INDEPENDENT WORK

Task 1. There are ***n*** students in the group, including m_A A students, m_B B students, the others are C students.

Q1: What is the probability of choosing one A student?

Q2: What is the probability of choosing one C student?

Q3: What is the probability of choosing no A student?

Q4: What is the probability of choosing 2 B students?

Q5: What is the probability of choosing 3 A students and 2 B students?

Q6: What is the probability of choosing 3 A students or 2 B students?

Use the following rule: $m_A + m_B + m_C = n$.

Data for individual tasks

Variants	**Task 1**			
	m_A	m_B	m_C	n
1	12	8	?	25
2	11	7	?	25
3	10	4	?	25
4	9	10	?	25
5	13	8	?	25
6	14	6	?	25
7	8	11	?	25
8	7	10	?	25

Task 2. Melissa collects data on her college graduating class. She finds out that of her classmates, ***a %*** are brunettes, ***b %*** have blue eyes, and ***c %*** are brunettes that have blue eyes. What is the probability that one of Melissa's classmates will be a brunette or have blue eyes.

Data for individual tasks

Variants	***a %***	***b %***	***c %***
1	70	25	4
2	65	27	5
3	74	23	6
4	68	25	7
5	72	28	6
6	63	24	5

7	69	26	4
8	73	29	5

Task 3. Three students are going to take an exam. The probability that the first student will pass it equals p_1; for the second and third ones it is p_2 and p_3 respectively.

What is the probability that

(a) all of the three students will pass the exam;

(b) the first student will only do it;

(c) the second and the third ones will only do it;

(d) one student will do it;

(e) no student will do it;

(f) at least one student will do it?

Data for individual tasks

Variants	**Task 3**		
	p_1	p_2	p_3
1	0.1	0.3	0.6
2	0.2	0.4	0.7
3	0.3	0.6	0.8
4	0.4	0.7	0.9
5	0.6	0.1	0.3
6	0.7	0.2	0.4
7	0.8	0.3	0.6
8	0.9	0.4	0.7

Task 4. In a factory, machines A, B and C are all producing metal rods of the same length. Machine A produces P_1 % of the rods, machine B produces P_2 % and the rest are produced by machine C. Out of their production of rods, machines A, B and C produce Q_1 %, Q_2 % and Q_3 % defective rods respectively.

(a) Find the probability that a randomly selected rod is defective.

(b) Given that a randomly selected rod is defective, find the probability that it was produced by machine C.

(c) Find the probability that a randomly selected rod is fully functioning.

(d) Given that a randomly selected rod is fully functioning, find the probability that it was produced by machine B.

Data for individual tasks

Variants	**Task 4**				
	P_1 %	P_2 %	Q_1 %	Q_2 %	Q_3 %
1	15	50	1	3	5
2	35	40	2	5	6
3	20	65	3	4	2
4	30	55	4	6	1
5	45	15	5	7	3
6	60	25	3	5	1
7	50	35	5	6	2
8	65	15	4	2	3