in “negative” Numbers of Units. We interpret the three “negative” Units as “stockpiling” by the Producer. At a later time within the same round, the Producer can sell the 3 Units without incurring extra costs.

In Figure 9.d we see that buying the 8 Units removes the "X" of Units Numbers 1 to 5 and in addition obtains three extra Units that have a zero (0 ECU) Cost of Unit. These Units are shown in the upper box with a negative Number of Unit, as shown in Figure 9.d.

Please make sure that you understand this.

Section 17

Figure 9 d - e: Production Costs for different examples

Units bought (can be resold)	
Number of Unit	**Cost of Unit**
-3	0
-2	0
-1	0

Units that can be sold	
Number of Unit	**Cost of Unit Sold**
1	0
2	0.1
3	0.3
4	0.7
5	1.7
6	3
7	4.9
8	7.5
9	11
10	14.8

9.d
Sold 7 Units
Bought 2 Units
Bought 8 Units
Net: Sold -3 Units (7-2-8=-3)

Units that can be sold		
Number of Unit	**Cost of Unit Sold**	
1	0	X
2	0.1	X
3	0.3	X
4	0.7	X
5	1.7	X
6	3	X
7	4.9	X
8	7.5	
9	11	
10	14.8	

9.e
Sold 7 Units
Bought 2 Units
Bought 8 Units
Sold 10 Units
Net: Sold 7 Units (7-2+8+10=-3)

Figure 9.e: The Producer has sold 7 Units, then bought 2 Units, then bought another 8 Units and then sold 10 Units.

If the Producer in Figure 9.d now sells again 10 Units, the three bought units (the ones with negative numbers) disappear from the column and the remaining 7 Units are marked with an "X" in the column Sold, starting with Unit 1. Thus, Units 1 till 7 are marked with a cross, as shown in Figure 9.e.

Please make sure that you understand this.

Section 18

Figure 10: Transactions overview for a specific example

Transactions Overview

#	Total	Units	Price per Unit
4	40	10	4
3	-24	-8	3
2	-4	-2	2
1	7	7	1

Figure 11: Profit Overview for a specific example

Profit Overview

Total Cost : 10.7 (this round)

Trading Revenue Stage 1: 0

Trading Revenues: 19 (this Stage)

PROFIT : 8.3 (this round)

Transactions Overview

At the top, to the right of the Production Cost, is the Transaction Overview. In this overview, each line represents a transaction, **with the top line showing the most recent transaction**. The transactions are numbered (#) and the higher the number, the more recent the transaction. Sales, with a red (or, in print, dark gray) background, always have a positive number of Units and purchases, with a blue (or, in print, light gray) background, a negative number.

Thus, the Trading account of the Producer in the example in Figure 9 (on the previous pages) would look as in Figure 10. You can see that the Producer, with the last transaction, earned a Total of 40 ECU by selling 10 Units for a Price per Unit of 4 ECU, and, with the transaction before that, spend a Total of 24 ECU by buying 8 Units for a Price per Unit of 3 ECU, and so on.

Profit Overview

Under the Transaction Overview is the Profit Overview. It shows the Total Cost, the Total Trading Revenues, and the PROFIT. If a Producer received penalties, they will also be shown here.

The Total Cost is thus the total production cost of the Units Sold. The Total Trading Revenues is the total earnings (if positive) or total costs (if negative) from trading (selling and buying). The PROFIT is then equal to the Total Trading Revenues minus the Total Costand, if there are any, minus the penalties.

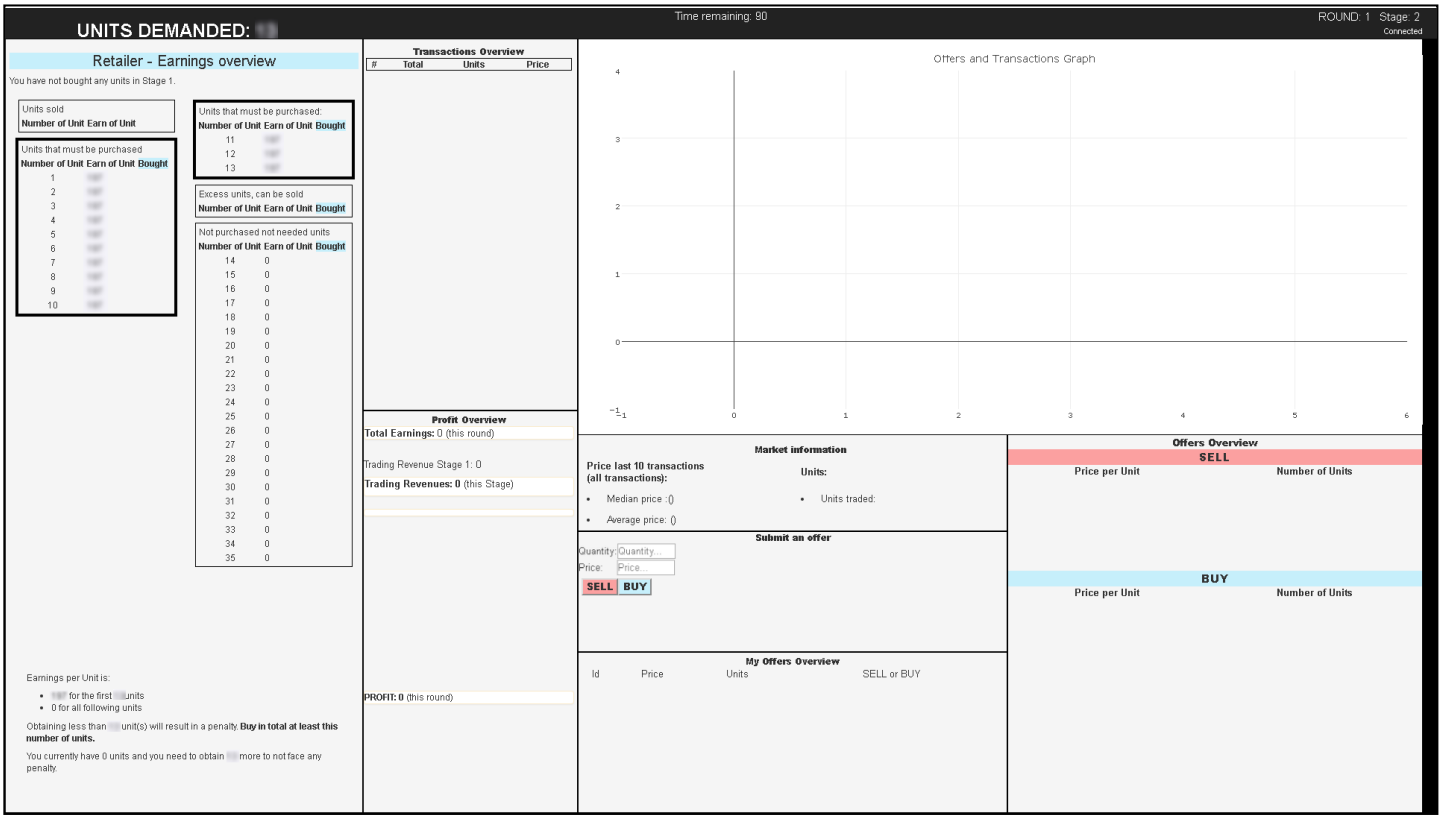
For the Producer in the example, the Profit Overview looks as in Figure 11

Note that the Profit Overview follows the previous example. The Retailer incurred Total Cost by using the 7 Units that were sold in Figure 9.e (Total Cost is 10.7 ECU) and obtained Total Trading Revenues from the payments for Units when trading. The Total Trading Revenue of 19 can be obtained by adding the totals in the Transaction Overview in Figure 9 (40 - 24 - 4 + 7 = 19 ECU). Please inspect Figure 10 to verify that.

Section 19

3.2 Trading rules for Retailers

Figure 12: The Trading Screen for Retailers in Stage 2

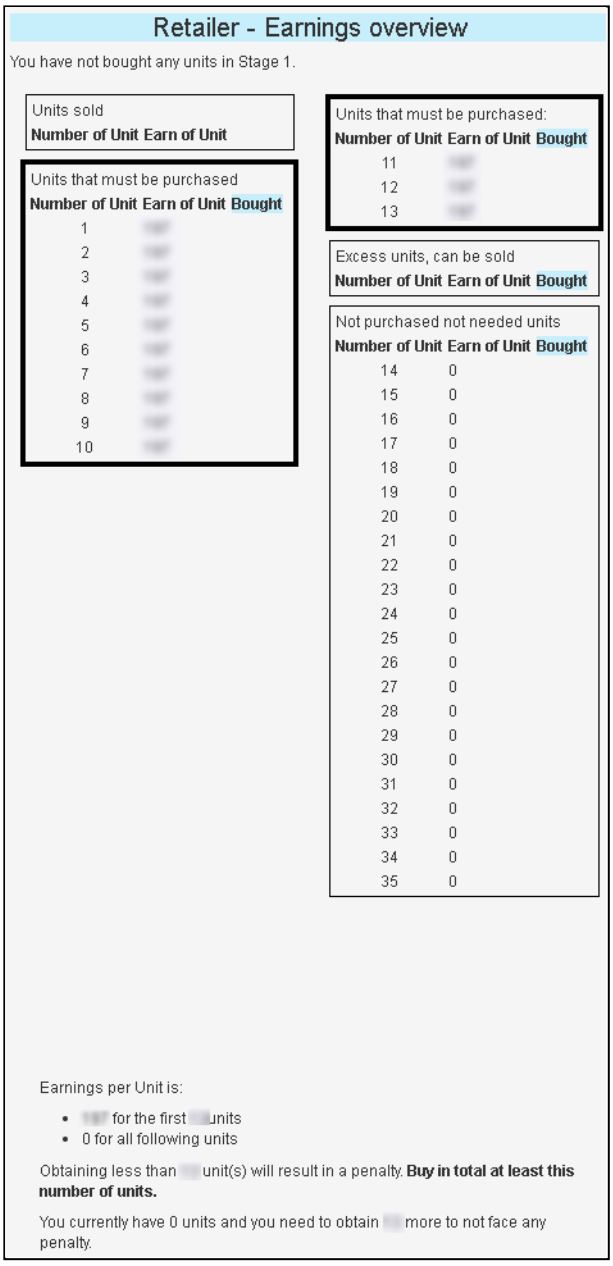


The Retailer sees a screen as in Figure 12.

The screen for the Retailer is somewhat different in Stage 1 and Stage 2. We will first focus on the screen in Stage 2.

Section 20

Figure 13: Earnings Overview in Stage 2



3.2.1 Earnings Overview in Stage 2

Figure 13 shows a close-up of the Earnings Overview for the Retailer. The Units are numbered in the first column labeled "Number of Unit". The column labeled "Earn of Unit" shows the Earnings of each of the Units bought (but the numbers have been blurred in this figure).

For each Unit bought, **139 ECU is earned, up to the number of UNITS DEMANDED**, which is 13 in the example in Figure 13. Thus buying one Unit earns 139 ECU, buying two Units a total of 278 ECU, buying three Units a total of 417 ECU, and so on.

As you can see in Figure 13, **for Units bought in addition to the number of UNITS DEMANDED, zero (0 ECU) is earned**. As mentioned before, UNITS DEMANDED is obtained by randomly drawing first the MARKET UNITS DEMANDED as an integer number between 20 and 100 with each number having the same probability of being chosen and dividing by the number of retailers (thus by 4) to get the number of UNITS DEMAND. (The possible rest is assigned as evenly as possible and at random).

Thus, as mentioned before, as the average of the MARKET UNITS DEMANDED is equal to **60** and the number of retailers is equal to **4**, the average of UNITS DEMANDED for each Retailer is equal to **60/4 = 15** and the standard deviation to **23.1/4 = 5.77** .

Please make sure that you understand this.

Section 21

Figure 14 a - b: Earnings Overview for different examples

Units that must be purchased		Units that must be purchased		
Number of Unit	**Earn of Unit Bought**	**Number of Unit**	**Earn of Unit Bought**	
1	139	1	139	X
2	139	2	139	X
3	139	3	139	X
4	139	4	139	X
5	139	5	139	X
6	139	6	139	X
7	139	7	139	X
8	139	8	139	
9	139	9	139	
10	139	10	139	
14.a		**14.b Bought 7 Units**		

As soon as the Retailer buys Units, the bought Units are marked with an "X" in the column “Bought”. Figure 14 gives an example to show how the selling and buying of Units is accounted and visualized on your screen.

Figure 14.a: The Retailer has not bought anything yet
At the start of a round, if the Retailer hasn’t bought anything yet, none of the Units has been marked with an "X" in the column Bought.

Figure 14.b: The Retailer has bought 7 Units
When the Retailer in Figure 14.a buys, for example, 7 Units, the Retailer buys the first seven Units without an "X" , which are in this example the Units 1 to 7. These Units are then marked with an "X" in the column Bought to indicate that they have been bought. The column now looks as in Figure 14.b.

The retailer has at this point total earnings equal to 7 x 139 ECU = **973 ECU**.

If the Retailer would now like to buy one more Unit, his/her earnings increase by the amount of the Earn(ings) per Unit of the first Unit without "X", which is in this example Unit 8 with Earn(ings) per Unit of **139 ECU**.

Please make sure that you understand this.

Section 22

Figure 14 b - c: Earnings Overview for different examples

Units that must be purchased		
Number of Unit	**Earn of Unit**	**Bought**
1	139	X
2	139	X
3	139	X
4	139	X
5	139	X
6	139	X
7	139	X
8	139	
9	139	
10	139	

14.b
Bought 7 Units

Units that must be purchased		
Number of Unit	**Earn of Unit**	**Bought**
1	139	X
2	139	X
3	139	X
4	139	X
5	139	X
6	139	
7	139	
8	139	
9	139	
10	139	

14.c
Bought 7 Units
Sold 2 Units
Net: Bought 5 Units (7-2=5)

Figure 14.c: The Retailer has bought 7 Units, and then sold 2 Units.
A Retailer may also sell Units. Selling removes the "X" of Bought Units. Thus, if the Retailer in the example in Figure 14.b sells 2 Units, the "X" marks of Units 6 and 7 disappear. The column now looks as in Figure 14.c.

Units 6 and 7 now no longer contribute to the total earnings. The total earnings of the Retailer are now 5 x 139 = **695** ECU. Verify this by inspecting Figure 14.c.

If the Retailer in Figure 14.b would now like to buy one more Unit, the Earnings are indicated by the Earn(ings) per Unit of the first unused Unit, which is in this example Unit 8 with Earn(ings) per Unit of 139 ECU.

Please make sure that you understand this.

Section 23

Figure 14 c - d: Earnings Overview for different examples

Units Sold	
Number of Unit	**Earn of Unit**
-3	0
-2	0
-1	0

Units that must be purchased		
Number of Unit	**Earn of Unit**	**Bought**
1	139	X
2	139	X
3	139	X
4	139	X
5	139	X
6	139	
7	139	
8	139	
9	139	
10	139	

14.c
Bought 7 Units
Sold 2 Units
Net: Bought 5 Units (7-2=5)

Units that must be purchased	
Number of Unit	**Earn of Unit Bought**
1	139
2	139
3	139
4	139
5	139
6	139
7	139
8	139
9	139
10	139

14.d
Bought 7 Units
Sold 2 Units
Sold 8 Units
Net: Bought -3 Units (7-2-8=-3)

Figure 14.d: The Retailer has bought 7 Units, then sold 2 Units, and then sold another 8 Units.
If the Retailer in Figure 14.c sells another 8 Units, (s)he will have sold in total more Units (10) than (s)he had bought (7). This results in “negative” Numbers of Units. We interpret the three “negative” Units as a “loan” for the Retailer. At a later time within the same round, the Retailer must buy the 3 Units to repay the “loan”.

In Figure 14.d we see that selling the 8 Units removes the "X" of Units 1 to 5 and in addition obtains three extra Units that have zero (0 ECU) Earn(ings) per Unit. These Units are shown in the upper box with a negative Number of Unit, as shown in Figure 14.d

The total earnings of the Retailer are now 0 ECU.

Please make sure that you understand this.

Section 24

Figure 14 d - e: Earnings Overview for different examples

Units Sold	
Number of Unit	**Earn of Unit**
-3	0
-2	0
-1	0

Units that must be purchased	
Number of Unit	**Earn of Unit Bought**
1	139
2	139
3	139
4	139
5	139
6	139
7	139
8	139
9	139
10	139

14.d
Bought 7 Units
Sold 2 Units
Sold 8 Units
Net: Bought -3 Units (7-2-8=-3)

Units that must be purchased		
Number of Unit	**Earn of Unit Bought**	
1	139	X
2	139	X
3	139	X
4	139	X
5	139	X
6	139	X
7	139	X
8	139	
9	139	
10	139	

14.e
Bought 7 Units
Sold 2 Units
Sold 8 Units
Bought 10 Units
Net: Bought 7 Units (7-2-8+10=7)

Figure 14.e: The Retailer has bought 7 Units, then sold 2 Units, then sold another 8 Units and then bought 10 Units.

If the Retailer in Figure 14.d now buys again 10 Units, the three sold units (the ones with negative numbers) disappear from the column and the remaining 7 Units are marked with an "X" in the column Bought, starting with Unit 1. Thus, Units 1 till 7 are marked with a cross, as shown in Figure 14.e.

Please make sure that you understand this.

Section 25

Transactions Overview

Figure 15: Transactions overview for a specific example

Transactions Overview

#	Total	Units	Price per Unit
4	-40	-10	4
3	24	8	3
2	4	2	2
1	-7	-7	1

At the top, to the right of the Earnings Overview, is the Transaction Overview. In this overview, each line represents a transaction, with the topline showing the most recent transaction. The transactions are numbered (#) and the higher the number, the more recent the transaction. Sales, with a red (or, in print, dark gray) background, always have a positive number of Units and purchases, with a blue (or, in print, light gray) background, a negative number.

Thus, the Transaction Overview of the Retailer in the example in Figure 14 would look as in Figure 15 and it can be seen that the Retailer, with the last transaction, spend a Total of 40 ECU by buying 10 Units for a Price per Unit of 4 ECU, and, with the transaction before that, earned a Total of 24 ECU by selling 8 Units for a Price per Unit of 3 ECU, and so on.

Figure 16: Profit Overview for a specific example

Profit Overview

Total Earnings : 973 (this round)

Trading Revenue Stage 1: 0

Trading Revenues: -19 (this Stage)

PROFIT : 954 (this round)

Under the Transaction Overview is the Profit Overview. It shows the Total Earnings, the Total Trading Revenues, and the PROFIT. If a participant received penalties, they will also be shown here. For the Retailer in the example, the Profit Overview looks as in Figure 16

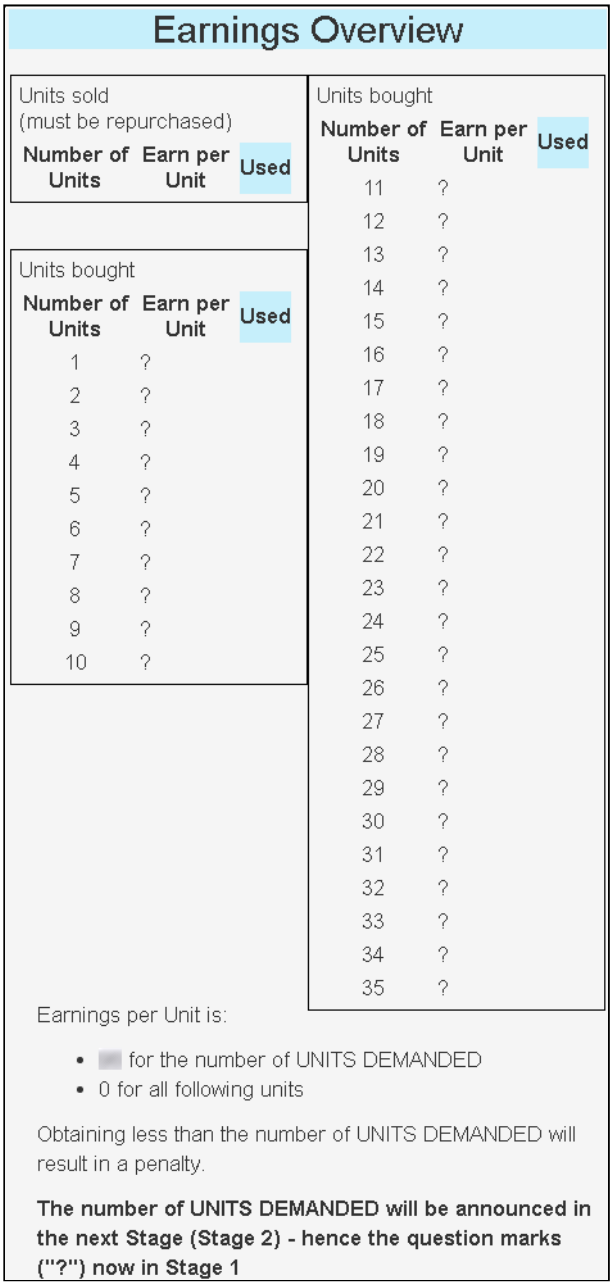
The Total Earnings is thus the total Earnings resulting from the Units Bought. The Total Trading Revenues is the total earnings (if positive) or total costs (if negative) from trading (selling and buying). The PROFIT is then equal to the Total Earnings plus the Total Trading Revenues and, if there are any, minus the penalties.

Note that the Profit Overview follows the previous example. The Retailer incurred Total Earnings from the 7 Units that were bought in Figure 14.e (Total Earn(ings) are 7 x 139 = 973) and obtained the Total Trading Revenues from the payments for Units when trading. The Total Trading Revenue of -19 ECU can be obtained by adding the totals in the Transaction Overview in Figure 15 (-40 + 24 + 4 – 7 = -19 ECU).Please inspect Figure 15 to verify that.

Section 26

3.2.2 Earnings Overview in Stage 1

Figure 17: Earnings Overview in stage 1

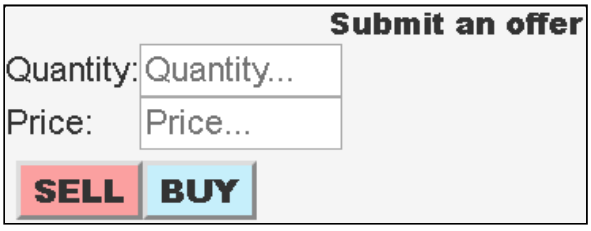


For Retailers, the information shown in the tables is somewhat different in Stage 1, because the number of UNITS DEMANDED is not know yet. The Earnings of each Unit (Earn of Unit) are therefore shown as “?”.

Section 27

5. Making an offer

Figure 18: Making an offer



In the box labeled “Submit an offer” as in Figure 18, an offer can be made. Fill out the Price and the Quantity you wish and then press SELL or BUY.

After you made an offer, it will become visible in the box below, labeled “My Offers Overview”. See Figure 19 for an example.

Figure 19: My Offers Overview for a specific example

In the example in Figure 16, the participant made both a SELL and a BUY offer. This is allowed and you will never make a transaction “with yourself” (even if your BUY offer quotes a higher price than your SELL offer, your own orders will never be matched with one another).

You cannot have more than one SELL and one BUY offer at the same time. If you make a second offer of the same type, the previous one is cancelled and disappears.

Note that you can also cancel your standing offer by pressing the Cancel button.

Section 28

If you make a new offer, the program tries to match your offer with outstanding offers of other participants in the Offer Overview. (We will describe the Offer Overview in detail in the next section.)

If you made a SELL offer:

- a match occurs when there are outstanding BUY offers with a price higher than yours (they are willing to pay more than the price you asked).

If you made a BUY offer:

- a match occurs when there are outstanding SELL offers with a price lower than yours (they are willing to sell for less than what you are offering).

When there are matches, the program selects the match that has the best price for your new offer (lowest if you made a BUY offer, highest if you made a new offer). The program then clears your offer. Your offer is erased and a transaction is registered with the transaction price of the outstanding offer.

If the outstanding offer was for less Units than the Number of Units in your offer, your offer is split in a part that is cleared and a part that cannot be cleared by this match. The program then looks if there are other matching offers of other participants in the Offer Overview to clear with.

If only a part of your offer can be matched, the remaining part of your offer is shown in the Offer Overview, waiting for new matching offers from other participants. It is up to you if you leave this remaining offer in the Offer Overview, or if you cancel it by pressing the cancel button or by posting a new offer.

Section 29

6 Offers Overview and Graph

Figure 20.a: Offers Overview for a specific example

6.1 Offers Overview

In the box labeled “Offers Overview” you can see all the outstanding offers by you and your group members. Figure 20.a shows the “Offers Overview” box for a specific example with fictitious offers. The offers are ordered by Price from high to low. The column "Number of Unit" shows the number of Units that are on offer for that Price.

Thus, if you want to buy Units, you need to look at the SELL offers.

If you want to sell Units, you need to look at the BUY offers.

Section 30

Figure 20 a-b: Offers Overview for different examples

Offers Overview		Offers Overview	
SELL		**SELL**	
Price per Unit	Number of Units	Price per Unit	Number of Units
7	2	7	2
5	3	5	1
4	1		
BUY		**BUY**	
Price per Unit	Number of Units	Price per Unit	Number of Units
3	1	3	1
2	1	2	1
1	2	1	2
20.a Before		20.b After: a new BUY offer of 3 Units for a Price of 10 ECU has been made	

When you make a BUY offer, your offer will first be matched to the existing SELL offer with the best Price available (best means cheapest as you want to buy).

Thus, if the Offer Overview is as in Figure 20.a (Before), and you made a new BUY offer of 3 Units for a Price of 10 ECU, your BUY offer would first be matched with the SELL offer in the last (third) row. You would thus get 1 Unit for a Price of 4 ECU. The remaining two Units in your BUY offer would be matched with the Units in the second row, for a Price of 5 ECU. You would thus get 3 Units in total, one for a Price of 4 ECU and two for a Price of 5 ECU.

The Offer Overview will now look as in Figure 20.b (After), as you bought all the units of the SELL offer in Figure 20.a (Before) for a Price of 4 ECU (in the last (third) row) and 2 of the 3 Units for a Price of 5 ECU (in the second row).

Please note that transactions happened instantly, you can see the result in the Transactions overview.

Section 31

Figure 20 a-c: Offers Overview for different examples

Offers Overview		Offers Overview	
SELL		**SELL**	
Price per Unit	Number of Units	Price per Unit	Number of Units
7	2	7	2
5	3	5	3
4	1	4	1
BUY		**BUY**	
Price per Unit	Number of Units	Price per Unit	Number of Units
3	1	3	1
2	1	2	4
1	2	1	2
20.a Before		20.c After: a new BUY offer of 3 Units for a Price of 2 ECU has been made	

If your offer cannot be matched for all the Units, your offer is added to the Offer Overview. Thus, if the Offer Overview is as in Figure 20.a (Before), and you make a BUY offer of 3 Units for a Price of 2 ECU, it will be added to the BUY Units in the second row and the Offer Overview will look as in Figure 20.c (After).

Section 32

Figure 20 a-d: Offers Overview for different examples

Offers Overview		Offers Overview	
SELL		**SELL**	
Price per Unit	Number of Units	Price per Unit	Number of Units
7	2		
5	3		
4	1		
BUY		**BUY**	
Price per Unit	Number of Units	Price per Unit	Number of Units
3	1	9	5
2	1	3	1
1	2	2	1
		1	2
20.a Before		20d After: a new BUY offer of 11 Units for a Price of 9 ECU has been made	

If the Offer Overview is again as in Figure 20.a (Before), and you make a BUY offer of 11 Units for a Price of 9, you will buy all the outstanding SELL offers, and the Offer Overview will look as in Figure 20.d(After).

You thus get a total of 6 Units, 1 Unit for a Price of 4 ECU, 3 Units for a Price of 5 ECU and 2 Units for a Price of 7 ECU. As there are still 5 Units left in your offer, they will be added to the BUY offers.

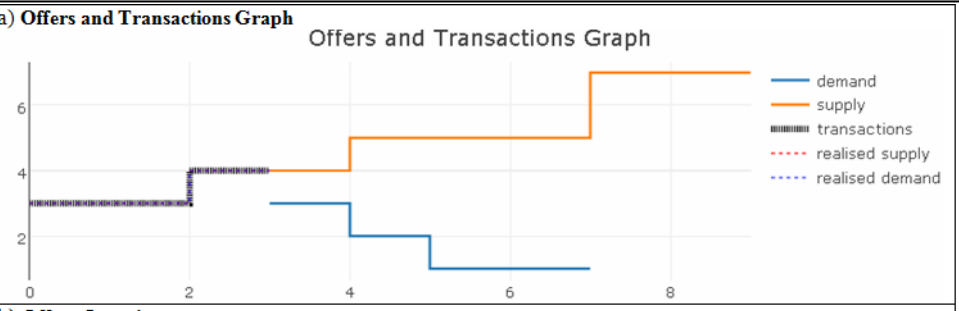
The same logic applies when you make SELL offers.

Section 33

6.2 Offers and Transactions Graph

Figure 21: Offers and Transactions Graph for a specific example

a) **Offers and Transactions Graph**



b) **Offers Overview**

Offers Overview

SELL

Price per Unit	Number of Units
7	2
5	3
4	1

BUY

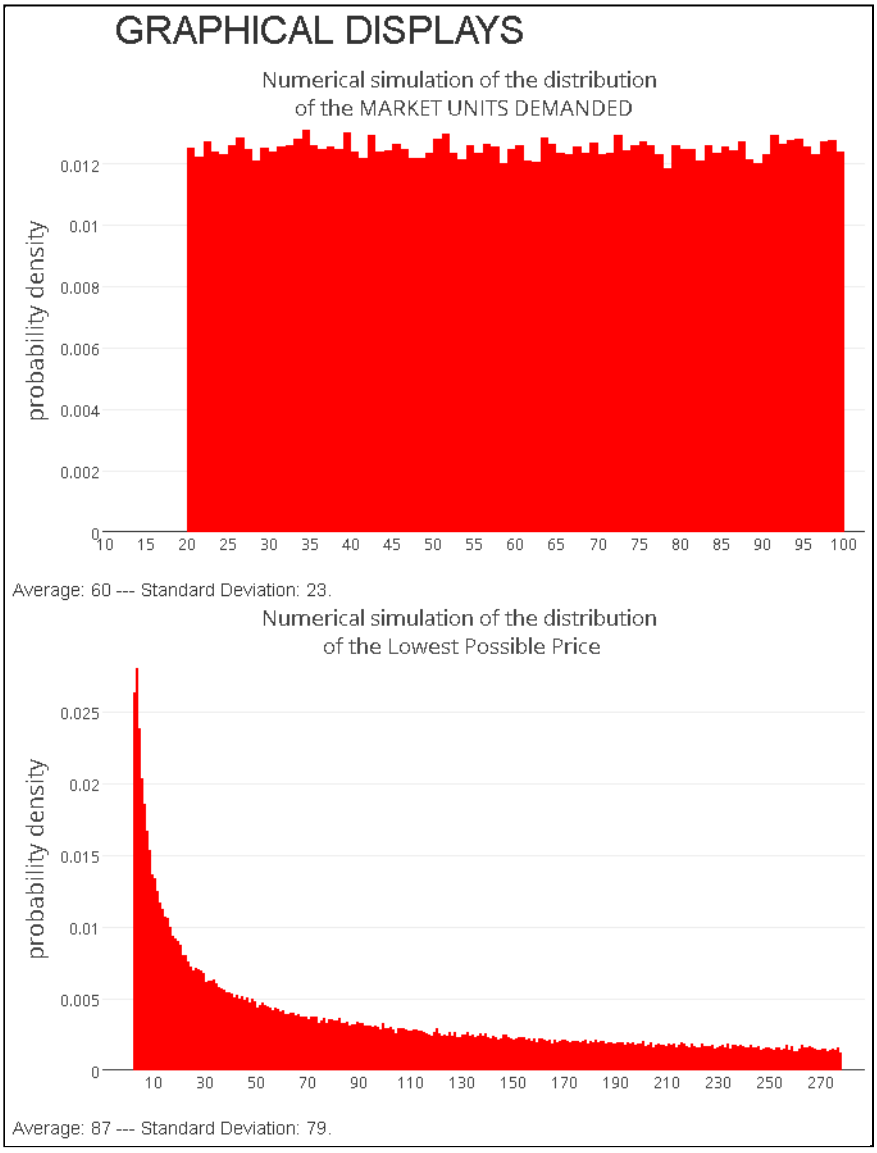
Price per Unit	Number of Units
3	1
2	1
1	2

All the transactions made and the active offers are also shown in the graph, see Figure 21. The thin (upwards edging) lines in red show SELL offers, while the thin (downwards edging) lines in blue show BUY offers. The thick black line shows transactions.

Section 34

7. Determination of the UNITS DEMANDED for Retailers

Figure 22: Distribution MARKET UNITS DEMANDED and PRICES



As mentioned before, the number of UNITS DEMANDED for the Retailer is determined by randomly drawing first **the MARKET UNITS DEMANDED as an integer number between 20 and 100** with each number having the same probability of being chosen. **The MARKET UNITS DEMANDED has thus an average of 60 and has a standard deviation of approximately 23.1**.

For your information, we also calculated the expected price in the market if Producers are charging marginal costs: this is equal to 87 ECU.

To help you understand how we could come to 87 as the expected price, we will show you the screen "Distribution MARKET UNITS DEMANDED and PRICES" with a graphical display of the distribution. The screen looks like Figure 22.

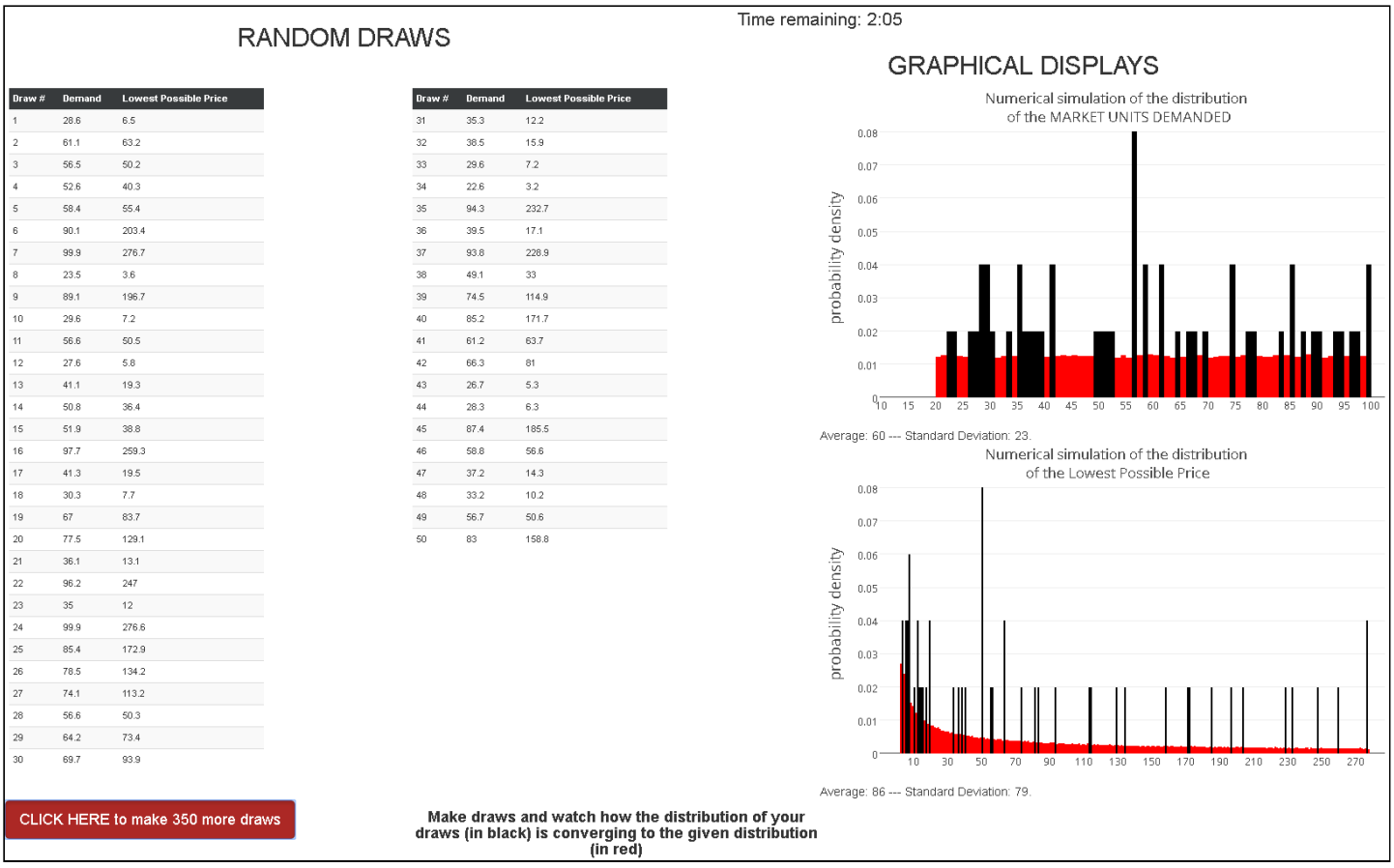
On the right, under the label "GRAPHICAL DISPLAYS", you see on top "Numerical simulation of the distribution of MARKET UNITS DEMANDED". The distribution is basically a histogram of the relative frequency of each outcome when the number of MARKET UNITS DEMANDED are drawn 200.000 times at random. You can see that **the average of the MARKET UNITS DEMANDED is equal to 60**.

Below you can see the "Distribution of lowest possible price". For each value of MARKET UNITS DEMANDED, we calculate what is the cost of the last Unit if we spread the production of the MARKET UNITS DEMANDED as equally as possible over all Producers.

This is the lowest possible price for which a Producer could sell his or her production without making a loss on the sale of the last Unit. Notice that this would be the equilibrium price for Units if competition were perfect. **Below the graph we indicate the average over all possible prices and this is equal, as mentioned before, to 87 ECU.**

Section 35

Figure 23: Distribution Demand and Production cost



Draw #	Demand	Lowest Possible Price
1	28.6	6.5
2	61.1	63.2
3	56.5	50.2
4	52.6	40.3
5	58.4	55.4
6	90.1	203.4
7	99.9	276.7
8	23.5	3.6
9	89.1	196.7
10	29.6	7.2
11	56.6	50.5
12	27.6	5.8
13	41.1	19.3
14	50.8	36.4
15	51.9	38.8
16	97.7	259.3
17	41.3	19.5
18	30.3	7.7
19	67	83.7
20	77.5	129.1
21	36.1	13.1
22	96.2	247
23	35	12
24	99.9	276.6
25	85.4	172.9
26	78.5	134.2
27	74.1	113.2
28	56.6	50.3
29	64.2	73.4
30	69.7	93.9

Draw #	Demand	Lowest Possible Price
31	35.3	12.2
32	38.5	15.9
33	29.6	7.2
34	22.6	3.2
35	94.3	232.7
36	39.5	17.1
37	93.8	228.9
38	49.1	33
39	74.5	114.9
40	85.2	171.7
41	61.2	63.7
42	66.3	81
43	26.7	5.3
44	28.3	6.3
45	87.4	185.5
46	58.8	56.6
47	37.2	14.3
48	33.2	10.2
49	56.7	50.6
50	83	158.8

To get a better feel for the probability of the outcomes of the total number of "MARKET UNITS DEMANDED" and "lowest possible price", you yourself have to experiment with creating random draws from the distribution at the experimental session by pressing "CLICK HERE to make x more draws".

Each time you press "CLICK HERE to make x more draws", the program generates ten RANDOM DRAWS of the "MARKET UNITS DEMANDED" from the **distribution of integer numbers between 20 and 100, with all integers having the same probability to be chosen**. You can watch how the distribution of your draws is converging to the given distribution (in red). The outcomes are also shown in the graph. Figure 23 shows an example.

To remind you, the "UNITS DEMANDED" that a Retailer must buy each round are equal to the "MARKET UNITS DEMANDED" divided by the number of Retailers in the experiment (four).

You are obliged to make 400 draws. You may make more draws if you wish, within the time.

This is the end of the instructions. Please make sure you understand them well. The contents of these instructions will be examined in the comprehension test that will determine if you are allowed to take part in the Trading Experiment.