Bachelor's Degree in Primary Education
Mathematics and Associated Teaching Methods I
School year 2016/2017
January 10th, 2017

UNIVERSIDAD DE OVIEDO
Departamento de Estadística e I.O.
y Didáctica de la Matemática

ORDINARY CALL

THEORETICAL PART: 4 points
APPLIED PART: 6 points
To pass the exam, you must obtain at least the 50% of the score corresponding to each one of the parts.

THEORETICAL PART

1. **(1 point)** By using the definition of division between natural numbers as a sharing out of a set of elements in groups of as many elements as the divisor indicates, find out the dividend of a division knowing that the quotient is 3 and the remainder is 5, and knowing that if the divisor decreases two units then the quotient increases one unit and the new remainder is 1.

2. **(1 point)** Define: improper fraction, multiple of a number, complement of a set, integer division and rational number. Put an example of each one of them.

3. **(1 point)** Describe briefly the differences between the classic and the ABN algorithms, and solve the subtraction 4683-2796 by using the ABN algorithm.

4. **(1 point)** Design a teaching situation to introduce the concept of negative number in a 6th grade course.

APPLIED PART

1. **a) (0.75 points)** A complete suit has cost 420 €. The third part of the price corresponds to the jacket, and the shirt costs 2/5 of the price of the trousers. Find out the price of each one of the three pieces of clothing.
   b) (0.75 points) How much time is left to get 12 o'clock if 8 minutes ago there were left 9/5 of the time which is left now?
   c) (0.75 points) Every time we cut off a cake we take the third part of the cake which is left at that moment. What is the fraction of the initial cake which is left after cutting it three times?

2. **(1 point)** We have bought 12 kg of special strawberries for 24€/kg. We make juice with them and in the process we spend 1.5 € per kilogram of fruit. We obtain an amount of juice which weighs the third part of the initial weight. After that we add the same amount of sugar (than the one of the juice) which costs 0.74 € per kilogram. Finally, we fill 64 jars with the final product. If each empty jar costs 0.16 € each, and each label costs 1 cent, find out the profit we will obtain if we sell each jar by 9.95 € each.

3. **(1 point)** From 24 students of a class of the 6th grade of Primary Education, it is known that 3 of each 4 students have a mobile, 2 of each 3 students have a computer and 1 of each 12 do not have neither mobile nor computer. How many students have mobile and computer?

4. **a) (0.75 points)** Ruben changes two digits on the number 888 looking for the greatest number of 3 digits which is divisible by 8. Javier also changes two digits on the number 888 looking for the smallest number of 3 digits which is a multiple of 8. What is the value of the difference between the two resulting numbers?

   b) (1 point) Analyze if the number corresponding to the current year is a prime number, knowing that it is not divisible by any number between 2 and 40, including both.

ARGUE YOUR ANSWER IN ALL THE QUESTIONS. THE USE OF THE CALCULATOR IS NOT ALLOWED. DELIVER ALSO THE CALCULATION SHEETS