THE G C SCHOOL OF CAREERS

MATHEMATICS SCHOOL

MATHEMATICS APTITUDE TEST

TIME: 1 HOUR 30 MINUTES

- This paper consists of **two parts**.
- The first part consists of **15 multiple choice questions**.
- The second part consists of **15 problems**.
- **Calculators** are **NOT** allowed for this examination.

Good Luck!

PART A – MULTIPLE CHOICE QUESTIONS

- **In this part there are 15 questions.**
- **Answer ALL questions.**
- **In each question there is ONLY ONE correct answer.**
- **CIRCLE the correct answer.**
- **Each question carries 2 marks.**

---

1. Michalis has spent $\frac{1}{3}$ of his money. If he spends another €90 he will spend half of his money. What was the total amount of money before Michalis started spending?

A	B	C	D	E
270	540	600	660	720

2. Work out the value of $\dfrac{2x^3+3x^2-4}{2x^2-5}$ when χ=2.

A	B	C	D	E
$\frac{20}{3}$	12	3	8	21

3. If x is an odd number and y is an even number, which of the following is NOT divisible by 2?

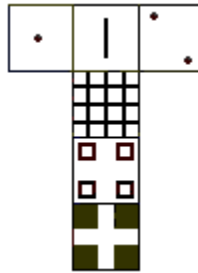| A	B	C	D	E
$x + y - 1$	$xy + x$	$xy - y$	$2y - 4$	$2y + 4$

4. The table below shows what Mary, Andreas and Costas bought from a kiosk and how much they paid.

	Chocolate	Sandwich	Orange juice	Total
Mary	0	2	2	€10
Andreas	1	1	1	€9
Costas	2	2	0	€13

How much does the sandwich cost?

A	B	C	D	E
€1	€2	€2.5	€3	€3.5

5. Which of the cubes is the same as the unfolded cube below?

A	B	C	D

6. The day before the day before yesterday is three days after Saturday. What day is it today?

A	B	C	D	E
Monday	Tuesday	Wednesday	Thursday	Friday

7. How many four sided shapes does this diagram have?
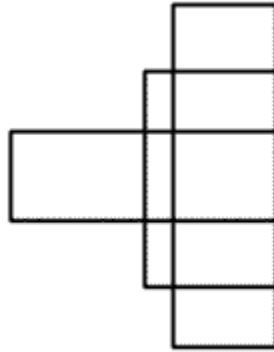
A	B	C	D	E
5-10	11-15	16-20	21-25	26-30

8. How many minutes does Stefanos need to cover a distance if he travels at a speed of 20km/hr, if Eleni who travels at a speed of 60km/hr needs 30 minutes to cover the same distance?

A	B	C	D	E
10	30	60	90	180

9. Which of the numbers below <u>cannot</u> be expressed as the sum of three consecutive integers?

A	B	C	D	E
18	24	28	33	36

10. An integer is greater than 50 and less than 59. Between the two digits we put a zero so that the number now has 3-digits. How much bigger is the new number compared to the original number?

A	B	C	D	E
9	90	500	450	100

11. Which of the following numbers is divisible by 2, 3 and 5?

A	B	C	D	E
1520	69315	4440	1330	2350

12. What is the percentage of numbers from 1 to 70 that have 1 or 9 in the unit's digit?

A	B	C	D	E
1	5	14	20	21

13. Which number should replace the letter **X**?

17	8	5	5
13	7	5	4
6	12	6	3
10	6	4	**X**

A	B	C	D	E
4	5	6	7	8

14. What is the maximum number of points of intersection between a square and a circle?

A	B	C	D	E
less than 4	4	6	8	more than 8

15. Alexia has tossed a fair coin 100 times. It has landed heads up 51 times and tails up 49 times. What is the probability that it will land heads up the next time Alexia tosses it?

A	B	C	D	E
$\dfrac{1}{100}$	$\dfrac{1}{10}$	$\dfrac{49}{100}$	$\dfrac{1}{2}$	$\dfrac{51}{100}$

END OF PART A

Now you can continue with Part B

PART B – PROBLEMS

- **In this part there are 15 questions.**
- **Answer ALL questions in the space provided for each question.**
- **Show all your workings and write your answers clearly.**

---

1. Mr George needs 6 liters of paint in order to paint a square surface. In order to paint another square surface whose side is three times the side of the previous surface, how many liters of paint does he need?

[3 marks]

2. I am thinking of a number. If I multiply it by 5, add 2, subtract 10 and then multiply by 2 the result will be 44. What number am I thinking of?

[3 marks]

3. In the figure that follows, there are a shaded rectangle and a shaded equilateral triangle. ΑΒΓ is a straight line. Find the size of angle θ. Give reasons for each step of your workings.
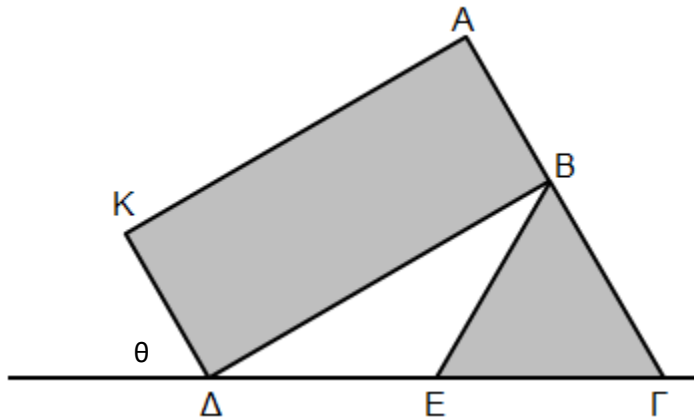

Diagram NOT accurately drawn

[4 marks]

4. Enter a digit from 1 through 6 in each cell, in such a way that:
- Each horizontal row contains each digit exactly once
- Each vertical column contains each digit exactly once
- Each subgrid (or region) contains each digit exactly once

Several digits have already been entered; these may not be changed.

5		4	6	3	2
3		2		5	
4		3	2	1	6
	2	6	3		
	3	1			
2	4		1		3

[3 marks]

5. Antonia together with her brothers and sister are currently in a primary school. She has one sister, Eleni, and two brothers, Marios and Panayiotis. Find the class grade for each of the children if:

- Eleni is the older child
- Panayiotis is the youngest of the boys
- Boys attend consecutive classes (e.g B' and Γ')
- None of the boys attend in a consecutive class with a girl
- No child is in grade B

Antonia: ………………. Eleni: …………….. Marios: ……………… Panayiotis: …………………..

[4 marks]

6. A square is divided in two equal rectangles. The perimeter of each rectangle is 24 cm. Find the area of the square.

[4 marks]

7.

M	A	A	13
A	T	H	15
T	T	M	17
M	H	H	3

Find the sum of M + A + T + H

[5 marks]

8. Can you find the 4-digit number?

   The fourth digit is 3 times the second digit.
   The third digit is an even number.
   The first digit is twice the third digit but smaller than the fourth digit.
   The 4-digit number is divisible by 9.

<div align="right">[4 marks]</div>

9. In Class A, the average score in a test for the girls is 80% and for the boys 70%. If the number of girls is twice the number of boys, find the average score of the whole class.
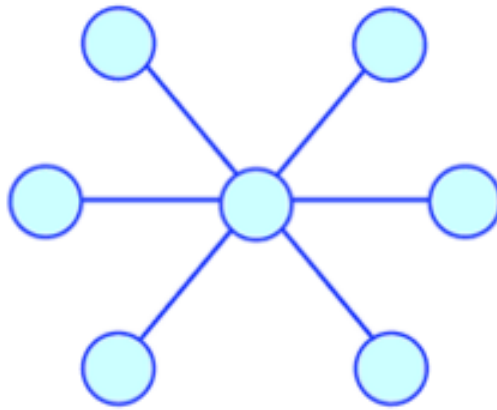
<div align="right">[4 marks]</div>

10. When 391 is divided by a two digit number, the remainder is 6. How many such two digit numbers exist?

[5 marks]

11. Mary was cooking a dish and as per recipe she needed one cup of milk. However, she only had a three cup measuring container and a five cup measuring container. How will she measure just one cup?

[3 marks]

12. Put the numbers 1,2,3,4,5,6 and 7 in the circles so that each straight line of three numbers adds up to the same total.

[3 marks]

13. Look at the table below. The numbers next to each row or under each column show the sum of the symbols on each row and column. Write the number that should replace the question mark.

★	★	★	★	24
★	☺	☺	★	20
☺	△	♡	★	17
△	♡	♡	☺	13
21	?	14	22	

[4 marks]

14. Using the digits from 1 to 9 only **once** find three 3-digit numbers so that the second number is two times the first number and the third number is three times the first number. (there are only 3 possible solutions).

[3 marks]

15. A frog fell on the bottom of a well. The well is 30 feet deep. During daytime, the frog jumps 5 feet while at night when the frog sleeps he slips back 4 feet.
In how many days will the frog come out of the well?

[3 marks]

END OF PART B