6 noiembrie 2010

CLASA a IV-a

Here are some suggestions to help you do your best:

- Read carefully each question and think about the answer before choosing your response.

RULES

- Part I has four multiple choice exercices.
- Part II must be solved into English
- Part III must be translated into English , and then solved in English as well.

PART I.

1. Four people can sit at a square table. For the school party the students put together 7 square tables in order to make one long rectangular table. How many people can sit at this long table now?
   A 14
   B 16
   C 21
   D 24

2. In the pattern below, which number belongs in the box?
   0,5,4,9,8,13,12,17,16, □
   A 15
   B 19
   C 20
   D 21

3. Dan wakes up at 7:30 A.M. on Saturday. He leaves for football practice at 10:00 A.M. How long is Dan awake on Saturday before he leaves for football practice?
   A 1 hour 30 minutes
   B 2 hours
   C 2 hours 30 minutes
   D 3 hours

4. Mr. Paul buys 102 bottles of water for the football team. The water comes in boxes of 6 bottles of water in each box. Which expression can be used to find the number of **boxes** of water Mr. Paul buys?
   A 6 x102=□
   B 102:6= □
   C 6+ □=102
   D 102- □=6

PART II.

Below is an equality that isn't correct yet. By adding a number of plus signs and minus signs between the digits on the left side (without changes the order of the digits), the equality can be made correct.

123456789 = 100 .

How many different ways are there to make the equation correct**?**

PART III.

Ion, Petre şi George au împreună 3 creioane colorate : unul roşu, unul galben şi altul albastru. Fiecare are un creion. Ion nu are creionul roşu şi nici pe cel albastru, iar George nu are creionul roşu .

Ce culoare are creionul lui Ion?

Ce culoare are creionul lui Petre?

Ce culoare are creionul lui George?

CLASA a V-a

Here are some suggestions to help you do your best:

- Read carefully each question and think about the answer before choosing your response.

RULES

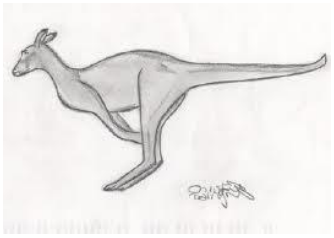
- Part I has four multiple choice exercices.
- Part II must be solved into English
- Part III must be translated into English , and then solved in English as well.

PART I.

1. What is the remainder when dividing the sum S below by 2010?
   S=2007+2008+2009+2010+2011+2012
   A 2008
   B 2009
   C 2007
   D 0

2. In some month three Tuesdays came out to be on even days of the month. Which day of the week will be the 21st day of that month ?
   A Sunday
   B Saturday
   C Friday
   D Thursday

3. When Jumpy jumps on his left foot, his jump is 3m long and when he jumps on his right foot, his jump is 4m long. If Jumpy jumps using his both feet, then his jumps are 7m long. What is the smallest number of jumps that Jumpy must make to travel exactly 1000m?



   A 140
   B 144
   C 175
   D 176

4. The average age of a grandmother, a grandfather and 7 grandchildren is 28 years. The average age of 7 grandchildren is 15 years. How old is grandfather, if he is 3 years older than grandmother?
   A 72
   B 73
   C 74
   D 75

PART II.

Postman Pat delivers the mail in the small village **Tenhouses**.
This village, as you already suspected, has only one street with exactly ten houses, numbered from 1 up to and including 10.

In a certain week, Pat did not deliver any mail at two houses in the village; at the other houses he delivered mail three times each. Each working day he delivered mail at exactly four houses.

The sums of the house numbers where he delivered mail were:
on Monday: 18
on Tuesday: 12
on Wednesday: 23
on Thursday: 19
on Friday: 32
op Saturday: 25
on Sunday: he never works .

Which two houses didn't get any mail that week**?**

PART III.

Într-o cutie sunt creioane negre, albasrte şi roşii. Se ştie ca 33 de creioane nu sunt roşii, 38 nu sunt negre şi 35 nu sunt albastre .

Cîte creioane de fiecare culoare sunt în cutie?

CLASA a VI-a

Here are some suggestions to help you do your best:

- Read carefully each question and think about the answer before choosing your response.

RULES

- Part I has four multiple choice exercices.
- Part II must be solved into English
- Part III must be translated into English , and then solved in English as well.

PART I.

1. A bottle of a volume of – liter is – filled with juice. How much juice will be left in the bottle after pouring out – of a liter?

   A — liter

   B — liter

   C –liter

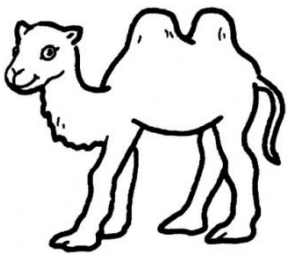
   D The bottle will be empty

2. John put magazines on a bookshelf. They have either 48 or 52 pages. Which of the following numbers cannot be the total number of pages af all magazines on the bookshelf?

   A 500
   B 524
   C 568
   D 620

3. Margaret, the camel, started a ride in the desert at 8:15 on Monday morning . She travelled for 98 hours and 56 minutes. When did Margaret end the ride?

   A On Thursday at 5:41 A.M.
   B On Thursday at 11:11 A.M.
   C On Friday at 5:41 A.M.
   D On Friday at 11:11 A.M.



4. We have two numbers X and Y, each of them has three digits. If the digits of X is 1, 2, 3 and the digits of Y is 3, 4, 5, knowing that $X+Y$ is an even number and 2 is the second digit for X, which is the last digit for the product $X\,Y$?

   A It cannot be obtained
   B 2
   C 5
   D 4

PART II.

Greengrocer C. Carrot wants to expose his oranges neatly for sale. Doing this he discovers that one orange is left over when he places them in groups of three. The same happens if he tries to place them in groups of 5, 7, or 9 oranges. Only when he makes groups of 11 oranges, it fits exactly.

How many oranges does the greengrocer have at least**?**

PART III.

Mihai este de două ori mai mare decât sora sa Alina. Alina are un coş cu cireşe şi Mihai unul cu alune. Ea are de trei ori mai multe cireşe decât numărul alunelor lui Mihai. Dacă înmulţim numărul care reprezintă vârsta lui Mihai cu numărul cireşelor obţinem 510.

Ce vârstă are Alina şi câte alune are Mihai?

6 noiembrie 2010

CLASA a VII-a

Here are some suggestions to help you do your best:

- Read carefully each question and think about the answer before choosing your response.

RULES

- Part I has four multiple choice exercices.
- Part II must be solved into English
- Part III must be translated into English , and then solved in English as well.

PART I.

1. In the isosceles triangle ABC, m(C)=22^0. Then which is the value of m(B)?
   A 68^0
   B 78^0
   C 79^0
   D 83^0

2. Alice shares cookies with some collegues. If she gives cookies for 6 collegues, or for 3 collegues, of for 4 collegues she remains with 1 cookie each time. How many cookies does she have?
   A 9
   B 12
   C 13
   D 25

3. The suplementary angles of A, B, C the angles in are directly proportional with 3, 4 respective 5. Then is...
   A Isosceles triangle
   B Equilateral triangle
   C Rectangular triangle
   D Obtuse triangle

4. A school bus travels from Veldhoven to Roosendaal. There are 4 children in the bus. And each child has 4 backpacks with him. There are 4 dogs sitting in each backpack. And every dog has 4 puppies with her. All these dogs have 4 legs, with 4 toes at each leg. What is the total number of toes in the bus**?**

   A 6400
   B 1225
   C 5170
   D 5250

PART II.

Charles walks over a railway-bridge. At the moment that he is just ten meters away from the middle of the bridge, he hears a train coming from behind. At that moment, the train, which travels at a speed of 90 km/h, is exactly as far away from the bridge as the bridge measures in length. Without hesitation, Charles rushes straight towards the train to get off the bridge. In this way, he misses the train by just four meters! If Charles would, however, have rushed exactly as fast in the other direction, the train would have hit him eight meters before the end of the bridge.

What is the length of the railway-bridge**?**

PART III.

La un concurs de matematică elevii au primit o problemă de algebră şi una de geometrie. Se ştie ca 25 de elevi au rezolvat corect ambele probleme, 72% au rezolvat corect problema de algebră, iar 48% au rezolvat corect problema de geometrie.

Să se afle :

a) câţi elevi sunt în clasă;
b) câţi elevi au rezolvat corect problema de algebră?
c) câţi elevi au rezolvat corect problema de geometrie?

6 noiembrie 2010

CLASA a VIII-a

Here are some suggestions to help you do your best:

- Read carefully each question and think about the answer before choosing your response.

RULES

- Part I has four multiple choice exercices.
- Part II must be solved into English
- Part III must be translated into English , and then solved in English as well.

PART I.

1. A rectangular room measures 7.5 meters in length and 3 meters in width. The room has a height of 3 meters. A spider sits 25 centimeters down from the ceiling at the middle of one of the short walls. A sleeping fly sits 25 centimeters up from the floor at the middle of the opposite wall. The spider wants to walk (i.e., move along the walls, floor, and ceiling only) to the fly to catch it.
How long is the shortest path between the spider and the fly?

A 12,5 m
B 10 m
C 21 m
D 100 m

2. On a nice summer day, two tourists visit the Dutch city of Gouda. During their tour through the center they spot a cosy terrace. They decide to have a drink and, as an appetizer, a portion of hot "bitterballs" (bitterballs are a Dutch delicacy, similar to croquettes). The waiter tells them that the bitterballs can be served in portions of 6, 9, or 20.
What is the largest number of bitterballs that *cannot* be ordered in these portions?

A 49
B 37
C 21
D 43

3. On a sunny morning, a greengrocer places 200 kilograms of cucumbers in cases in front of his shop. At that moment, the cucumbers are 99% water. In the afternoon, it turns out that it is the hottest day of the year, and as a result, the cucumbers dry out a little bit. At the end of the day, the greengrocer has not sold a single cucumber, and the cucumbers are only 98% water.
How many kilograms of cucumbers has the greengrocer left at the end of the day?

A 198 kilograms
B 100 kilograms
C 180 kilograms
D 120 kilograms

4. What is the product of the expression below?

A
B
C

D

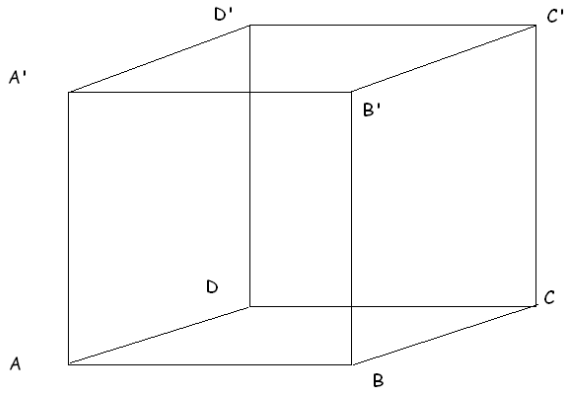
PART II.

William lives in a street with house-numbers 8 up to 100. Lisa wants to know at which number William lives.
She asks him: "Is your number larger than 50?"
William answers, but lies.
Upon this, Lisa asks: "Is your number a multiple of 4?"
William answers, but lies again.
Then Lisa asks: "Is your number a square?"
William answers truthfully.
Upon this, Lisa says: "I know your number if you tell me whether the first digit is a 3."
William answers, but now we don't know whether he lies or speaks the truth.
Thereupon, Lisa says at which number she thinks William lives, but (of course) she is wrong.
What is William's real house-number**?**

PART III.

În figura alăturată este reprezentată schematic jucăria unui copil de forma unui cub ABCDA'B'C'D'. Pe feţele ABCD, BCC'B', A'B'C'D' respectiv ADD'A' sunt desenate triunghiurile echilaterale ABM, B'C'N, C'D'P şi ADQ , ce sunt colorate în roşu, albastru, galben şi verde.

a) Arătaţi că punctele M,N,P,Q sunt coplanare
b) Arătaţi că MNPQ este dreptunghi



PUNCTAJ:

Sub.I				Sub.II						total	Sub.II			total
1	2	3	4							mate				engl
0,50	0,50	0,50	0,50	0,25	0,25	0,25	0,25	0,50	0,50	4p	0,25	0,25	0,50	1p

Sub.III						total	Sub.III						total
						mate							engl
0,25	0,25	0,25	0,25	0,50	0,50	2p	0,25	0,25	0,25	0,25	0,50	0,50	2p

BAREM DE CORECTARE
Clasa a IV-a

I.

1	2	3	4
B	D	C	B

II. There are 11 different ways:
123+45-67+8-9=100
123+4-5+67-89=100
123-45-67+89=100
123-4-5-6-7+8-9=100
12+3+4+5-6-7+89=100
12+3-4+5+67+8+9=100
12-3-4+5-6+7+89=100
1+23-4+56+7+8+9=100
1+23-4+5+6+78-9=100
1+2+34-5+67-8+9=100
1+2+3-4+5+6+78+9=100
Remark: if it is not only allowed to put plus signs and minus signs *between* the digits, but also *in front of* the first 1, then there is a twelfth possibility: -1+2-3+4+5+6+78+9=100.

III.
John, Peter and George have got three coloured pencils/crayons together: a red one, a yellow one and a blue one. Each child has got a pencil. John hasn't got the red pencil or the blue one and George hasn't got the red pencil.

What colour is John's pencil?
What colour is Peter's pencil?
What colour is George's pencil?
Soluţie: Ion nu primeste R si nici A, deci Ion primeste G. George nu primeste R si G, deci George primeste A. Petre primeste R.

BAREM DE CORECTARE
Clasa a V-a

I.

1	2	3	4
C	A	B	D

II. If postman Pat would have delivered mail three times at each house, then the total sum of the house numbers per day would be (1+2+3+4+5+6+7+8+9+10)×3=165. Now that sum is 18+12+23+19+32+25=129. The difference is 165-129=36; divided by 3 this is 12. The sum of the house numbers where no mail was delivered is therefore 12. The following combinations are possible:
2+10
3+9
4+8
5+7

Each day at four houses the mail was delivered. On Tuesday the sum was 12. 12 can only be made from four house numbers in 2 ways:
1+2+3+6
1+2+4+5
The same holds for Friday with the sum of 32:
5+8+9+10
6+7+9+10
From this we can conclude that the house numbers 1, 2, 9 and 10 for sure have received mail, which means that the combinations 2+10 and 3+9 are not possible. Also the combination 5+7 is not possible, because mail was delivered either at house 5 *or* at house 7. Thus the only remaining solution is: houses 4 and 8.
N.B.: there are various possibilities for the actual post delivery of the whole week. For example:

Monday	houses 1, 3, 5 and 9
Tuesday	houses 1, 2, 3 and 6
Wednesday	houses 1, 5, 7 and 10
Thursday	houses 2, 3, 5 and 9
Friday	houses 6, 7, 9 and 10
Saturday	houses 2, 6, 7 and 10

III.
In a box there are black, blue and red coloured pencils. It is known/We know that 33 crayons are not red, 38 are not black and 35 of them are not blue.

How many crayons/coloured pencils of each colour are there in the box?

Soluţie: Deci avem 33 creioane negre si albe, 38 creioane albe si rosii , respectiv 35 creioane negre si rosii. Daca le adunam avem de doua ori numarul total de creioane =106, deci in total sunt 53 de creioane.
Atunci avem 20 rosii, 15 negre, respectiv 18 albe.

BAREM DE CORECTARE
Clasa a VI-a

I.

1	2	3	4
A	C	D	C

II. Assume the number of oranges is A. Then A-1 is divisible by 3, 5, 7 and 9. So, A-1 is a multiple of 5×7×9 = 315 (note: 9 is also a multiple of 3, so 3 must not be included!). We are looking for a value of N for which holds that 315×N + 1 is divisible by 11. After some trying it turns out that the smallest N for which this holds is N = 3. This means that the greengrocer has at least 946 oranges.
Note that for N = 14, 25, 36, etc. (so each time 11 more) it also holds that 315×N + 1 is divisible by 11.
III. Michael is twice older than his sister Alina. Alina has got a basket with cherries and Michael has got one with peanuts. She has got three times more cherries than Michael's peanuts. If we multiply the number which shows Michael's age by the number of cherries he has got we get 510.

How old is Alina and how many peanuts has Michael got?

SOLUTIE: Se descompune numarul 510=2.3.5.17.
Deoarece varsta lui Mihai este un numar par, iar nr.cireselor este multiplu de 3, vârsta băiatului nu poate fi decât 2.5=10 ani, iar Alina are 5 ani. Numărul cireşelor este 3.17=51, iar cel al alunelor este 17.

BAREM DE CORECTARE
Clasa a VII-a

I.

1	2	3	4
C	C(D)	C	C

II. Let the length of the bridge be x meters.

Running towards the train, Charles covers $0.5x$-10 meters in the time that the train travels x-4 meters. Running away from the train, Charles covers $0.5x$+2 meters in the time that the train travels $2x$-8 meters.

Because their speeds are constant, the following holds:
$(0.5x\text{-}10) / (x\text{-}4) = (0.5x+2) / (2x\text{-}8)$
we find that x=44, so the railway-bridge has a length of 44 meters

III.

At a mathematics contest, students were given an algebra problem and a geometry one. It is known that 25 students solved both problems correctly, 72% solved only the algebra problem correctly whereas 48% solved the geometry one.

Find out:

a) How many students there are in the class;
b) How many students solved the algebra problem correctly?
c) How many students solved the geometry problem correctly?

Solutie: 72% au rezolvat corect algebra inseamna ca 28% au rezolvat corect numai geometrie. Deci 48%-28%=20% au rezolvat corect si algebra si geometrie. Total 100% va fi 125.
a)Numarul total de elevi este 125.
b)90 de elevi au rezolvat geometrie
c) 90-25=65 au rezolvat numai geometrie
125-65=60 au rezolvat algebra.

BAREM DE CORECTARE
Clasa a VIII-a

I.

1	2	3	4
B	D	B	B

II. Note that Lisa does not know that William sometimes lies. Lisa reasons as if William speaks the truth. Because Lisa says after her third question, that she knows his number if he tells her whether the first digit is a 3, we can conclude that after her first three questions, Lisa still needs to choose between two numbers, one of which starts with a 3. A number that starts with a 3 must, in this case, be smaller than 50, so William's (lied) answer to Lisa's first question was "No". Now there are four possibilities:

	number is a square	nummer is not a square
number is a multiple of 4	**16, 36**	8, 12, 20, and more
number is not a multiple of 4	9, 25, 49	10, 11, 13, and more

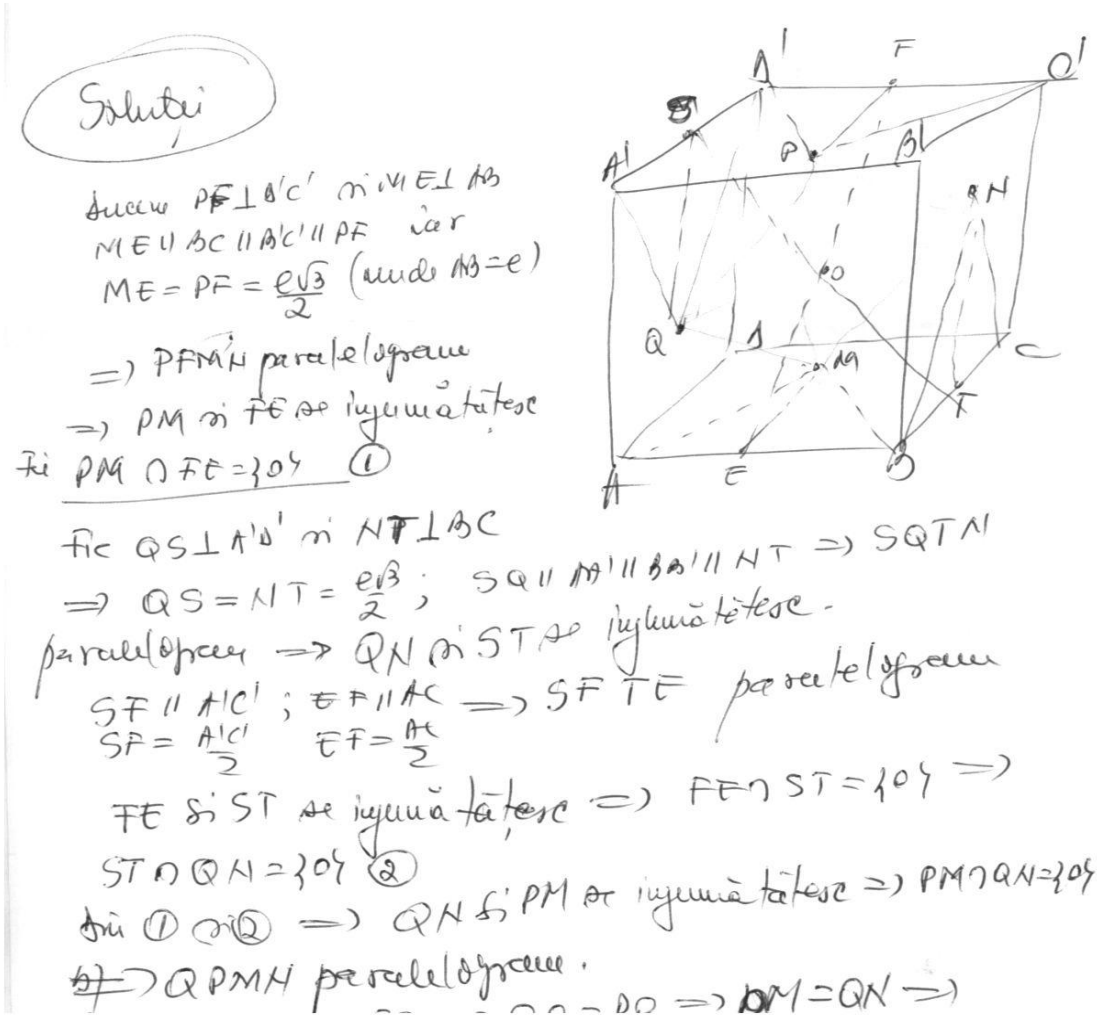
Only the combination "number is a multiple of 4" and "number is a square" results in two numbers, of which one starts with a 3. William's (lied) answer to Lisa's second question therefore was "Yes", and William's (true) answer to Lisa's third question was also "Yes".

In reality, William's number is larger than 50, not a multiple of 4, and a square. Of the squares larger than 50 and at most 100 (these are 64, 81, and 100), this only holds for 81.

Conclusion: William's real house-number is 81.

III. The picture given shows the design of a toy in the form of a cube ABCDA'B'C'D'. On sides ABCD, BCC'B', A'B'C'D' and ADD'A' respectively there are drawings of four equilateral triangles ABM, B'C'N, C'D'P and ADQ , which are coloured in red, blue, yellow and green.

a) Demonstrate that points M,N,P,Q are coplanar;
b) Demonstrate that the figure MNPQ is a rectangle.



Deci MNPQ este paralelogram.