Practice 1.1 (September 19)[1]

You have to fill this poll https://goo.gl/forms/CDXubqHnFvwBynnj1 before Monday 18, 10 pm.

1. Express in base 10 the biggest number that has 8 digits in base 2.

2. Count by twos in bse 5, from $31_{(5}$ to $112_{(5}$.

3.   a)   Write $4054_{(6}$ in base 10.   b)   Write 227 in base 4.

4. Compute: a) $321023_{(4} + 231322_{(4}$.   c) $A7F_{(16} + BC2_{(16}$.

   Explain in detail the meaning of the regroupings in case b).

   (In base 16, we use letters A, B, C, D, E, F to represent numbers $10, \ldots, 15$).

5. Use the algorithms proposed in the slide 22 (decomposition and ABN) in order to compute the addition $938 + 854$.

   Explain why in the decomposition algorithm there is no carrying (llevadas) involved.

6. Fill in the boxes in the following computations.

$$
\begin{array}{ccccccc}
 & 5 & \Box & 2 & 6 & \Box & {}_{(8} \\
+ & \Box & 2 & \Box & 3 & 4 & {}_{(8} \\
\hline
1 & 3 & 0 & 4 & \Box & 1 & {}_{(8}
\end{array}
\qquad
\begin{array}{ccccccc}
 & 7 & \Box & 8 & 0 & 2 & {}_{(9} \\
- & 5 & 5 & \Box & \Box & 4 & {}_{(9} \\
\hline
1 & 8 & 0 & 2 & \Box & & {}_{(9}
\end{array}
$$

7. Compute the following substractions, with regrouping in the "minuendo" and explaining in detail the meaning. You can use a drawing in case a).   a) $301_{(5} + 143_{(5}$ b) $B20A_{(16} - 9F8D_{(16}$

8. In which base b the number $31_{(9}$ is written as $24_{(b}$?

9.   a) Find out all possible definitions of even numbers.

   b) Decide the parity of the sum of two numbers, in terms of the parity of the terms in the addition.

   c) Decide si los siguientes números son pares o impares:

       a) $325 + 32887 + 7368$ b) $3^{20} + 2^{18} + 5^{55} + 727436 + 827469$

10. Two cyclists are on two villages, A and B, at distance 166,5 km. They start moving, to meet in a point in between A and B. They start cycling at noon, the cyclist at A moves at a constat speed of 21 km/h, and the cyclist at B moves at a constant speed of 24 km/h. When do they meet? (You have to solve this problem without algebraic methods, and give the answer in hours, minutes and seconds).

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[1] All problems should be made without using a calculator. In the future, problems meant to be solved with the help of a calculator will be marked with the symbol ©.