GENERAL INSTRUCTIONS

Thank you for participating in the experiment. The bell you just heard marked the beginning of the experiment. From now on we would like to have your undistracted attention. Do not open any applications on your computer, chat with other students, use headphones, read, etc.

Before we begin with the instructions of the experiment, please make sure that you do not have any time-keeping devices such as watches, music players, cell phones etc with you. You are not allowed to use them at any time during the experiment. If you are seen using any such device you will be asked to leave the experiment and you will forfeit any earnings from your participation. Please turn your phone to silent mode and keep it in your bag. If you do not have a bag, you can ask the experimenter to keep it safe for you during the duration of the experiment.

The experiment consists of three independent sections. Instructions regarding each section will be presented before the beginning of that section. Please make sure you pay complete attention as this will affect your earnings from the experiment.

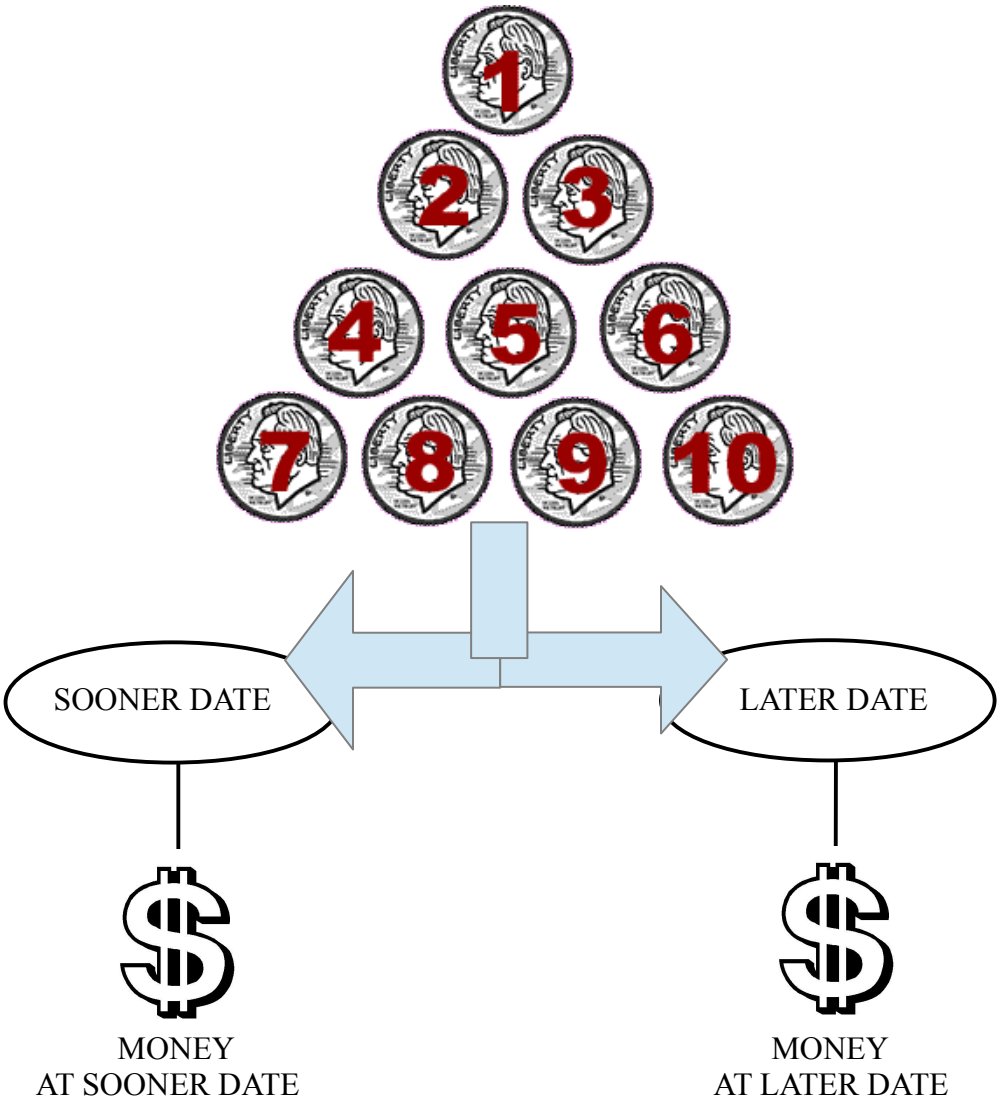
In each of the three sections you will have the possibility of earning money. The money you make in one section does not affect the amount you can earn in any other section.

Does anyone need a moment to put a device in their bag?

We will now begin with Section 1.

SECTION 1

----------THEY SEE IN SCREEN----------



----------I READ----------

In this section you will complete 45 tasks. In each task you will be assigned 10 tokens. Each task consists of allocating the 10 tokens between two dates. Tokens allocated to the two dates are exchanged into money. This process is best described by an example.

----------THEY SEE IN SCREEN----------

Option	Tokens IN 10 DAYS (worth $1.00)	Tokens IN 20 DAYS (worth $1.25)	Money IN 10 DAYS	Money IN 20 DAYS
1	10 tokens	0 tokens	$10.00	$0.00
2	9 tokens	1 tokens	$9.00	$1.25
3	8 tokens	2 tokens	$8.00	$2.50
4	7 tokens	3 tokens	$7.00	$3.75
5	6 tokens	4 tokens	$6.00	$5.00
6	5 tokens	5 tokens	$5.00	$6.25
7	4 tokens	6 tokens	$4.00	$7.50
8	3 tokens	7 tokens	$3.00	$8.75
9	2 tokens	8 tokens	$2.00	$10.00
10	1 tokens	9 tokens	$1.00	$11.25
11	0 tokens	10 tokens	$0.00	$12.50

----------I READ----------

The image on the screen shows an example of one task.All tasks consist of allocating 10 tokens between two dates. In this example task the two dates are IN 10 DAYS, that is, next _____, and IN 20 DAYS, that is, next _____. These two dates are just examples. Neither of them appears in the real tasks. Each task shows 11 options which are represented by the 11 rows. Each option determines how the 10 tokens are distributed between the two dates. Your job on each task is to choose one (and only one) of the 11 options.

----------THEY SEE IN SCREEN----------

SOONER DATE | LATER DATE | SOONER DATE | LATER DATE

Option	Tokens IN 10 DAYS (worth $1.00)	Tokens IN 20 DAYS (worth $1.25)	Money IN 10 DAYS	Money IN 20 DAYS
1	10 tokens	0 tokens	$10.00	$0.00
2	9 tokens	1 tokens	$9.00	$1.25
3	8 tokens	2 tokens	$8.00	$2.50
4	7 tokens	3 tokens	$7.00	$3.75
5	6 tokens	4 tokens	$6.00	$5.00
6	5 tokens	5 tokens	$5.00	$6.25
7	4 tokens	6 tokens	$4.00	$7.50
8	3 tokens	7 tokens	$3.00	$8.75
9	2 tokens	8 tokens	$2.00	$10.00
10	1 tokens	9 tokens	$1.00	$11.25
11	0 tokens	10 tokens	$0.00	$12.50

TOKENS **MONEY**

----------I READ----------

The second and third columns refer to the number of tokens you assign to each date. The **TITLE of the SECOND COLUMN** reads: "*Tokens IN 10 DAYS (worth $1.00)*". This means that in this example task the sooner date is in 10 days and each token you assign to the sooner date you get $1.00 at that date. This date and how much the tokens are worth are just examples. Neither of them appears in the real tasks. The **CONTENT** of the **SECOND COLUMN** goes from 10 tokens to 0 tokens and displays the *11 ways* in which you can assign the 10 tokens for the sooner date in descending order. The **TITLE of the THIRD COLUMN** reads: "*Tokens IN 20 DAYS (worth 1.25)*". This means that in this example task the later date is in 20 days and each token you assign to the later date you get $1.25 at that date. This date and how much the tokens are worth are just examples. Neither of them appears in the real tasks. The **CONTENT** of the **THIRD COLUMN** goes from 0 tokens to 10 tokens and displays the *11 ways* in which you can assign the 10 tokens for the later date in ascending order.

The fourth and fifth columns refer to the corresponding amount of money you assign to each date. The **TITLE of the FOURTH COLUMN** reads: "*Money IN 10 DAYS*". This means that in this example task the sooner date is in 10 days. The **CONTENT of the FOURTH COLUMN** displays the *11 combinations* of money that correspond to how you can assign the tokens to the sooner date. The **TITLE of the FIFTH COLUMN** reads: "*Money IN 20 DAYS*". This means that in this example task the later date is in 20 days. The **CONTENT of the FIFTH COLUMN** displays the *11 combinations* of money that correspond to how you can assign the tokens to the later date.

So when you make a choice by circling one of the 11 options in the first column you determine how many tokens, and therefore how much money, you get at both dates. To see how this works imagine that you circle option 1. By circling option 1 you will assign 10 tokens worth $1.00 to "in 10 days" and 0 tokens worth $1.25 to "in 20 days". In other words, you will get $10.00 "in 10 days" and $0.00 "in 20 days". If instead you circle option 2, you will assign 9 tokens worth $1.00 to "in 10 days" and 1 tokens worth $1.25 to "in 20 days". In other

words, you will get $9.00 “in 10 days” and $1.25 “in 20 days”.

Remember that these dates and how much the tokens are worth at these dates are just examples. Neither of them appears in the real tasks. In the 45 real tasks, the sooner date, the later date and how much the tokens are worth at those dates vary from task to task. So make sure to read the titles and content of the columns carefully before circling your favorite option. By circling an option you will determine how you allocate the tokens and money you will earn between the two dates. Because of this, note that there is no wrong or right answer. You can go back and forth between tasks as many times as you want. You can change your mind about which option you prefer by erasing the option you circled. However, please make sure that at the end you leave exactly one option for each task circled. If you circle either 0 or more than one option in a task you will get no payment for that task. All participants must wait for everyone else to finish Section 1 in order for the experiment to continue to Section 2.

Are there any questions?

PAYMENTS of SECTION 1

At the end of the experiment one of the 45 tasks in Section 1 will be randomly chosen to be the one that counts towards payments. This means that even though you will make 45 choices (one for each task) only one of the 45 tasks will be the one that counts for earning money. The task that counts towards payments will be determined at the end of the experiment in the following way: tasks are labeled Task 1 through Task 45. At the end of the experiment the experimenter will randomly select a number between 1 and 45 from an urn. The number that is selected will represent the number of the *task-that-counts.*

Professor Carrillo and the Economics Department has arranged with the USC Card department so that the money you earn in Section 1 will be paid through your USC Card discretionary money account. Regardless of your choice, you will receive a $2.32 thank-you payment on both the sooner and later dates of the *task-that-counts*. So if the *task-that-counts* has all of the tokens allocated to, for example, the later date, you will still get $2.32 deposited on your USC Card Account on the earlier date.

On top of the $2.32 thank-you payment on both dates of the *task-that-counts*, you will be deposited the amount of money that your choice specifies on each of the two dates of the *task-that-counts* through your USC Card. The money will be deposited to your USC Card Account by 4:00pm on each of the dates of the *task-that-counts.* So, if the *task-that-counts* specifies that you will be paid today, this amount will not be given to you here directly. It will be deposited to your USC Card Account by 4:00pm today. Similarly, if the *task-that-counts* specifies some amount in 10 days, that amount will not be available here in the experiment room. It will be deposited to your USC Card Account in 7 days by 4:00pm of that day. Professor Carrillo will supervise that all payments are made on the specified date. If you have questions regarding payments you can email him anytime at juandc@usc.edu. You will be given a paper with his contact information at the end of the experiment.

Please answer the following quiz so we can make sure you understand how the tasks and payments work.

HAND OUT QUIZ AND CHECK THEIR ANSWER IS CORRECT. IF NOT, TELL THEM TO DOUBLE CHECK IT

DISTRIBUTE SECTION 1

Please write down your participant number and circle one (and only one) option in each of the 45 tasks.

COLLECT SECTION 1 AND LEAVE IN CONTROL ROOM

SECTION 1 QUIZ

Please write down your participant number _____

Please answer the following questions to make sure you understand how the tasks and payments work. Suppose that you decide to choose option 4. Please circle option 4 and answer the following questions.

Option	Tokens IN 10 DAYS (worth $1.00)	Tokens IN 20 DAYS (worth $1.25)	Money IN 10 DAYS	Money IN 20 DAYS
1	10 tokens	0 tokens	$10.00	$0.00
2	9 tokens	1 tokens	$9.00	$1.25
3	8 tokens	2 tokens	$8.00	$2.50
4	7 tokens	3 tokens	$7.00	$3.75
5	6 tokens	4 tokens	$6.00	$5.00
6	5 tokens	5 tokens	$5.00	$6.25
7	4 tokens	6 tokens	$4.00	$7.50
8	3 tokens	7 tokens	$3.00	$8.75
9	2 tokens	8 tokens	$2.00	$10.00
10	1 tokens	9 tokens	$1.00	$11.25
11	0 tokens	10 tokens	$0.00	$12.50

What is the sooner date of this task?_____

What is the later date of this task?_____

How much would you earn at the sooner date by choosing option 4?_____

By what time will you receive the payment on that date? _____

How much would you earn at the later date:_____

By what time will you receive the payment on that date: _____

Please answer the following questions to make sure you understand how the tasks and payments work. **Suppose that you decide to choose option 7**. Please circle option 7 and answer the following questions.

Option	Tokens IN 5 DAYS (worth $0.90)	Tokens IN 40 DAYS (worth $1.10)	Money TODAY	Money IN 21 DAYS
1	10 tokens	0 tokens	$9.00	$0.00
2	9 tokens	1 tokens	$8.10	$1.10
3	8 tokens	2 tokens	$7.20	$2.20
4	7 tokens	3 tokens	$6.30	$3.30
5	6 tokens	4 tokens	$5.40	$4.40
6	5 tokens	5 tokens	$4.50	$5.50
7	4 tokens	6 tokens	$3.60	$6.60
8	3 tokens	7 tokens	$2.70	$7.70
9	2 tokens	8 tokens	$1.80	$8.80
10	1 tokens	9 tokens	$0.90	$9.90
11	0 tokens	10 tokens	$0.00	$11.00

What is the sooner date of this task?_____

What is the later date of this task?_____

How much would you earn at the sooner date by choosing option 7?_____

By what time will you receive the payment on that date? _____

How much would you earn at the sooner date by choosing option 7?_____

By what time will you receive the payment on that date: _____

SECTION 2

BELL AND HAND IN SHEET "SECTION 2 ESTIMATION"

The bell you just heard marked the beginning of Section 2. Your first task in section 2 is to estimate the interval of time between the two bells. The first bell marked the beginning of the experiment and the second bell is the one that marked the beginning of Section 2 which you just heard.

PAYMENTS of SECTION 2

If your estimate is within the real length of the interval plus 10% or minus 10% you will earn $5.00 paid in cash at the end of the experiment. Otherwise you will not earn anything for this task.

Any questions?

Please write down your participant number and your estimate of the time interval.

WAIT AND COLLECT THE SHEET "SECTION 2 ESTIMATION"

The remainder of Section 2 will be administered using the computer. The instructions for the remaining part of section 2 are included in the computer software. Please wait for the experimenter to start the software in your computer. Do not use the mouse until the experimenter tells you that you can begin.

START THEIR SOFTWARE

Please follow the instructions on the computer screen. The first screen displays: "please click "next" to continue". With the mouse press the button labeled "next". Then follow the instructions on the screen. Throughout this section you will use the mouse only, you will not use the keyboard.

If you have a question at any point please raise your hand and wait for the experimenter to assist you.

You may begin.

SECTION 2 ESTIMATION

Please write down your participant number _____

Please estimate the amount of time that passed between the two bells.

____ minutes and ____ seconds

SECTION 2

Next

In this section you will estimate time intervals.

First we will explain how you earn money.

You will be told when the choices that count towards payments begin.

To continue click on "Next".

Next

To mark the beginning and end of a time interval you will always click on the button on the top right corner of the screen.

Whenever you have to start a time interval the button will say "Start Interval".

Once the time interval starts and you have to end it the button will say "End Interval".

To continue click on "Next".

Start Interval

You will now get familiar with how to begin and end a time interval using the button.

Please estimate a time interval of 5 seconds.

When you are ready to mark the beginning of the time interval click on "Start Interval".

End Interval of
5 seconds

To end the time interval click on "End Interval".

Start Interval

Very good. Now please estimate a time interval of 10 seconds.

When you are ready to mark the beginning of the time interval click on "Start Interval".

End Interval of 10 seconds

To end the time interval click on "End Interval".

Next

You are now familliar with how to mark the beggining and end of time intervals using the button.

As we mentioned before, in this section you will estimate time intervals.

However, while estimating the time intervals you will also be asked to solve tasks.

We will describe these tasks in the next slides.

To continue click on "Next".

Next

The tasks you have to answer while estimating time intervals will always ask you to click on different parts of the screen.

Specifically, they will ask you to click on one of the 24 cells from the table shown below (4 rows by 6 columns).

In this table the rows are labeled "row1" through "row4" as an example. In the real tasks they will have other labels.

Similarly, the columns are labeled "col1" through "col6" as an example. In the real tasks thy will have other labels.

To continue click on "Next".

Left — Right

Above — Below

	col1	col2	col3	col4	col5	col6
row1						
row2						
row3						
row4						

Imagine that a task asked you to click on the cell where row2 intersects col3.

For illustrative purposes we colored this cell in black. In the real tasks there are no colored cells.

Please click on this cell to continue.

Left — Right

Above — Below

	col1	col2	col3	col4	col5	col6
row1						
row2						
row3						
row4						

The last task asked you to click on the cell where row2 intersected col3.

However, tasks may ask you to click on a specific cell in more complicated ways.

For example, a task may ask you to click on the cell where "the row below row 2" intersects the "column to the left of column 3".

In this task you should click on the cell where row 3 (the row below row 2) intersects column 2 (the column to the left of column 3).

For illustrative purposes we colored this cell in black. In the real tasks there are no colored cells.

Please click on this cell to continue..

Left — Right

Above — Below

	col1	col2	col3	col4	col5	col6
row1						
row2						
row3						
row4						

The labels of the rows and columns of real tasks are never row1 through row4 and col1 through col6 but actual names.

The table below shows some example names.

Imagine that a task asks you to click on the row above the Alaska row and the column to the right of the classical column.

In this task you shold click the cell where row Texas (above row Alaska) intersects column folk (to the right of column classical).

Please click on this cell to continue.

Left — Right

Above — Below

	jazz	pop	salsa	rap	classical	folk
California						
Iowa						
Texas						
Alaska						

Next

In the last examples there was no time limit for answering the tasks.

However, real tasks have a time limit. After a few seconds the real tasks will dissapear from the screen.

If a task dissapears from the screen it will count as a wrong answer.

The time limit (of a few seconds) is unknown to you and is not constant from task to task.

This means that a task may give you more or less time to answer before it dissapears.

In a moment we will explain how correct or incorrect answers influence the money you earn.

The important thing to understand is that to make money, it is crucial that you answer tasks correctly (and before they dissapear).

To continue click on "Next".

While you are estimating time intervals, tasks of this form will keep appearing one after the other until you end the time interval.

So tasks will appear and dissapear one after the other until you press "end button".

Each task will dissapear from the screen when either 1) you answer it by clicking on a cell or 2) the tasks time limit is reached.

Remember that the time limit (of a few seconds) is unknown to you and not the same from one task to the other.

Importantly, the amount of time after a task dissapears and the next one appears is also not the same in all tasks.

The following slides are example tasks with a time limit. This means that the tasks will dissapear if you dont answer them fast enough.

Remember that if a task dissapears (because you didnt click on the cell fast enough) it counts as a wrong answer.

If you click on the wrong cell of a task it also counts as a wrong answer.

To continue click on "Next".

Next

Please click the cell where the row below the blue row intersects the column to the left of the orange column.

Left — Right

Above — Below

	banana	peach	apple	grape	orange	pear
red						
green						
blue						
yellow						

The correct cell is the yellow grape cell.

The yellow row is the row below the blue row and the grape column is the column to the left of the orange column.

Next

Left — Right

Above — Below

	banana	peach	apple	grape	orange	pear
red						
green						
blue						
yellow						

Lets try another task.

Please click the cell where the row above the bus row intersects the column to the right of the pants column.

Left — Right

Above — Below

	shoe	coat	pants	scarf	shorts	gloves
car						
truck						
bike						
bus						

The correct cell is the bike scarf cell.

The bike row is the row above the bus row and the scarf column is the column to the right of the pants column.

To continue click on "Next".

Next

Left — Right

Above — Below

	shoe	coat	pants	scarf	shorts	gloves
car						
truck						
bike						
bus						

These last examples illustrated 1) how tasks appear into the screen and 2) how they dissapear if you dont answer them fast enough.

Next

While you estimate real time intervals, tasks will appear one after the other until you click on the "End interval" button.

When a task dissapears you will see a blank screen except for the "End Interval" button until the next task appears.

The amount of time between a task dissapears and the next one appears is not always the same.

You may end the interval at any time (either during a task or between tasks) by clicking the "End Interval" button.

You should always read and answer the tasks carefully until you feel the length of the interval has passed.

Then you should click on "End Interval" regardless of whether you are in a task or in between tasks.

If you end a time interval estimation during a task (before clicking a cell) it does not count either as a correct nor incorrect answer.

To continue click on "Next".

Please estimate an interval of 20 seconds.

You will have to answer tasks during your estimation of the time interval.

Answer tasks until you feel the interval length (20 seconds) has passed. Then click on the "End Interval" button.

Please click "Start Interval" to start the interval.

Start Interval

Please click the cell where the blue row intersects the column to the right of the column labeled peach.

End Interval
of 20 seconds

Left — Right

Above — Below

	banana	peach	apple	grape	orange	pear
red						
green						
blue						
yellow						

We cant tell you how good your estimate for the 20 second interval was.

However, we will tell you how many correct and incorrect task answers you had.

You had <0> correct answers and <0> incorrect answers. The proportion of correct anwers is under 80 per cent.

Please click the button labeled "Next" to continue.

Next

Next

IMPORTANT TO REMEMBER

1) If you end a time interval estimation during a task (before clicking a cell) it does not count either as a correct nor incorrect answer.

2) The time between a task dissapears and the next one appears is not always the same.

This means that a task may show up right after the previous task dissapeared or it may take some time.

To continue click on "Next".

EARNING MONEY

Next

You wont earn money but your responses will be shown as results in the next lab meeting.

Read the folling and imagine you are in the real experiment. Do the best you can as we will analyze your results.

How much money you earn depends on

1) the proportion of correct and incorrect tasks you accumulate while estimating a time interval and
2) how good your estimation for a time interval is.

Specificly, you only earn money for a time interval if 80 per cent (or more) of your task answers during that interval are correct.

If less than 80 per cent of the task answers during an interval are correct you earn $0 no matter how good your estimation for the interval was.

Therefore, answering the tasks correctly is crucial for earning money.

If you have 80 per cent or more of correct task answers while estimating a time interval, how much you earn also depends on your estimation of the time interval.

If you are within -5 to 5 percent of the interval length you earn $40. If you are within -10 to 10 percent, you earn $30.

If you are within -15 to 15 percent, you earn $20. If you are within -25 to 25 percent, you earn $10.

If you are within -50 to 50 percent, you earn $5. If you are below -50 or above 50 percent you earn $0.

Therefore, you should always target the true length of the interval while answering tasks correctly.

At the end of this section, only one of the intervals will be picked at random and will be the one that counts towards payments.

You will get one more practice interval now. Please click "Next" to continue.

Start Interval

Now that you know how to earn money please estimate another practice interval of 20 seconds.

During the interval you will have to answer tasks that have a time limit.

Answer tasks until you feel the interval length (20 seconds) have passed. After click on the "End Interval" button.

Please click "Start Interval" to start the interval.

End Interval
of 20 seconds

Please click the cell where the row below the cumulus row intersects the column to the left of the rex column.

Left — Right

Above — Below

	velociraptor	brachiosaurus	rex	triceratops	allosaurus	brachiosaurus
cumulus						
nimbus						
cirrus						
stratus						

Next

We cant tell you how good your estimate for the 20 second interval was.

However, we can tell you how many correct and incorrect task answers you had.

You had <0> correct answers and <0> incorrect answers. The proportion of correct anwers is under 80 per cent.

So you would have earned zero for this time interval regardless of your estimation.

Remember: if less than 80 per cent of the task answers during an interval are correct you earn $0 no matter how good your estimation for the interval.

Please click the button labeled "Next" to continue.

Please estimate another interval of 20 seconds.

During the interval you will have to answer tasks that have a time limit.

Answer tasks until you feel the interval length (20 seconds) have passed. After click on the "End Interval" button.

Please click "Start Interval" to start the interval.

Start Interval

SECTION 3 – INSTRUCTIONS

We will now proceed to section 3. We will first do two practice problems to familiarize you with the task. Please fill out the box on the first page with your subject ID number. After you have done so you may turn the page. The top part of the first sample problem is a pattern with a bit cut out of it. Look at the pattern, think what the piece needed to complete the pattern correctly both along and down must be like. Then find the right piece out of the eight bits shown below. Only one of these pieces is perfectly correct. No. 2 completes the pattern correctly going downwards, but is wrong going the other way. No. 1 is correct going along, but is wrong going downward.

Think about which piece with is correct both ways. No. 4 is the right bit, isn't it? So the answer is No. 4, and you select No. 4.

DO: Check that everyone has selected "4" for the first sample problem.

SAY: Now turn to the next page and do the second sample problem by yourselves.

DO: Allow 20 seconds.

SAY: The answer is No. 8. Have you all done that?

DO: Check that everyone is selecting "8"

SAY: Is everyone clear about what it is you are to do on this task?

DO: Answer any questions they may have

SAY: You can have as much time as you like for the rest of the section. You will find that the problems soon get difficult. Whether the problems are easy or difficult, you will notice that to solve them you have to use the same method all the time. Keep in mind, it is accurate work that counts. Attempt each problem in turn. Do your best to find the correct piece to complete it before going on the next problem. If you get stuck, you can move on and come back to the problem later. But remember, in every case, the next problem is harder and it will take you longer to check your answers carefully. When you get to the end of the section, please wait for further instructions.

Are there any questions?

DO: Pause briefly. Check that everyone is ready to start.

SAY: Begin now.

DO: Wait for all subjects to finish.

PAYMENTS

You will get 5 minutes for this task. If you are among the top 25% of the people participating in the experiment will receive $5 paid in cash at the end of the experiment. Otherwise you will not earn anything for Section 3.

The experimenter will distribute a booklet with the 12 tasks of section 3. The first page asks you to write down your participant number. Please write your participant number and do not turn the page over until you are told to do so.

DISTRIBUTE SECTION 3

START CLOCK

You may begin.

AFTER 5 MINUTES.

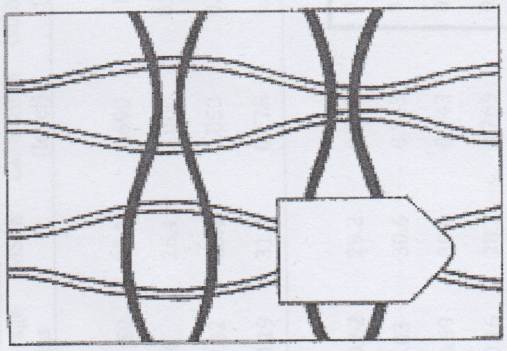
Please put your pencils down.

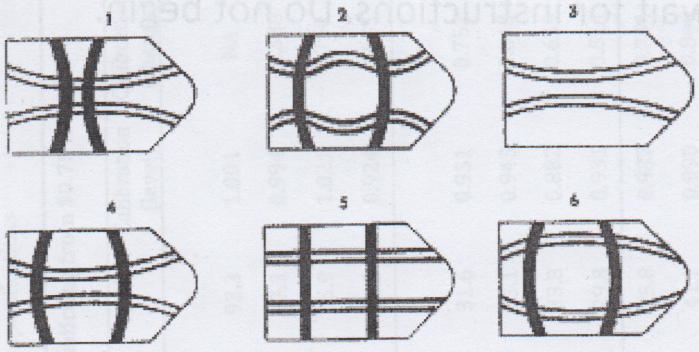
Please answer the short questionnaire and wait for your participant number to be called to get paid. *TAKE SECTION 3 TO CONTROL ROOM*

Subject ID number: [ ]

Please wait for instructions. Do not begin.

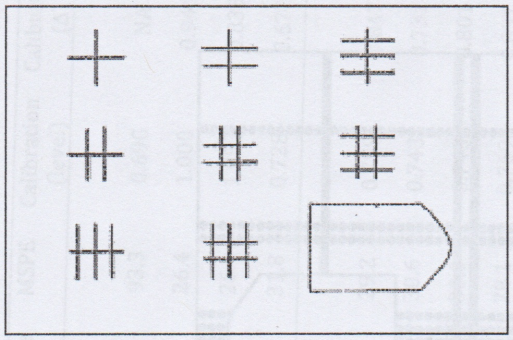
Sample 1

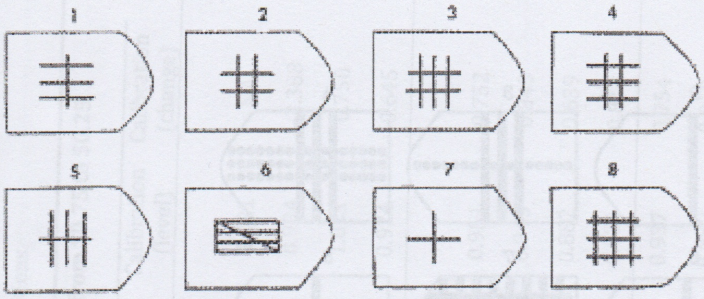




- ❍ 1
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5
- ❍ 6

Sample 2





- ❍ 1
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5
- ❍ 6
- ❍ 7
- ❍ 8

You are now done with the practice portion. Please wait to begin the test at experimenter's prompting.

QUESTIONNAIRE

Please write down your participant number _____

What is your major? _____

What is your GPA? _____

Please circle your gender: Female Male

Please circle if you are on financial aid or not: Yes No

How much do you spend on "background consumption" on typical week? (i.e. pocket money or money you use in personal expenses)_____

Please circle if you are an international student or not: Yes No

Which is your native language? _____

Do you trust the method in which you will be paid for your choices in Section 1? Yes No

What strategy did you use for estimating the time intervals while having to answer the tasks correctly in section 2?

_____
_____
_____
_____
_____
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_____
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_____
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_____
_____

Was answering tasks while estimating time intervals at the same time difficult? Why?

_____
_____
_____
_____
_____