

## Testul 3

1. a)  $20 : 10$  (A)
- b)  $7 : 5$  (F)
- c)  $13 | 39$  (A)
- d)  $8 : 4$  (A)
- e)  $142 : 2$  (A)
- f)  $5 : 50$  (F)

2.  $\Delta_{18} = \{1, 2, 3, 6, 9, 18\}$

18 are 6 divizori

$$S = \underline{1} + \underline{2} + 3 + 6 + \underline{9} + \underline{18} = 10 + 20 + 9 = 39$$

$$39 : 3, \text{ deoarece } 3 + 9 = 12 : 3$$

3.  $\overline{7xy} = \text{par}$   $\Rightarrow y = \{0, 2, 4, 6, 8\} \Rightarrow 5$  valori ale lui  $y$   
 $x = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\} \Rightarrow 10$  valori ale lui  $x$

$5 \times 10 = 50$  de numere (pentru că, pentru fiecare valoare a lui  $y$  avem 10 numere).

4.  $a, b, c = ?$ ,  $a, b, c \neq 0$

$$a + 2b + 3c = 58, \quad a = \text{nb. prim}, \quad c : 10$$

$$c : 10 \Rightarrow c = \{0, 10, 20, \dots\} \Rightarrow c = \{10, 20, 30, \dots\} \Rightarrow \boxed{c = 10} \text{ (deoarece celelalte valori sunt prea mari)}$$

Pentru  $c = 10$

$$a + 2b + 30 = 58 \Rightarrow a + 2b = 28 \Rightarrow a : 2 \Rightarrow \boxed{a = 2}$$

$$2 + 2 \cdot b = 28 \Rightarrow 2b = 26 \Rightarrow b = 26 : 2 \Rightarrow b = 13$$

Pentru  $c=20$

$$a+2b+60=58 \Rightarrow a+2b=58-60 \text{ (nu se poate)}$$

Deci, numerele naturale  $a, b, c$  diferite de zero sunt:

$$a=2, b=13 \text{ și } c=10.$$

5.  $\overline{abba} = ?$

$$a) \overline{abba} : 2 \Rightarrow a = \{0, 2, 4, 6, 8\}$$

$$a+b=13$$

$$a=0 \Rightarrow b=13-0 \Rightarrow b=13 \text{ (imposibil)}$$

$$a=2 \Rightarrow b=13-2 \Rightarrow b=11 \text{ (imposibil)}$$

$$a=4 \Rightarrow b=13-4 \Rightarrow b=9$$

$$a=6 \Rightarrow b=13-6 \Rightarrow b=7$$

$$a=8 \Rightarrow b=13-8 \Rightarrow b=5$$

$$\overline{abba} = \{4994, 6996, 8998\}$$

$$b) \overline{abba} : 5 \Rightarrow a = \{0, 5\}$$

$$a+b=12$$

$$a=0 \Rightarrow b=12-0 \Rightarrow b=12 \text{ imposibil}$$

$$a=5 \Rightarrow b=12-5 \Rightarrow b=7$$

$$\overline{abba} = 5775$$

$$6. 25^{2011} = 25 \cdot 25^{2010} = (4^2+3^2) \cdot (5^2)^{2010} = (4^2+3^2) \cdot (5^{2010})^2 =$$

$$25 = 16+9 = 4^2+3^2$$

$$= 4^2 \cdot (5^{2010})^2 + 3^2 \cdot (5^{2010})^2 = (4 \cdot 5^{2010})^2 + (3 \cdot 5^{2010})^2$$