

**Elementary Division Solutions**

**1. Computer Number Systems**

$2018_{16} = 10\ 0000\ 0001\ 1000$  because you need 4 bits for each digit.  
 Grouping by 3 digits gives  $10\ 000\ 000\ 011\ 000 = 20030_8$ .

**1.**  $20030_8$  or 20030**2. Computer Number Systems**

Convert each of them to binary which gives  
 $254_8 = 10101100_2$  which is 4 1's  
 $139_{16} = 100111001_2$  which is 5 1's  
 $44_{10} = 32 + 8 + 4 = 101100_2$  which is 3 1's

**2.** 44 or  $44_{10}$ **3. Computer Number Systems**

$2AF4_{16} + 246_{16} = 2D3A_{16}$  because  $4 + 6 = 10$  (A);  $F + 4 = 19$  (3, carry 1);  $A + 2 + 1 = 13$  (D);  $2 + 0 = 2$   
 $D3A_{16} - ABE_{16} = 27C_{16}$  because E is greater than A so borrow 1 from the 3 (which is 16). Then  $16 + A$  (10)  $- E$  (14) = 12 (C).  
 B is greater than 2 so borrow 1 from the D which becomes C.  
 Then  $16 + 2 - B$  (11) = 7.  
 Finally,  $C$  (12)  $- A$  (10) = 2 to get 227C.

**3.** 227C or  $227C_{16}$ **4. Computer Number Systems**

Counting in binary starting with 1 yields 1, 10, 11, 100, 101, 110, 111, 1000, 1001, 1010, 1011, 1100, 1101, 1110, 1111.  
 Only 10, 1001, 1010, and 1100 satisfy the condition.

**4.** 4**5. Computer Number Systems**

Each color for an RGB code uses 2 hexadecimal digits. The BLUE component in RGB is the last 2 digits. Converting  $3D_{16}$  to base 10 =  $3 * 16 + 13 = 48 + 13 = 61$ .

**5.**  $61_{10}$  or 61