Appendix (Not for Publication): Instructions Used in the Experiment

A.1 Static Entry Game, C,G Treatment Order

Overview

Welcome to this experiment in economic decision-making. Please read these instructions carefully as they explain how you earn money from the decisions you make in today's session. There is *no talking* for the duration of the session. If you have a question, please raise your hand and your question will be answered in private.

There are 20 participants in today's session. The rules are the same for all participants. In the first phase of this experiment you will participate in 30 rounds of decision-making. At the beginning of each round you will be assigned randomly to one of two groups of 10 participants, Group 1 or Group 2. The group to which you are assigned for that round appears on your screen. In each round you will be asked to choose between one of two choices, labeled "A" or "B". After a round is over, all participants will be randomly divided between these two groups again. While you may be assigned to the same group number (1 or 2) more than once in succession, the composition of participants in the group to which you are assigned will differ from round to round.

The Decision You Face Each Round

Prior to the start of each round, an integer number labeled the "Y number" will be randomly drawn from the interval 10 to 90 inclusive. All numbers in this interval have the same probability of being drawn. The Y number drawn in each round is the same for all participants and will be shown on your computer screen.

After the Y number is revealed, you will have to make a decision between choice A or choice B. Click on the radio button next to your choice. You can change your mind any time prior to clicking the red Submit button.

If you choose A then you earn 20 points for the round.

If you choose B, then the number of points you earn depends on 1) how many other participants also choose B and 2) the value of the Y number. Generally, the more participants who choose B and the larger is the Y number, the greater will be your points from choosing B. Specifically if the number of participants who choose B is at least $10 \times (80-Y)/60$, rounded to the next integer, or greater, then each of those choosing B earns Y points. If the number of participants who choose B is less than $10 \times (80-Y)/60$, then each of those choosing B earns 0 points. For your convenience, we provide a table on the next page showing, for different values of Y, the minimum number of players who must choose B for B to yield Y points.

After all decisions have been made, the round is over and the results of the round appear on your computer screen. You will be reminded of the Y number for the round and your choice for the round, (A or B). You will also see the number of points you earned from your choice, the total number of players in your group of 10 who chose action B in the last round and the payoff earned by the members of your group who chose action B. (The payoff to choosing action A is always 20 points and so it is not displayed). Please record the information appearing on your screen on your record sheet under the appropriate headings. When you have completed this task, click the OK

button to continue to the next decision round. Your history of play will appear at the bottom of your decision screen for ready reference. Before the next round begins you will be randomly assigned to one of the two groups.

After 30 rounds of play you will receive further instruction on how to play the next 30 rounds.

Earnings

Each point earned is equal to 1/2 cent, so 10 points = 5 cents, etc. The more points you earn the greater is your dollar payoff. You will be paid your earnings from all rounds played today in cash at the end of the session.

Table

Recall that if the number of participants who chose B is at least $10\times(80-Y)/60$, then each player who chose B earns Y>0 points. Otherwise, each player who chose B earns 0 points. The table below presents this formula in tabular form for your convenience.

Y is a number drawn between 10 and 90 inclusive. If the Y number drawn is in the interval:	…then at least this number of the 10 participants must choose B in order for each of them to get Y>0 points.
10 to 23	10
24 to 29	9
30 to 35	8
36 to 41	7
42 to 47	6
48 to 53	5
54 to 59	4
60 to 65	3
66 to 71	2
72 to 90	1

Some Examples

The numbers in these examples are merely illustrative. Actual numbers in the session may be quite different.

Example 1. Suppose Y=64 and 4 of the 10 participants in your group chose A, each earning 20 points. The other 6 chose B. The payoff to those choosing B depends on whether the total number of participants choosing B is greater than or equal to $10\times(80-Y)/60$. Since Y=64, the critical number is $10\times(80-64)/60 = 2.67$. Rounded up to the next integer, the critical number is 3. Since 6 players chose B, and 6 is greater or equal to 3, each player choosing B earns Y=64 points for the round. Alternatively, one could use the table above to come up with the same answer. With Y=64, the table reveals that the minimum number of players needed to choose action B for a B choice to yield Y=64 points is 3. Since 6 players choose B, each of those choosing B earns Y=64 points.

Example 2. Suppose Y=31. 6 of the 10 participants chose A, each earning 20 points. The other 4 players chose B. With Y=31, the critical number, $10\times(80-31)/60 = 8.17$ rounded to the next integer is 8. Since just 4 players chose B, each player who chose B earns 0 points for the round.

Practice Questions

We now pause to ask you to answer two practice questions. We will review the answers shortly.

Question 1. The Y number is 45. 8 players choose A and 2 choose B. How many points are earned by those choosing A? _____   How many points are earned by those choosing B? _____

Question 2. The Y number is 74. 3 players choose A and 7 choose B. How many points are earned by those choosing A? _____   How many points are earned by those choosing B? _____

Questions

Now is the time for questions about the rules or how you make decisions. If you have a question, please raise your hand and we will attempt to answer your question in private.

Continuation Instructions

You will play 30 more rounds in which you will have to make decisions. However, the rules as to how you make decisions are different from the rules used in the first 30 rounds. As in the first 30 rounds, after each round you will be randomly assigned to either Group 1 or to Group 2. The following rules apply to all participants.

The Decision You Face Each Round

Prior to the start of each round, an integer number labeled the "Y number" will be randomly drawn from the interval 10 to 90 inclusive. All numbers in this interval have the same probability of being drawn. The Y number drawn in each round is the same for all participants. Unlike the first 30 rounds however, the Y number will *not* be revealed to you or any other participant in your group until the end of the round, *after* you have made your decision.

In each round you will be asked to specify a cut-off value, corresponding to an integer number in the interval between 10 and 90 inclusive. Simply enter your number in this range in the box on your screen. When you are satisfied with your choice click the submit button.

If the Y number drawn is less than your cut-off number, your choice for the round will be action A. If the Y number drawn is greater than or equal to your cut-off number, your choice for the round will be action B. These choices will be made for you automatically by the computer program, given your cut-off value.

Some Examples

The numbers in these examples are merely illustrative. Actual numbers in the session may be quite different.

Example 1. You specify a cut-off number of 12. The Y number is 32. Since the Y number is greater than or equal to your cut-off number, the action chosen for you is action B.

Example 2. You specify a cut-off number of 74. The Y number is 71. Since the Y number is less than your cut-off number, the action chosen for you is action A.

Notice that you no longer choose action A or B; that choice is made for you based on whether the Y number drawn is less than your cut-off number or greater than or equal to your cut-off number. The number of points you earn from action A is the same as before, 20 points. Similarly, the number of points you earn from action B is determined in the same manner as before. Specifically, if at least $10 \times (80-Y)/60$ participants (rounded to the next integer) choose B, then all those choosing B earn Y points; otherwise they earn 0 points. The table given in the earlier set of instructions remains useful in figuring out your points from a B choice, for various possible values of Y. Of course, in the next 30 rounds, you will not know the value of Y in advance, and whether or not you choose B will depend on your cut-off value.

After all cut-off decisions have been made, the round is over and the results of the round will appear on your computer screen. The value of Y for the round will be revealed to you and you will be reminded of your cut-off number. The choice that was made for you (A or B) based on your cut-off value is also revealed, as is the number of points you earned from your choice, the total number of players in your group of 10 who chose action B in the last round and the payoff

earned by the members of your group who chose action B. The payoff to choosing action A is always 20 points. As before, please record this information on your record sheet under the appropriate headings. When you have completed this task, click the OK button to continue to the next decision round. Your history of play will also appear at the bottom of your decision screen for ready reference.

Earnings

As in the first 30 rounds, in these last 30 rounds, each point is worth 1/2 cent. Following the completion of these last 30 rounds, the session will be over. Your point total from all 60 rounds will be converted into dollars and you will be paid your earnings in cash and in private.

Practice Questions

We now pause to ask you to answer two practice questions. We will review the answers shortly.

Question 1. You specify a cut-off of 52. Y is revealed to be 64. A total of 3 players chose B. What is your action choice? _____ How many points did you earn? _____

Question 2. You specify a cut-off of 38. Y is revealed to be 26. A total of 7 players chose B. What is your action choice? _____ How many points did you earn? _____

Questions

Now is the time for questions about the rules or how you make decisions. If you have a question, please raise your hand and we will attempt to answer your question in private.

A.2 Static Entry Game, C,G Treatment Order

Overview

Welcome to this experiment in economic decision-making. Please read these instructions carefully as they explain how you earn money from the decisions you make in today's session. There is *no talking* for the duration of the session. If you have a question, please raise your hand and your question will be answered in private.

There are 20 participants in today's session. The rules are the same for all participants. In the first phase of this experiment you will participate in 30 rounds of decision-making. At the beginning of each round you will be assigned randomly to one of two groups of 10 participants, Group 1 or Group 2. The group to which you are assigned for that round appears on your screen. In each round you will be asked to enter a number. After a round is over, all participants will be randomly divided between these two groups again. While you may be assigned to the same group number (1 or 2) more than once in succession, the composition of participants in the group to which you are assigned will differ from round to round.

The Decision You Face Each Round

Prior to the start of each round, an integer number labeled the "Y number" will be randomly drawn from the interval 10 to 90 inclusive. All numbers in this interval have the same probability of being drawn. The Y number drawn in each round is the same for all participants. The Y number will *not* be revealed to you or any other participant in your group until the end of the round, *after* you have made your decision.

In each round you will be asked to specify a cut-off value, corresponding to an integer number in the interval between 10 and 90 inclusive. Simply enter your number in this range in the box on your screen. When you are satisfied with your choice click the submit button.

If the Y number drawn is less than your cut-off number, your choice for the round will be action A. If the Y number drawn is greater than or equal to your cut-off number, your choice for the round will be action B. These choices will be made for you automatically by the computer program, given your cut-off value.

Example 1. You specify a cut-off number of 12. The Y number is 32. Since the Y number is greater than or equal to your cut-off number, the action chosen for you is action B.

Example 2. You specify a cut-off number of 74. The Y number is 71. Since the Y number is less than your cut-off number, the action chosen for you is action A.

Your cut-off value implies a certain choice of A or B each round.

If your choice is A then you earn 20 points for the round.

If your choice is B, then the number of points you earn depends on 1) how many other participants also choose B and 2) the value of the Y number. Generally, the more participants who choose B and the larger is the Y number, the greater will be your points from choosing B. Specifically if the number of participants who choose B is at least $10 \times (80-Y)/60$, rounded to the next integer, or greater, then each of those choosing B earns Y points. If the number of participants who choose B is less than $10 \times (80-Y)/60$, then each of those choosing B earns 0

points. For your convenience, we provide a table below showing, for different values of Y, the minimum number of players who must choose B for B to yield Y points.

After all cut-off decisions have been made, the round is over and the results of the round will appear on your computer screen. The value of Y for the round will be revealed to you and you will be reminded of your cut-off number. The choice that was made for you (A or B) based on your cut-off value is also revealed, as is the number of points you earned from your choice, the total number of players in your group of 10 who chose action B in the last round and the payoff in points earned by the members of your group who chose action B. The payoff to choosing action A is always 20 points. As before, please record this information on your record sheet under the appropriate headings. When you have completed this task, click the OK button to continue to the next decision round. Your history of play will also appear at the bottom of your decision screen for ready reference.

Earnings

Each point earned is equal to 1/2 cent, so 10 points = 5 cents, etc. The more points you earn the greater is your dollar payoff. You will be paid your earnings from all rounds played today in cash at the end of the session.

Table

Recall that if the number of participants who chose B is at least 10×(80-Y)/60, then each player who chose B earns Y>0 points. Otherwise, each player who chose B earns 0 points. The table below presents this formula in tabular form for your convenience.

Y is a number drawn between 10 and 90 inclusive. If the Y number drawn is in the interval:	…then at least this number of the 10 participants must choose B in order for each of them to get Y>0 points.
10 to 23	10
24 to 29	9
30 to 35	8
36 to 41	7
42 to 47	6
48 to 53	5
54 to 59	4
60 to 65	3
66 to 71	2
72 to 90	1

Some Examples

The numbers in these examples are merely illustrative. Actual numbers in the session may be quite different.

Example 3. Suppose Y turns out to be 64. Four of the 10 participants in your group had cutoff values greater than 64 so their choice is A, earning 20 points each. The other 6 had cutoff values less than or equal to 64 so their choice is B. The payoff to those choosing B depends on whether the total number of participants choosing B is greater than or equal to 10×(80-Y)/60. Since

Y=64, the critical number is 10×(80-64)/60 = 2.67. Rounded up to the next integer, the critical number is 3. Since 6 players chose B, and 6 is greater or equal to 3, each player whose cutoff value caused them to choose B earns Y=64 points for the round. Alternatively, one could use the table above to come up with the same answer. With Y=64, the table reveals that the minimum number of players needed to choose action B for a B choice to yield Y=64 points is 3. Since 6 players choose B, each of those choosing B earns Y=64 points.

Example 4. Suppose Y turns out to be 31. Six of the 10 participants in your group had cutoff values greater than 31 so their choice is A, earning 20 points each. The other 4 had cutoff values less than or equal to 31 so their choice is B. With Y=31, the critical number, 10×(80-31)/60 = 8.17 rounded to the next integer is 8. Since just 4 players chose B, each player who chose B earns 0 points for the round.

Practice Questions

We now pause to ask you to answer two practice questions. We will review the answers shortly.

Question 1. You specify a cut-off of 52. Y is revealed to be 64. A total of 3 players chose B. What is your action choice? _____ How many points did you earn? _____

Question 2. You specify a cut-off of 38. Y is revealed to be 26. A total of 7 players chose B. What is your action choice? _____ How many points did you earn? _____

Questions

Now is the time for questions about the rules or how you make decisions. If you have a question, please raise your hand and we will attempt to answer your question in private.

Continuation Instructions

You will play 30 more rounds in which you will have to make decisions. However, the rules as to how you make decisions are different from the rules used in the first 30 rounds. As in the first 30 rounds, after each round you will be randomly assigned to either Group 1 or to Group 2. The following rules apply to all participants.

The Decision You Face Each Round

Prior to the start of each round, an integer number labeled the "Y number" will be randomly drawn from the interval 10 to 90 inclusive. All numbers in this interval have the same probability of being drawn. The Y number drawn in each round is the same for all participants. Unlike the first 30 rounds however, the Y number will be revealed to you and all other participants in your group *before* you have make your decision.

After the Y number is revealed, you will have to make a decision between choice A or choice B. Click on the radio button next to your choice. You can change your mind any time prior to clicking the red Submit button.

Notice that you no longer specify a cut-off number. You directly choose either action A or action B after observing the Y number for the round. The number of points you earn from action A is the same as before, 20 points. Similarly, the number of points you earn from action B is determined in the same manner as before. Specifically, if at least $10 \times (80-Y)/60$ participants (rounded to the nearest integer) choose B, then all those choosing B earn Y points; otherwise they earn 0 points. The table given in the earlier set of instructions remains useful to you in figuring out your points from a B choice, given the value of the Y number announced at the start of each round.

After all decisions have been made, the round is over and the results of the round appear on your computer screen. You will be reminded of the Y number for the round and your choice for the round, (A or B). You will also see the number of points you earned from your choice, the total number of players in your group of 10 who chose action B in the last round and the points earned by the members of your group who chose action B. (The payoff to choosing action A is always 20 points and so it is not displayed). Please record the information appearing on your screen on your record sheet under the appropriate headings. When you have completed this task, click the OK button to continue to the next decision round. Your history of play will appear at the bottom of your decision screen for ready reference. Before the next round begins you will be randomly assigned to one of the two groups.

Earnings

As in the first 30 rounds, in these last 30 rounds, each point is worth 1/2 cent. Following the completion of these last 30 rounds, the session will be over. Your point total from all 60 rounds will be converted into dollars and you will be paid your earnings in cash and in private.

Some Examples

The numbers in these examples are merely illustrative. Actual numbers in the session may be quite different.

Example 1. Suppose Y=40 and you chose B. 5 of the 10 participants chose A each earning 20 points. The other 5, including you, chose B. With Y=40 the critical number of players needed to earn Y points from playing B, $10\times(80-40)/60 = 6.67$, Rounded up to the next integer, the critical number is 7. Since only 5 players chose B, you and each of these players choosing B earns 0 points for the round.

Example 2. Suppose Y=68 and you chose A. The 4 members of your group, including yourself, who chose A earn 20 points each. The other 6 players chose B. With Y=68, the critical number of players needed to earn a Y points from playing B, $10\times(80-68)/60 = 2$. Since 6 players chose B, each of those players earns 68 points for the round.

Practice Questions

We now pause to ask you to answer two practice questions. We will review the answers shortly.

Question 1. The Y number is 45. 8 players choose A and 2 choose B. How many points are earned by those choosing A? _____   How many points are earned by those choosing B? _____

Question 2. The Y number is 74. 3 players choose A and 7 choose B. How many points are earned by those choosing A? _____   How many points are earned by those choosing B? _____

Questions

Now is the time for questions about the rules or how you make decisions. If you have a question, please raise your hand and we will attempt to answer your question in private.

A.3 Dynamic Entry Game, No Delay Costs

Overview

Welcome to this experiment in economic decision-making. Please read these instructions carefully as they explain how you earn money from the decisions you make in today's session. There is *no talking* for the duration of the session. If you have a question, please raise your hand and your question will be answered in private.

There are 20 participants in today's session. The rules are the same for all participants. You will participate in 30 sequences of decision-making. At the beginning of each sequence you will be assigned randomly to one of two groups of 10 participants, Group 1 or Group 2. The group to which you are assigned for that sequence appears on your screen. Each sequence consists of 10 rounds. At the end of each sequence you will be randomly assigned again to one of the two groups.

The Decision You Face Each Sequence

At the beginning of a sequence an integer number labeled the "Y number" will be randomly drawn from the interval 10 to 90 inclusive. All numbers in this interval have the same probability of being drawn. The Y number drawn is the same for all participants and will be shown on your computer screen. This number remains unchanged for all 10 rounds of the sequence.

In the first round of a sequence you will be asked to choose between one of two choices, labeled "A" or "B". You make your choice by clicking on the radio button next to your choice. You then click the red 'submit' button. At the end of this first round (and at the end of the subsequent 9 rounds) of the sequence, you will be reminded of your choice and you will be informed as to how many people in your group of 10 have chosen "B" so far in that sequence. The next round of the sequence is then played. If you chose "B" in a previous round then the computer automatically chooses "B" for you in this and every remaining round of the sequence. You must simply click the red "OK" button to advance the program to the next round in the sequence. However, if you have not chosen "B" in a previous round in the sequence – you have instead chosen A in all prior rounds of the sequence – then you must decide in the current round whether to repeat your choice of "A" or to choose "B" instead. That is, a choice of "B" in any round in the sequence 'locks' you into choosing B for duration of that sequence. But a choice of "A" preserves your option to choose either "A" or "B" in a future round of the sequence, or to completely avoid making a B choice.

In the first round of each new 10-round sequence, you are again free to choose A or B, regardless of your action choices in any previous sequence.

After all 10 rounds of a sequence have been played; your point earnings for that sequence will be calculated as follows:

If you chose "A" in all 10 rounds you earn 20 points for that sequence.

If you chose "B" in any round, then your earnings for the sequence depend upon the Y number drawn for that sequence and on the total number of people in your group of 10 who chose "B" in the sequence. Generally, the more people in your group who choose B

and the larger the Y number, the greater will be your points from choosing B. Specifically if the number of participants in your group who choose B is _at least_ $10 \times (80-Y)/60$, rounded to the next integer, or greater, then each of those choosing B earns _Y points._ However, if the number of participants in your group who choose B _is less than_ $10 \times (80-Y)/60$, then each of those choosing B earns _0 points_. For your convenience, we provide a table below showing, for different values of Y, the minimum number of participants who must choose B for B to yield Y points.

At the end of a sequence the results for that sequence appear on your computer screen. Displayed will be the Y number for the sequence, your final choice for the sequence, (A or B), the number of points you earned from your choice, the total number of participants in your group of 10 who chose action B and the payoff earned by the members of your group who chose action B. (The payoff to always choosing action A is fixed at 20 points and so it is not displayed). Please record the information appearing on your screen on your record sheet under the appropriate headings. When you have completed this task, click the OK button to continue on to the next 10-round sequence. Your history of play will appear at the bottom of your decision screen for ready reference. After a sequence is over, all participants will be randomly divided between these two groups again. While you may be assigned to the same group number (1 or 2) more than once in succession, the composition of participants in the group to which you are assigned will differ from sequence to sequence.

Earnings

Every point earned is equal to 1 cent. You will be paid your earnings from all rounds played today in cash at the end of the session.

Table

Recall that if the number of participants in your group who chose B during a sequence is at least $10 \times (80-Y)/60$, then each participant who chose B in that sequence earns Y>0 points. Otherwise, each participant who chose B during a sequence earns 0 points. The table below presents this formula in tabular form for your convenience.

Y is a number drawn between 10 and 90 inclusive. If the Y number drawn is in the interval:	…then at least this number of the 10 participants must choose B in order for each of them to get Y>0 points.
10 to 23	10
24 to 29	9
30 to 35	8
36 to 41	7
42 to 47	6
48 to 53	5
54 to 59	4
60 to 65	3
66 to 71	2
72 to 90	1

Some Examples

The numbers in these examples are merely illustrative. Actual numbers in the session may be quite different.

Example 1. Suppose Y=64. Following the 10th round of the sequence, 4 of the 10 participants' final choice was A, earning them 20 points each and the other 6 participants' final choice was B. The payoff to those choosing B depends on whether the total number of participants choosing B is greater than or equal to 10×(80-Y)/60. Since Y=64, the critical number is 10× (80-64)/60 = 2.67. Rounded up to the next integer, the critical number is 3. Since 6 participants chose B, and 6 is greater or equal to 3, each participant choosing B earns Y=64 points for the round. Alternatively, one could use the table above to come up with the same answer. With Y=64, the table reveals that the minimum number of participants needed to choose action B for a B choice to yield Y=64 points is 3. Since 6 participants choose B, each of those choosing B earns Y=64 points.

Example 2. Suppose Y=31. Following the 10th round of the sequence, 6 of the 10 participants' final choice is A, earning them 20 points each and the other 4 participants' final choice is B. With Y=31, the critical number, 10× (80-31)/60 = 8.17 rounded to the next integer is 8. Since just 4 participants choice was B, each participant who chose B earns 0 points for the round.

Practice Questions

We now pause to ask you to answer two practice questions. We will review the answers shortly.

Question 1. The Y number is 45. Following the 10th round of the sequence, 8 participants have chosen A and 2 have chosen B. How many points are earned by those choosing A?_____
How many points are earned by those choosing B?_____

Question 2. The Y number is 74. Following the 10th round of the sequence, 3 participants have chosen A and 7 have chosen B. How many points are earned by those choosing A?_____
How many points are earned by those choosing B?_____

Questions

Now is the time for questions about the rules or how you make decisions. If you have a question, please raise your hand and we will attempt to answer your question in private.

A.4 Dynamic Entry Game With Delay Costs

Overview

Welcome to this experiment in economic decision-making. Please read these instructions carefully as they explain how you earn money from the decisions you make in today's session. There is *no talking* for the duration of the session. If you have a question, please raise your hand and your question will be answered in private.

There are 20 participants in today's session. The rules are the same for all participants. You will participate in 30 sequences of decision-making. At the beginning of each sequence you will be assigned randomly to one of two groups of 10 participants, Group 1 or Group 2. The group to which you are assigned for that sequence appears on your computer screen. Each sequence consists of 10 rounds. At the end of each sequence you will be randomly assigned again to one of the two groups.

The Decision You Face Each Sequence

At the beginning of a sequence an integer number labeled the "Y number" will be randomly drawn from the interval 10 to 90 inclusive. All numbers in this interval have the same probability of being drawn. The Y number drawn is the same for all participants and will be shown on your computer screen. This number remains unchanged for all 10 rounds of the sequence.

In the first round of a sequence you will be asked to choose between one of two choices, labeled "A" or "B". You make your choice by clicking on the radio button next to your choice. You then click the red 'submit' button. At the end of this first round (and at the end of the subsequent 9 rounds) of the sequence, you will be reminded of your choice and you will be informed as to how many people in your group of 10 have chosen "B" so far in that sequence. The next round of the sequence is then played. If you chose "B" in a previous round then the computer automatically chooses "B" for you in this and every remaining round of the sequence. You must simply click the red "OK" button to advance the program to the next round in the sequence. However, if you have not chosen "B" in a previous round in the sequence – you have instead chosen A in all prior rounds of the sequence – then you must decide in the current round whether to repeat your choice of "A" or to choose "B" instead. That is, a choice of "B" in any round in the sequence 'locks' you into choosing B for duration of that sequence. But a choice of "A" preserves your option to choose either "A" or "B" in a future round of the sequence, or to completely avoid making a B choice.

In the first round of each new 10-round sequence, you are again free to choose A or B, regardless of your action choices in any previous sequence.

Points Earned For Each Sequence

After all 10 rounds of a sequence have been played; your point earnings for that sequence will be calculated as follows:

If you chose "A" in all 10 rounds you earn 20 points for the sequence.

If you chose "B" in any round, then your earnings for the sequence depend on the total number of people in your group of 10 who chose "B" at the end of the sequence, the Y

number drawn for that sequence, and on the round number r=1,2,…10 of the sequence in which *you* decided to choose B.

Specifically, suppose that following the 10th round of a sequence the number of participants in your group who choose B is _at least_ $10 \times (80 - Y)/60$ rounded to the next integer, or greater. Then each group member i who chose B earns $Y - \frac{1}{2} \times (r_i - 1)$ points for the sequence where r_i is the round number 1,2,…10 in which player *i* chose B. However, if the number of participants in your group who choose B _is less than_ $10 \times (80 - Y)/60$, then a group member *i* who chose B in round r_i earns $-\frac{1}{2} \times (r_i - 1)$ points for the sequence (negative points).

Notice that you maximize your points from a B choice by choosing B in round 1 where you earn Y points if enough others have also chosen B, and you earn 0 points otherwise. If you wait to choose B in rounds 2,3,…,10, your points for the sequence are reduced by ½ point per round that you delay in choosing B. Negative points are subtracted from your total point earnings. The maximum negative points are $-4.5 \times 30 \text{ sequences} = -135.$

For your convenience, we provide two tables below showing, for different values of Y, the minimum number of participants who must choose B for a B choice to yield the maximum of Y points, and the net payoff in points you can earn from choosing B in rounds r=1,2,..10.

At the end of a sequence the results for that sequence appear on your computer screen. Displayed will be the Y number for the sequence, your final choice for the sequence, (A or B), the number of points you earned from your choice, the total number of participants in your group of 10 who chose action B and the maximum payoff earned by members of your group choosing B (Y or 0). The payoff to always choosing action A is fixed at 20 points and so it is not displayed. Please record the information appearing on your screen on your record sheet under the appropriate headings. When you have completed this task, click the OK button to continue on to the next 10-round sequence. Your history of play will appear at the bottom of your decision screen for ready reference. After a sequence is over, all participants will be randomly divided up to form two new groups of size 10. While you may be assigned to the same group number (1 or 2) more than once in succession, the composition of participants in the group to which you are assigned will differ from sequence to sequence.

Dollar Earnings

Every point earned is equal to 1 cent. You will be paid your earnings from all 30 sequences played today in cash and in private at the end of the session.

Tables

Recall that if the number of participants in your group who chose B during a sequence is at least 10×(80-Y)/60, then each participant who chose B in that sequence earns a maximum of Y>0 points. Otherwise each participant who chose B earns in that sequence earns a maximum of 0 points. Table 1below presents this formula in tabular form for your convenience.

Table 1: Number of Participants Choosing B Needed for a B Choice to Earn the Maximum of Y>0 Points	
Y is a number drawn between 10 and 90 inclusive. If the Y number drawn is in the interval:	…then at least this number of the 10 participants must choose B in order for each of them to get a maximum of Y>0 points.
10 to 23	10
24 to 29	9
30 to 35	8
36 to 41	7
42 to 47	6
48 to 53	5
54 to 59	4
60 to 65	3
66 to 71	2
72 to 90	1

If you chose B in any round of the sequence, the points you earn for that sequence will also depend on the round number 1,2,…,10 in which you chose B. Table 2 gives the net payoff in points you earn from a B choice in rounds 1,2,…,10, given the Y number for the sequence.

Table 2: Net Points from a B Choice		
Round Number of Sequence in Which You Choose B	Points You Earn for Sequence if:	
	the number of B choices ≥ $10 \times (80-Y)/60$	the number of B choices < $10 \times (80-Y)/60$
1	Y	0
2	Y-0.5	-0.5
3	Y-1.0	-1.0
4	Y-1.5	-1.5
5	Y-2.0	-2.0
6	Y-2.5	-2.5
7	Y-3.0	-3.0
8	Y-3.5	-3.5
9	Y-4.0	-4.0
10	Y-4.5	-4.5

If you choose A in all 10 rounds of a sequence you always earn 20 points for that sequence.

Some Examples

The numbers in these examples are merely illustrative. Actual numbers in the session may be quite different.

Example 1. Suppose Y=64. Following the 10th round of the sequence, 4 of the 10 participants' final choice was A, earning them 20 points each and the other 6 participants' final choice was B. The payoff to those choosing B depends on whether the total number of participants choosing B

is greater than or equal to 10×(80-Y)/60. Since Y=64, the critical number is 10× (80-64)/60 = 2.67. Rounded up to the next integer, the critical number is 3. Since 6 participants chose B, and 6 is greater or equal to 3, each participant choosing B earns at most Y=64 points for the round. Recall that the amount of points each of those choosing B earn may be reduced if they chose B in some round r>1 of the sequence. However, even if all 6 participants choosing B waited until round 10, they would have earned 64-1/2×(10-1)=64-4.5 or 59.5 points, which is still greater than the payoff from choosing A, 20 points.

Alternatively, one could use the tables above to come up with the same answer. With Y=64, Table 1 reveals that the minimum number of participants needed to choose action B for a B choice to yield the maximum of Y=64 points is 3. Since 6 participants choose B, each of those choosing B earns a maximum of Y=64 points. This point amount may be reduced if those choosing B did so in a round r>1. For instance, if one of those choosing B did so in round 10, Table 2 indicates that his payoff would be Y-4.5. Since Y=64, this is 64-4.5=59.5 points.

Example 2. Suppose Y=31. Following the 10th round of the sequence, 6 of the 10 participants' final choice is A, earning them 20 points each and the other 4 participants' final choice is B. With Y=31, the critical number, 10× (80-31)/60 = 8.17 rounded to the next integer is 8. Since just 4 participants choice was B, each participant who chose B earns a maximum of 0 points for the sequence. If they chose B in a round r_i, their payoff is $-\frac{1}{2} \times (r_i - 1)$ points for sequence – that is they lose some number of points.

Practice Questions

We now pause to ask you to answer some practice questions. Write your answer to each of the three parts of Questions 1-2 in the blank spaces provided. We will review your answers shortly.

Question 1. The Y number is 45. Following the 10th round of the sequence, 8 participants have chosen A and 2 have chosen B.
    a.) How many points are earned by those choosing A? _____

    b.) How many points are earned by a player who chose B in round 7? _____

    c.) How many points are earned by a player who chose B in round 1? _____

Question 2. The Y number is 74. Following the 10th round of the sequence, 3 participants have chosen A and 7 have chosen B.
    a.) How many points are earned by those choosing A? _____

    b.) How many points are earned by a player who chose B in round 4? _____

    c.) How many points are earned by a player who chose B in round 10? _____

Questions

Now is the time for questions about the rules or how you make decisions. If you have a question, please raise your hand and we will attempt to answer your question in private.