

# 1 What is it about?

In this part of the experiment, you can collect points that will be converted into euros at the end of the experiment. The exchange rate for your points is:

$$10 \text{ Points} = 3 \text{ Euro.}$$

In each of 6 rounds, your task is to estimate a random number. This random number had already been drawn from the following sequence:  $\{-10, -9, -8, \dots, -1, 0, 1, \dots, 8, 9, 10\}$ . The numbers were printed out and placed next to you in a sealed envelope. Thus, nothing you do can affect these numbers.

You can verify this at the end of the experiment, but **you should not open the envelope until the end of the experiment! Opening the envelope before the end of the experiment will result in your immediate dismissal.**

## 1.1 Estimation Task

Your task in each round is to estimate the random number as accurately as possible. Your payoff (in points) will depend on how close you were to the number drawn, but also on your performance in the IQ test you took before, and the random number itself. Your payoff will be calculated using the following formula:

$$\text{Payoff} = 20 + 0.8 \times [28.6 \times \text{Performance} + \text{Number} - 0.48 \times (\text{Absolute difference between the number and your estimate})].$$

Therefore, there are several factors that influence your payoff:

- **"Performance"** is your score in the IQ test compared to the scores of other participants in the study. As a measure of your performance we use the fraction of participants who obtained a lower or equal score in the IQ test. For example, we say that you are in the 40th percentile if 40 percent of the other participants had a lower or equal score (and 60 percent were better than you). Likewise, we say that you are in the 70th percentile if 70 percent of the other participants had a lower or equal score (and 30 percent had a better score).

Your percentile also corresponds to the probability of being better than or equal to a randomly drawn participant. This is the probability you were asked about in the previous part of the study.

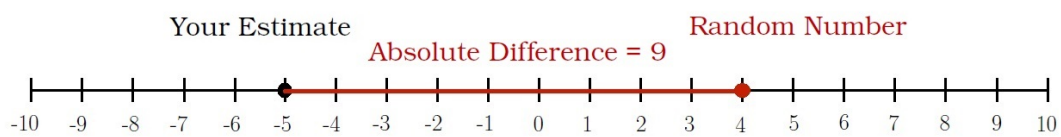
While your assessment can serve as a helpful guide, the payoff in this task is based on your true performance. It may differ from your assessment.

To calculate the payoff, we will categorize the percentile you are in. For example, if your percentile position is between the 40th and 45th percentile, we will use 42.5 (the middle of the interval) as the percentile for calculations.

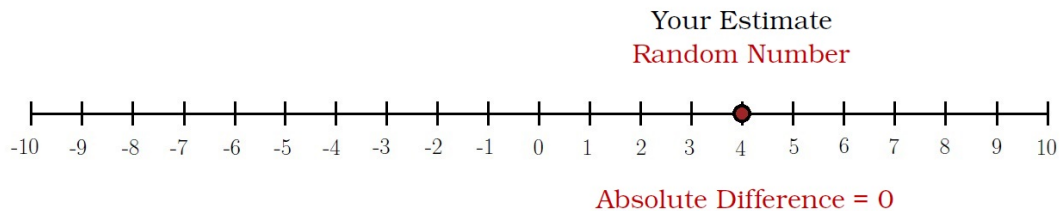
- **“Number”** is the number that was randomly drawn.
- **“Absolute difference between the random number and your estimate”** is the difference (in absolute value) between your estimate and the random number.

The following examples will help you understand the concept of absolute difference.

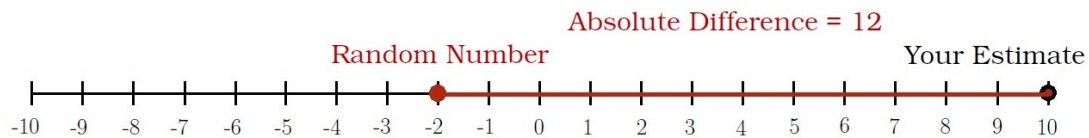
**Example:** If the random number is 4 and your estimate is -5, then the absolute difference is 9.



**Example:** If the random number is 4 and your estimate is 4, then the absolute difference is 0.



**Example:** If the random number is -2 and your estimate is 10, then the absolute difference is 12.



**Important:** Your payoff is always the highest when the difference is 0, i.e. when your estimate exactly matches the random number.

## 1.2 Tables

We have prepared a couple of tables to help you in this part of the task (you will find them in the printed materials that were given to you). Please, have a look at the tables and read carefully the example on the following pages. A good understanding of the tables is necessary to work out the estimation task.

In the tables, you will find **payoffs for every possible random number, every estimate, and every performance interval**. You can use these tables to better understand the above equation in three easy steps.

**Example:** Let's assume that your estimate was -2 and the random number is -4. Suppose that your performance is in the 40-45% interval. Now, you can calculate the payoff in this case in three simple steps:

**Step 1.** In the tables you received, look for a table with the title: "Your estimate was -2". It is presented in the figure below, with "Step 1" marked in red. In this table, you can find all payoffs that are possible if your estimate was -2. There is one such table for every feasible estimate.

Step 1.		Your estimate was: -2																				
	Performance Interval	Possible random number																				
		-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
95 – 100%		31.24	32.42	33.60	34.79	35.97	37.16	38.34	39.52	40.71	41.12	41.54	41.96	42.37	42.79	43.20	43.62	44.04	44.45	44.87	45.28	45.70
90 – 95%		30.09	31.28	32.46	33.64	34.83	36.01	37.20	38.38	39.56	39.98	40.40	40.81	41.23	41.64	42.06	42.48	42.89	43.31	43.72	44.14	44.56
85 – 90%		28.95	30.13	31.32	32.50	33.68	34.87	36.05	37.24	38.42	38.84	39.25	39.67	40.08	40.50	40.92	41.33	41.75	42.16	42.58	43.00	43.41
80 – 85%		27.80	28.99	30.17	31.36	32.54	33.72	34.91	36.09	37.28	37.69	38.11	38.52	38.94	39.36	39.77	40.19	40.60	41.02	41.44	41.85	42.27
75 – 80%		26.66	27.84	29.03	30.21	31.40	32.58	33.76	34.95	36.13	36.55	36.96	37.38	37.80	38.21	38.63	39.04	39.46	39.88	40.29	40.71	41.12
70 – 75%		25.52	26.70	27.88	29.07	30.25	31.44	32.62	33.80	34.99	35.40	35.82	36.24	36.65	37.07	37.48	37.90	38.32	38.73	39.15	39.56	39.98
65 – 70%		24.37	25.56	26.74	27.92	29.11	30.29	31.48	32.66	33.84	34.26	34.68	35.09	35.51	35.92	36.34	36.76	37.17	37.59	38.00	38.42	38.84
60 – 65%		23.23	24.41	25.60	26.78	27.96	29.15	30.33	31.52	32.70	33.12	33.53	33.95	34.36	34.78	35.20	35.61	36.03	36.44	36.86	37.28	37.69
55 – 60%		22.08	23.27	24.45	25.64	26.82	28.00	29.19	30.37	31.56	31.97	32.39	32.80	33.22	33.64	34.05	34.47	34.88	35.30	35.72	36.13	36.55
50 – 55%		20.94	22.12	23.31	24.49	25.68	26.86	28.04	29.23	30.41	30.83	31.24	31.66	32.08	32.49	32.91	33.32	33.74	34.16	34.57	34.99	35.40
45 – 50%		19.80	20.98	22.16	23.35	24.53	25.72	26.90	28.08	29.27	29.68	30.10	30.52	30.93	31.35	31.76	32.18	32.60	33.01	33.43	33.84	34.26
40 – 45%		18.65	19.84	21.02	22.20	23.39	24.57	25.76	26.94	28.12	28.54	28.96	29.37	29.79	30.20	30.62	31.04	31.45	31.87	32.28	32.70	33.12
35 – 40%		17.51	18.69	19.88	21.06	22.24	23.43	24.61	25.80	26.98	27.40	27.81	28.23	28.64	29.06	29.48	29.89	30.31	30.72	31.14	31.56	31.97
30 – 35%		16.36	17.55	18.73	19.92	21.10	22.28	23.47	24.65	25.84	26.25	26.67	27.08	27.50	27.92	28.33	28.75	29.16	29.58	30.00	30.41	30.83
25 – 30%		15.22	16.40	17.59	18.77	19.96	21.14	22.32	23.51	24.69	25.11	25.52	25.94	26.36	26.77	27.19	27.60	28.02	28.44	28.85	29.27	29.68
20 – 25%		14.08	15.26	16.44	17.63	18.81	20.00	21.18	22.36	23.55	23.96	24.38	24.80	25.21	25.63	26.04	26.46	26.88	27.29	27.71	28.12	28.54
15 – 20%		12.93	14.12	15.30	16.48	17.67	18.85	20.04	21.22	22.40	22.82	23.24	23.65	24.07	24.48	24.90	25.32	25.73	26.15	26.56	26.98	27.40
10 – 15%		11.79	12.97	14.16	15.34	16.52	17.71	18.89	20.08	21.26	21.68	22.09	22.51	22.92	23.34	23.76	24.17	24.59	25.00	25.42	25.84	26.25
5 – 10%		10.64	11.83	13.01	14.20	15.38	16.56	17.75	18.93	20.12	20.53	20.95	21.36	21.78	22.20	22.61	23.03	23.44	23.86	24.28	24.69	25.11
0 – 5%		9.50	10.68	11.87	13.05	14.24	15.42	16.60	17.79	18.97	19.39	19.80	20.22	20.64	21.05	21.47	21.88	22.30	22.72	23.13	23.55	23.96

**Step 2.** Look again at the table you found in Step 1. All possible performance intervals are listed in rows. You can find the interval in which your performance falls. In this example, we assume that it is between the 40th and 45th percentile. In the corresponding line, you will find **all payoffs that are possible given this performance**, namely, for 40-45% and the estimate of -2. The line is marked in red and referred to as “Step 2”.

Your estimate was: -2

	Possible random number																					
	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	
Performance Interval  2.	95 – 100%	31.24	32.42	33.60	34.79	35.97	37.16	38.34	39.52	40.71	41.12	41.54	41.96	42.37	42.79	43.20	43.62	44.04	44.45	44.87	45.28	45.70
	90 – 95%	30.09	31.28	32.46	33.64	34.83	36.01	37.20	38.38	39.56	39.98	40.40	40.81	41.23	41.64	42.06	42.48	42.89	43.31	43.72	44.14	44.56
	85 – 90%	28.95	30.13	31.32	32.50	33.68	34.87	36.05	37.24	38.42	38.84	39.25	39.67	40.08	40.50	40.92	41.33	41.75	42.16	42.58	43.00	43.41
	80 – 85%	27.80	28.99	30.17	31.36	32.54	33.72	34.91	36.09	37.28	37.69	38.11	38.52	38.94	39.36	39.77	40.19	40.60	41.02	41.44	41.85	42.27
	75 – 80%	26.66	27.84	29.03	30.21	31.40	32.58	33.76	34.95	36.13	36.55	36.96	37.38	37.80	38.21	38.63	39.04	39.46	39.88	40.29	40.71	41.12
	70 – 75%	25.52	26.70	27.88	29.07	30.25	31.44	32.62	33.80	34.99	35.40	35.82	36.24	36.65	37.07	37.48	37.90	38.32	38.73	39.15	39.56	39.98
	65 – 70%	24.37	25.56	26.74	27.92	29.11	30.29	31.48	32.66	33.84	34.26	34.68	35.09	35.51	35.92	36.34	36.76	37.17	37.59	38.00	38.42	38.84
	60 – 65%	23.23	24.41	25.60	26.78	27.96	29.15	30.33	31.52	32.70	33.12	33.53	33.95	34.36	34.78	35.20	35.61	36.03	36.44	36.86	37.28	37.69
	55 – 60%	22.08	23.27	24.45	25.64	26.82	28.00	29.19	30.37	31.56	31.97	32.39	32.80	33.22	33.64	34.05	34.47	34.88	35.30	35.72	36.13	36.55
	50 – 55%	20.94	22.12	23.31	24.49	25.68	26.86	28.04	29.23	30.41	30.83	31.24	31.66	32.08	32.49	32.91	33.32	33.74	34.16	34.57	34.99	35.40
	45 – 50%	19.80	20.98	22.16	23.35	24.53	25.72	26.90	28.08	29.27	29.68	30.10	30.52	30.93	31.35	31.76	32.18	32.60	33.01	33.43	33.84	34.26
	40 – 45%	18.65	19.84	21.02	22.20	23.39	24.57	25.76	26.94	28.12	28.54	28.96	29.37	29.79	30.20	30.62	31.04	31.45	31.87	32.28	32.70	33.12
	35 – 40%	17.51	18.69	19.88	21.06	22.24	23.43	24.61	25.80	26.98	27.40	27.81	28.23	28.64	29.06	29.48	29.89	30.31	30.72	31.14	31.56	31.97
	30 – 35%	16.36	17.55	18.73	19.92	21.10	22.28	23.47	24.65	25.84	26.25	26.67	27.08	27.50	27.92	28.33	28.75	29.16	29.58	30.00	30.41	30.83
	25 – 30%	15.22	16.40	17.59	18.77	19.96	21.14	22.32	23.51	24.69	25.11	25.52	25.94	26.36	26.77	27.19	27.60	28.02	28.44	28.85	29.27	29.68
	20 – 25%	14.08	15.26	16.44	17.63	18.81	20.00	21.18	22.36	23.55	23.96	24.38	24.80	25.21	25.63	26.04	26.46	26.88	27.29	27.71	28.12	28.54
	15 – 20%	12.93	14.12	15.30	16.48	17.67	18.85	20.04	21.22	22.40	22.82	23.24	23.65	24.07	24.48	24.90	25.32	25.73	26.15	26.56	26.98	27.40
	10 – 15%	11.79	12.97	14.16	15.34	16.52	17.71	18.89	20.08	21.26	21.68	22.09	22.51	22.92	23.34	23.76	24.17	24.59	25.00	25.42	25.84	26.25
	5 – 10%	10.64	11.83	13.01	14.20	15.38	16.56	17.75	18.93	20.12	20.53	20.95	21.36	21.78	22.20	22.61	23.03	23.44	23.86	24.28	24.69	25.11
	0 – 5%	9.50	10.68	11.87	13.05	14.24	15.42	16.60	17.79	18.97	19.39	19.80	20.22	20.64	21.05	21.47	21.88	22.30	22.72	23.13	23.55	23.96

Step 2.

**Step 3.** In the same table, all possible values of the random number are listed in the first row. In this row, find the number -4 and the corresponding column. This column contains all payoffs that are possible if the random number is -4 (and your estimate was -2). It is marked in red as “ Step 3. ”

Your estimate was: -2

	Possible random number:																					
	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	
Performance Interval	95 – 100%	31.24	32.42	33.60	34.79	35.97	37.16	38.34	39.52	40.71	41.12	41.54	41.96	42.37	42.79	43.20	43.62	44.04	44.45	44.87	45.28	45.70
	90 – 95%	30.09	31.28	32.46	33.64	34.83	36.01	37.20	38.38	39.56	39.98	40.40	40.81	41.23	41.64	42.06	42.48	42.89	43.31	43.72	44.14	44.56
	85 – 90%	28.95	30.13	31.32	32.50	33.68	34.87	36.05	37.24	38.42	38.84	39.25	39.67	40.08	40.50	40.92	41.33	41.75	42.16	42.58	43.00	43.41
	80 – 85%	27.80	28.99	30.17	31.36	32.54	33.72	34.91	36.09	37.28	37.69	38.11	38.52	38.94	39.36	39.77	40.19	40.60	41.02	41.44	41.85	42.27
	75 – 80%	26.66	27.84	29.03	30.21	31.40	32.58	33.76	34.95	36.13	36.55	36.96	37.38	37.80	38.21	38.63	39.04	39.46	39.88	40.29	40.71	41.12
	70 – 75%	25.52	26.70	27.88	29.07	30.25	31.44	32.62	33.80	34.99	35.40	35.82	36.24	36.65	37.07	37.48	37.90	38.32	38.73	39.15	39.56	39.98
	65 – 70%	24.37	25.56	26.74	27.92	29.11	30.29	31.48	32.66	33.84	34.26	34.68	35.09	35.51	35.92	36.34	36.76	37.17	37.59	38.00	38.42	38.84
	60 – 65%	23.23	24.41	25.60	26.78	27.96	29.15	30.33	31.52	32.70	33.12	33.53	33.95	34.36	34.78	35.20	35.61	36.03	36.44	36.86	37.28	37.69
	55 – 60%	22.08	23.27	24.45	25.64	26.82	28.00	29.19	30.37	31.56	31.97	32.39	32.80	33.22	33.64	34.05	34.47	34.88	35.30	35.72	36.13	36.55
	50 – 55%	20.94	22.12	23.31	24.49	25.68	26.86	28.04	29.23	30.41	30.83	31.24	31.66	32.08	32.49	32.91	33.32	33.74	34.16	34.57	34.99	35.40
	45 – 50%	19.80	20.98	22.16	23.35	24.53	25.72	26.90	28.08	29.27	29.68	30.10	30.52	30.93	31.35	31.76	32.18	32.60	33.01	33.43	33.84	34.26
	40 – 45%	18.65	19.84	21.02	22.20	23.39	24.57	25.76	26.94	28.12	28.54	28.96	29.37	29.79	30.20	30.62	31.04	31.45	31.87	32.28	32.70	33.12
	35 – 40%	17.51	18.69	19.88	21.06	22.24	23.43	24.61	25.80	26.98	27.40	27.81	28.23	28.64	29.06	29.48	29.89	30.31	30.72	31.14	31.56	31.97
	30 – 35%	16.36	17.55	18.73	19.92	21.10	22.28	23.47	24.65	25.84	26.25	26.67	27.08	27.50	27.92	28.33	28.75	29.16	29.58	30.00	30.41	30.83
	25 – 30%	15.22	16.40	17.59	18.77	19.96	21.14	22.32	23.51	24.69	25.11	25.52	25.94	26.36	26.77	27.19	27.60	28.02	28.44	28.85	29.27	29.68
	20 – 25%	14.08	15.26	16.44	17.63	18.81	20.00	21.18	22.36	23.55	23.96	24.38	24.80	25.21	25.63	26.04	26.46	26.88	27.29	27.71	28.12	28.54
	15 – 20%	12.93	14.12	15.30	16.48	17.67	18.85	20.04	21.22	22.40	22.82	23.24	23.65	24.07	24.48	24.90	25.32	25.73	26.15	26.56	26.98	27.40
	10 – 15%	11.79	12.97	14.16	15.34	16.52	17.71	18.89	20.08	21.26	21.68	22.09	22.51	22.92	23.34	23.76	24.17	24.59	25.00	25.42	25.84	26.25
	5 – 10%	10.64	11.83	13.01	14.20	15.38	16.56	17.75	18.93	20.12	20.53	20.95	21.36	21.78	22.20	22.61	23.03	23.44	23.86	24.28	24.69	25.11
	0 – 5%	9.50	10.68	11.87	13.05	14.24	15.42	16.60	17.79	18.97	19.39	19.80	20.22	20.64	21.05	21.47	21.88	22.30	22.72	23.13	23.55	23.96



Your estimate was: -2

	Possible random number																				
	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
95 – 100%	31.24	32.42	33.60	34.79	35.97	37.16	38.34	39.52	40.71	41.12	41.54	41.96	42.37	42.79	43.20	43.62	44.04	44.45	44.87	45.28	45.70
90 – 95%	30.09	31.28	32.46	33.64	34.83	36.01	37.20	38.38	39.56	39.98	40.40	40.81	41.23	41.64	42.06	42.48	42.89	43.31	43.72	44.14	44.56
85 – 90%	28.95	30.13	31.32	32.50	33.68	34.87	36.05	37.24	38.42	38.84	39.25	39.67	40.08	40.50	40.92	41.33	41.75	42.16	42.58	43.00	43.41
80 – 85%	27.80	28.99	30.17	31.36	32.54	33.72	34.91	36.09	37.28	37.69	38.11	38.52	38.94	39.36	39.77	40.19	40.60	41.02	41.44	41.85	42.27
75 – 80%	26.66	27.84	29.03	30.21	31.40	32.58	33.76	34.95	36.13	36.55	36.96	37.38	37.80	38.21	38.63	39.04	39.46	39.88	40.29	40.71	41.12
70 – 75%	25.52	26.70	27.88	29.07	30.25	31.44	32.62	33.80	34.99	35.40	35.82	36.24	36.65	37.07	37.48	37.90	38.32	38.73	39.15	39.56	39.98
65 – 70%	24.37	25.56	26.74	27.92	29.11	30.29	31.48	32.66	33.84	34.26	34.68	35.09	35.51	35.92	36.34	36.76	37.17	37.59	38.00	38.42	38.84
60 – 65%	23.23	24.41	25.60	26.78	27.96	29.15	30.33	31.52	32.70	33.12	33.53	33.95	34.36	34.78	35.20	35.61	36.03	36.44	36.86	37.28	37.69
55 – 60%	22.08	23.27	24.45	25.64	26.82	28.00	29.19	30.37	31.56	31.97	32.39	32.80	33.22	33.64	34.05	34.47	34.88	35.30	35.72	36.13	36.55
50 – 55%	20.94	22.12	23.31	24.49	25.68	26.86	28.04	29.23	30.41	30.83	31.24	31.66	32.08	32.49	32.91	33.32	33.74	34.16	34.57	34.99	35.40
45 – 50%	19.80	20.98	22.16	23.35	24.53	25.72	26.90	28.08	29.27	29.68	30.10	30.52	30.93	31.35	31.76	32.18	32.60	33.01	33.43	33.84	34.26
40 – 45%	18.65	19.84	21.02	22.20	23.39	24.57	25.76	26.94	28.12	28.54	28.96	29.37	29.79	30.20	30.62	31.04	31.45	31.87	32.28	32.70	33.12
35 – 40%	17.51	18.69	19.88	21.06	22.24	23.43	24.61	25.80	26.98	27.40	27.81	28.23	28.64	29.06	29.48	29.89	30.31	30.72	31.14	31.56	31.97
30 – 35%	16.36	17.55	18.73	19.92	21.10	22.28	23.47	24.65	25.84	26.25	26.67	27.08	27.50	27.92	28.33	28.75	29.16	29.58	30.00	30.41	30.83
25 – 30%	15.22	16.40	17.59	18.77	19.96	21.14	22.32	23.51	24.69	25.11	25.52	25.94	26.36	26.77	27.19	27.60	28.02	28.44	28.85	29.27	29.68
20 – 25%	14.08	15.26	16.44	17.63	18.81	20.00	21.18	22.36	23.55	23.96	24.38	24.80	25.21	25.63	26.04	26.46	26.88	27.29	27.71	28.12	28.54
15 – 20%	12.93	14.12	15.30	16.48	17.67	18.85	20.04	21.22	22.40	22.82	23.24	23.65	24.07	24.48	24.90	25.32	25.73	26.15	26.56	26.98	27.40
10 – 15%	11.79	12.97	14.16	15.34	16.52	17.71	18.89	20.08	21.26	21.68	22.09	22.51	22.92	23.34	23.76	24.17	24.59	25.00	25.42	25.84	26.25
5 – 10%	10.64	11.83	13.01	14.20	15.38	16.56	17.75	18.93	20.12	20.53	20.95	21.36	21.78	22.20	22.61	23.03	23.44	23.86	24.28	24.69	25.11
0 – 5%	9.50	10.68	11.87	13.05	14.24	15.42	16.60	17.79	18.97	19.39	19.80	20.22	20.64	21.05	21.47	21.88	22.30	22.72	23.13	23.55	23.96

The table, the row and the column you found in steps 1, 2, and 3 indicate the payoff you will receive if your estimate was -2, your true performance is 40-45% and the random number is -4. You will find the payoff in the cell at the intersection of the respective row and column in the right table. **The number in this cell, 25.76, is the solution of the formula presented above if you substitute the appropriate values.**

It is important that you understand how the tables work. Please, read carefully the following examples and find out the payoff yourself by looking it up in your tables. If you have any questions, do not hesitate to ask.

**Example:** Suppose that your estimate was -3 and your performance is in the 30-35% interval. The random number is 2. The payoff you would receive for this estimate is equal to 27.12.

**Example:** Suppose that your estimate was 5 and your performance is in the 30-35% interval. The random number is 2. The payoff you would receive for this estimate is equal to 27.88.

**Example:** Suppose that your estimate was 1 and your performance is in the 70-75% interval. The random number is 3. The payoff you would receive for this estimate is equal to 38.22.

## 2 What is your task?

The task consists of **6 rounds**. In each round, you will be assigned a new random number. The random number can take any value between -10 and 10 in steps of 1 (i.e. any value from  $\{-10, -9, -8, \dots, -1, 0, 1, \dots, 8, 9, 10\}$ ).

**The average of numbers drawn for all participants is equal to zero** in each round. In each round, some participants receive the number zero. The rest will receive numbers that always add up to zero. For example, if one participant gets 3, another participant will get -3.

In every round, that is, for each of the 6 random numbers, you will make **4 estimates**. You make an estimate by choosing a number from  $\{10, -9, -8, \dots, -1, 0, 1, \dots, 8, 9, 10\}$ .

There are two types of rounds: Multiple-Feedback rounds and Single-Feedback rounds. We will explain these in more detail in the following sections.

### 2.1 Multiple-Feedback rounds

You will participate in three Multiple-Feedback rounds. In each round, a random number will be drawn that you have to estimate. In each round, you can give four estimates. After each estimate, you will receive feedback that can help you improve your estimate.

The next figure presents the screen-shot of the interface that you will use. The screen reminds you of what you have entered as your assessment of the percentile in the IQ distribution in the previous part of the experiment. It also shows you the estimate of the number that you gave previously.

The screen also gives you an indication of your payoff. However, the number you see does not exactly match the payoff in the table. Each time, we add a small perturbation: a number between -0.18 and 0.18. This means that the feedback you receive is the sum of the payoff and the perturbation:

$$\text{Feedback} = \text{Payoff as in the table} + \text{Perturbation.}$$



This figure shows you how the screen will look like. It has several elements. It shows you your previous estimation and feedback. It also shows you your assessment of your performance in the previous part of the experiment.

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This is a Multiple-Feedback round.

You think that your performance in the IQ test falls between 40% and 45%.

Your 1. Estimate was: 0      Multiple-Feedback: 25.02

What is your 2. Estimate of the number drawn for you?

Continue

Thus, the feedback is **correct on average**. Still, you will be shown a number that can differ from the actual payoff by any value between -0.18 and 0.18.

**Example:** Assuming that the payoff displayed on the screen was 16.37, is it possible that the actual payoff was 16.30? Yes, because  $16.37 - 16.30 = 0.07$  and 0.07 is a value between -0.18 and 0.18.

### 2.1.1 How to use the tables for your next estimate

You can use the tables to specify your next estimate. Since **you do not know your exact performance interval or the random number**, the feedback can help you to understand what is happening. The following example shows you what you should do to correctly interpret your feedback.

Let us assume that you believe that your performance is in the 40-45% interval. Your last guess was -2. If you received feedback of 25.90, how would you arrive at your next estimate?

**Step 1.** Find the table with the title that corresponds to your last estimate. In this case, it is the table titled “Your estimate was: -2”. All possible payoffs are indicated in this table.

**Step 2.** Select the line with the performance interval that you think corresponds to your performance. In this example, it is the line “40 - 45%”.

**Step 3.** Go along this line and select the column that has the payoff that is the closest to your current feedback, 25.90. In this example, it is the column “-4”, with the payoff of 25.76. The feedback may not exactly match the numbers in the table because of the added perturbation.

Your next best estimate is therefore -4.

Step 1.

Your estimate was: -2

Step 3.

Possible random number

Performance Interval

	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
95 – 100%	31.24	32.42	33.60	34.79	35.97	37.16	38.34	39.52	40.71	41.12	41.54	41.96	42.37	42.79	43.20	43.62	44.04	44.45	44.87	45.28	45.70
90 – 95%	30.09	31.28	32.46	33.64	34.83	36.01	37.20	38.38	39.56	39.98	40.40	40.81	41.23	41.64	42.06	42.48	42.89	43.31	43.72	44.14	44.56
85 – 90%	28.95	30.13	31.32	32.50	33.68	34.87	36.05	37.24	38.42	38.84	39.25	39.67	40.08	40.50	40.92	41.33	41.75	42.16	42.58	43.00	43.41
80 – 85%	27.80	28.99	30.17	31.36	32.54	33.72	34.91	36.09	37.28	37.69	38.11	38.52	38.94	39.36	39.77	40.19	40.60	41.02	41.44	41.85	42.27
75 – 80%	26.66	27.84	29.03	30.21	31.40	32.58	33.76	34.95	36.13	36.55	36.96	37.38	37.80	38.21	38.63	39.04	39.46	39.88	40.29	40.71	41.12
70 – 75%	25.52	26.70	27.88	29.07	30.25	31.44	32.62	33.80	34.99	35.40	35.82	36.24	36.65	37.07	37.48	37.90	38.32	38.73	39.15	39.56	39.98
65 – 70%	24.37	25.56	26.74	27.92	29.11	30.29	31.48	32.66	33.84	34.26	34.68	35.09	35.51	35.92	36.34	36.76	37.17	37.59	38.00	38.42	38.84
60 – 65%	23.23	24.41	25.60	26.78	27.96	29.15	30.33	31.52	32.70	33.12	33.53	33.95	34.36	34.78	35.20	35.61	36.03	36.44	36.86	37.28	37.69
55 – 60%	22.08	23.27	24.45	25.64	26.82	28.00	29.19	30.37	31.56	31.97	32.39	32.80	33.22	33.64	34.05	34.47	34.88	35.30	35.72	36.13	36.55
50 – 55%	20.94	22.12	23.31	24.49	25.68	26.86	28.04	29.23	30.41	30.83	31.24	31.66	32.08	32.49	32.91	33.32	33.74	34.16	34.57	34.99	35.40
45 – 50%	19.80	20.98	22.16	23.35	24.53	25.72	26.90	28.08	29.27	29.68	30.10	30.52	30.93	31.35	31.76	32.18	32.60	33.01	33.43	33.84	34.26
40 – 45%	18.65	19.84	21.02	22.20	23.39	24.57	25.76	26.94	28.12	28.54	28.96	29.37	29.79	30.20	30.62	31.04	31.45	31.87	32.28	32.70	33.12
35 – 40%	17.51	18.69	19.88	21.06	22.24	23.43	24.61	25.80	26.98	27.40	27.81	28.23	28.64	29.06	29.48	29.89	30.31	30.72	31.14	31.56	31.97
30 – 35%	16.36	17.55	18.73	19.92	21.10	22.28	23.47	24.65	25.84	26.25	26.67	27.08	27.50	27.92	28.33	28.75	29.16	29.58	30.00	30.41	30.83
25 – 30%	15.22	16.40	17.59	18.77	19.96	21.14	22.32	23.51	24.69	25.11	25.52	25.94	26.36	26.77	27.19	27.60	28.02	28.44	28.85	29.27	29.68
20 – 25%	14.08	15.26	16.44	17.63	18.81	20.00	21.18	22.36	23.55	23.96	24.38	24.80	25.21	25.63	26.04	26.46	26.88	27.29	27.71	28.12	28.54
15 – 20%	12.93	14.12	15.30	16.48	17.67	18.85	20.04	21.22	22.40	22.82	23.24	23.65	24.07	24.48	24.90	25.32	25.73	26.15	26.56	26.98	27.40
10 – 15%	11.79	12.97	14.16	15.34	16.52	17.71	18.89	20.08	21.26	21.68	22.09	22.51	22.92	23.34	23.76	24.17	24.59	25.00	25.42	25.84	26.25
5 – 10%	10.64	11.83	13.01	14.20	15.38	16.56	17.75	18.93	20.12	20.53	20.95	21.36	21.78	22.20	22.61	23.03	23.44	23.86	24.28	24.69	25.11
0 – 5%	9.50	10.68	11.87	13.05	14.24	15.42	16.60	17.79	18.97	19.39	19.80	20.22	20.64	21.05	21.47	21.88	22.30	22.72	23.13	23.55	23.96

Step 2.

**Example:** Let us assume that you believe that your performance is in the 70-75% interval. Your last estimate was 4. If you got feedback of 40.57, how would you arrive at your next estimate? Please go through this example using the tables.

Step 1: Go to the table "Your estimate was: 4".

Step 2: Find the line "70 - 75%".

Step 3: In this line, the payoff 40.62 comes the closest to your feedback, 40.57. Your next best guess for the random number is therefore 6.

### **2.1.2 Your first estimate**

At the beginning of each round, you have no information about the number randomly drawn for you. Remember, however, that the average of all random numbers in each round is zero.

Also, the 6 random numbers have been drawn **independently**. It does not matter what was the number you were estimating in the previous round, as it does not contain any information about the upcoming number.

**Therefore, zero is the best estimate to start with, in each round. It maximizes your expected payoff.**

## **2.2 Single-Feedback rounds**

You will take part in three Single-Feedback rounds. In each round, a random number will be drawn that you have to estimate. In each round, you can give four estimates.

In contrast to the Multiple-Feedback rounds, the feedback is no longer updated. After your first assessment, you will receive feedback as before. However, after the following estimates, the feedback will be changing only with respect to the perturbation that is drawn anew each time. Therefore, you cannot learn from the feedback after the 2nd and 3rd estimation in the Single-Feedback rounds.

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This is a Single-Feedback round.

You think that your performance in the IQ test falls between 40% and 45%.

Your 1. Estimate was: 0

Multiple-Feedback: 32.24

What is your 3. Estimate of the number drawn for you?

Continue

Note that, on the screen above, the information displayed after the second estimate was not based on the second estimate. To find out which random number most likely generated the feedback, you need to be looking at the table with your **first estimate during the entire round**. Before entering your estimate, make sure whether the current round is a Single-Feedback round or a Multiple-Feedback round.

Entering **zero as your first guess** is advisable also in the Single-Feedback rounds. Just as in the Multiple-Feedback rounds, the average of the numbers drawn in each round is zero.

### 3 How are your earnings determined?

Of all Multiple-Feedback rounds, one of the  $3 \times 4 = 12$  estimates will be drawn at random. Only this estimate will count for your payment. Similarly, of all single feedback rounds, one estimate will be drawn at random. Again, only this estimate will be included in your payment.

The two estimates that will be drawn for payment, could be any of the estimates you enter. Therefore, each time you estimate, try to be as close as possible to the random number. The closer you are to the number that had been drawn, the more you will earn.

Before you can continue with the experiment, you have to correctly answer a couple of control questions.

**Please turn the page.**

## 4 Control questions

The control questions are designed to help you understand how to proceed with the task. Please, write your answer in the provided space. Once you have given your answers, or in case of any questions, please let know the assistant.

**Question 1:** What is the best number for the first estimate?

**Answer 1:** The number \_\_\_\_\_ is the best choice for the first estimate.

**Question 2:** After you received the first feedback, in which table you should look for the random number?

**Answer 2:** After my first estimate, I should look for the number in the table \_\_\_\_\_ .

**Question 3:** Your last estimate in a **Multiple-Feedback round** was -2 and now you get new feedback. In which table you should look for the random number?

**Answer 3:** After the estimate of -2 in a Multiple-Feedback round I should for the number in the table \_\_\_\_\_ .

**Question 4:** Your last, third estimate in a Single-Feedback round was 5 and now you get new feedback. In which table should you search for the random number?

**Answer 4:** After my last, third estimate of 5 in a **Single-Feedback** round I should for the number in the table \_\_\_\_\_.

**Question 5:** Assume that your last estimate in a Multiple-Feedback round was 0 and you think that your performance is in the 60-65% interval. You see the feedback of 36.74. What's your next guess?

**Answer 5:** My next guess is \_\_\_\_\_ .

**Question 6:** Assume that your last estimate in a Multiple-Feedback round was -2 and you think that your performance is in the 45-50% interval. You see the feedback of 25.68. What's your next guess?

**Answer 6:** My next guess is \_\_\_\_\_ .