# 1REVISIONS LOGIC - PROBLEM SOLVING

**EXERCICE 1 : Conversion**

**Q1.** 8610 🡪 base 7

Explanation :

Result: 152

**Q2.** 5CE16 🡪 base 10

Explanation :

Result : 1486

**EXERCICE 2 : Hexadecimal operation**

**Q1.** Use **2 methods** to do this operation

D45

+ 8A5

+ 1C0

17AA

Method 1 : Method 2 :

**EXERCICE 3 : Logic**

The alphabet is given below to help you:

a b c d e f g h i j k l m n o p q r s t u v w x y z

Find the missing letter in every series below:

**Q1.** c c d \_e\_ e f g g h

**Q2.** f g e h d i c \_j\_

**EXERCICE 4 : Bits, bytes and storage**

**Q1.** I have 230 colors to store. How many bits do I need? How many bytes do I need? **Justify**

**Q2.** If I have 10 bits, how many colors can I store? **Justify**

3bits=8colors

So 10bits=1024colors that I can store.

**Q3.** For the RGB, we use 6 bytes. How many colors can we express? Explain the method but we don’t need the result.

colors that we can express.

1 bytes =8 bits

6 bytes=6\*8=48btis

3bits=8colors

48bits=128colors

**EXERCICE 5 : Encoding problem**

**Q1.**

Rules:

* 4 letters: A, E, O, U
* Each letter is repeated minimum 0 time and maximum 7 times.
* The letters are always in the alphabetic order: A then E then O then U

Examples:

AAAAEEEOOU

EEEUUUUUUU

AAEEOOUU

1. Find an encoding of maximum **12 bits**. Explain the method, explain the size and give examples.
2. Is your encoding lossless or loosely?

**Q2.**

Now, the letters can be in any order

Example:

EEEOOAAAAU

UUEEEOAA

1. Does the encoding you found before work for this new rule?
2. Find a new lossless encoding. What is the minimum size of this encoding? Explain and give example**s**.
3. For this example **EEEEEE**, what is the most little size possible with your encoding?
4. Is this encoding a compression ?