Exercise 1 Calc. : ✓

In a class there are 15 students, 9 students like geography and 10 students like science. Knowing that 2 students like neither geography nor sciences:

1. Represent the situation with a Venn diagram. — 3 marks
2. Determine the probability that a student randomly selected likes geography and not science. — 3 marks
3. Determine the probability that a student randomly selected among the students who like science, he/she does not like geography. — 4 marks

Exercise 2 Calc. : ✓

A survey of smoking habits conducted on 200 people (90 women and 110 men) says that only 140 people do not smoke. Amid smokers, 40 are men.

1. Fill in the two-way table below. — 4 marks

	Women	Men	TOTAL
Smokers			
Non smokers			
TOTAL			

2. Determine the probability that a randomly selected person is a woman and does not smoke. — 3 marks
3. Determine the probability that a randomly selected person is a man, knowing that he is not a smoker. — 3 marks

Exercise 3 Calc. : ✓

Students of a college must spend an academic year abroad in a foreign country.
Students have different options. First, they must choose the country where they want to study: 76% of the students want to go to UK, the others in France.
Then, they must choose the accommodation. Students can choose between "homestay" or "residential".
50% of the students going to France choose "homestay" while 25% of students going to UK choose "residential".

1. Represent the situation using a tree diagram. — 4 marks
2. Determine the probability that a randomly selected student chooses to go to France. — 2 marks
3. Determine the probability that a randomly selected student chooses "homestay". — 2 marks
4. Determine the probability that a randomly selected student DOES NOT choose "France" and "residential". — 2 marks

Exercise 4 Calc. : ✓

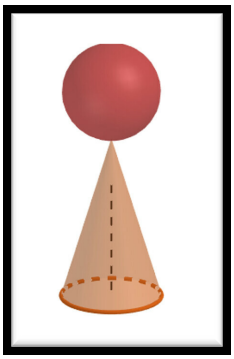
The table below shows the distribution of times obtained by 10 contestants during a sport competition.

Time x	10	20	30	40	50
Frequency f	1	2	4	2	1

1. Determine the mean of x. — 4 marks
2. Determine the standard deviation σ. — 4 marks
3. Determine the interval related to 68% of the time. — 3 marks
4. Draw a histogram representing the situation. — 4 marks

Exercise 5 Calc. : ✓

The new spray bottle of the perfume "*Profumo di Parma*" is made by a cone and a sphere on top of the vertex of the cone (see figure below).



The height of the cone is 10 cm and the diameter of the base is 6 cm. The radius of the sphere is 3 cm.

1. Determine the surface of the whole bottle (cone and sphere) — 4 marks
2. Determine the volume of the bottle (cone and sphere). — 4 marks
3. A gift box contains 3 bottles of perfume. The box is a cuboid whose edges are 20 cm, 20 cm, 10 cm. How much free space is left? — 4 marks
4. Determine the angle between the base of the cone and the slant height. — 3 marks