



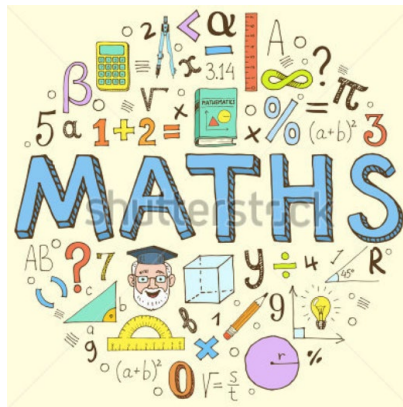
Surname \_\_\_\_\_

Name \_\_\_\_\_

Father's name \_\_\_\_\_

# THE G C SCHOOL OF CAREERS

## MATHEMATICS SCHOOL



## MATHEMATICS APTITUDE TEST

**TIME: 1 HOUR 30 MINUTES**

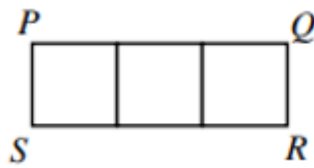
- The paper consists of **two parts**.
- The first part consists of **15 multiple choice questions**.
- The second part consists of **15 problems**.
- **Calculators** are **NOT** allowed for this examination.

**Good Luck!**

## **PART A – MULTIPLE CHOICE QUESTIONS**

- **This part consists of 15 questions.**
- **Answer ALL questions in the space provided.**
- **There is only one correct answer to each question.**
- **Circle the correct answer.**
- **Each question is 3 marks.**

1. In the diagram that follows, the rectangle PQRS is divided into three identical squares. If the perimeter of PQRS is 120cm, what is the area of PQRS in  $\text{cm}^2$ ?



- (a) 225                      (b) 675                      (c) 360                      (d) 432                      (e) 144

2. The age of Maria is the same as the age that Helen had 3 years ago. If the sum of their ages is 43, how old will Helen be in two years?

- (a) 20                      (b) 22                      (c) 23                      (d) 25                      (e) 41

3. Which of the following gives the highest product?

- (a)  $888.8 \times 8$
- (b)  $88.88 \times 88$
- (c)  $8.888 \times 888$
- (d)  $0.8888 \times 8888$
- (e) all the same

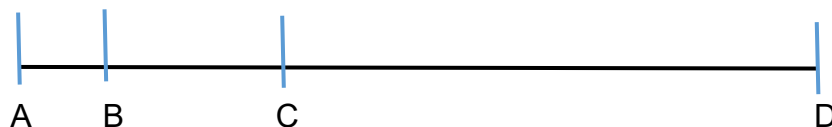
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4. In a seminar, 12 people shook hands with each other. How many handshakes did they exchange?

- (a) 11                      (b) 66                      (c) 132                      (d) 144                      (e) 145

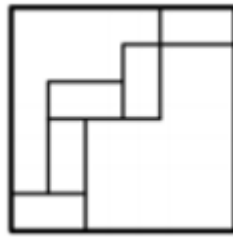
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5. In the following figure, the ratio of the length of the line segment AB to the length of the line segment BC is 2:5. The ratio of the length of the line segment BC to the length of CD is 3:7. Find the ratio of the length of AC to CD.



- (a) 2:7                      (b) 3:4                      (c) 2:3                      (d) 3:5                      (e) 7:10
-

6. As it can be seen in the following diagram, five identical rectangles are placed inside a square of side 24 cm. What is the area of one of the rectangles in  $\text{cm}^2$ ?

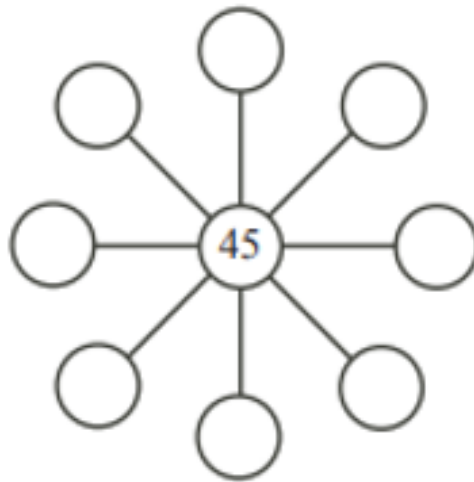


- (a) 12                      (b) 16                      (c) 18                      (d) 24                      (e) 32

- 
7. Kyriacos is in a theatre where all rows have the same number of seats. He notices that in front of him there are 12 rows, behind him there are 8 rows, 6 seats on his left and 8 seats on his right. Can you find the total number of seats in the theatre?

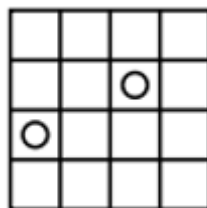
- (a) 280                      (b) 300                      (c) 308                      (d) 315                      (e) 325
-

8. In the following figure, write 8 different integer numbers in the circles so that the product of any three numbers in a straight line is 3240. Which is the highest possible sum of these eight numbers around 45?



- (a) 139                      (b) 211                      (c) 156                      (d) 159                      (e) 160

9. How many rectangles (including squares), that include the two circles, can you find in the following diagram?



- (a) 2                      (b) 4                      (c) 6                      (d) 8                      (e) 10

10. How many of the first 200 positive integer numbers are not multiples of 6 or 15?

- (a) 154      (b) 156      (c) 160      (d) 164      (e) 166
- 

11. In how many different ways can Andreas, Ben, Chris, Demos and Eleni stand in a straight line, if Ben needs to always stand in the middle and Eleni at the end?

- (a) 6      (b) 12      (c) 24      (d) 48      (e) 120
- 

12. A box contains 14 coloured balls (red, blue and green). The red balls are double the number of the green ones, and the blue balls are half in number than the green ones. How many green balls are there?

- (a) 2      (b) 4      (c) 6      (d) 8      (e) 10
-

13. How many triangles with perimeter 9 cm can be drawn if the lengths of the sides are integer numbers?

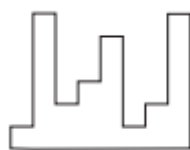
- (a) 2      (b) 3      (c) 5      (d) 7      (e) none of the above

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14. How many three digit numbers exist with their middle digit equal to the average of the other two numbers?

- (a) 12      (b) 25      (c) 35      (d) 40      (e) 45
-

15. Which of the following pieces, when fitted to the above piece, will form a perfect square?



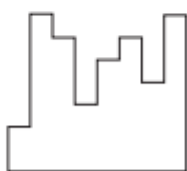
A



B



C



D



E

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**END OF PART A**

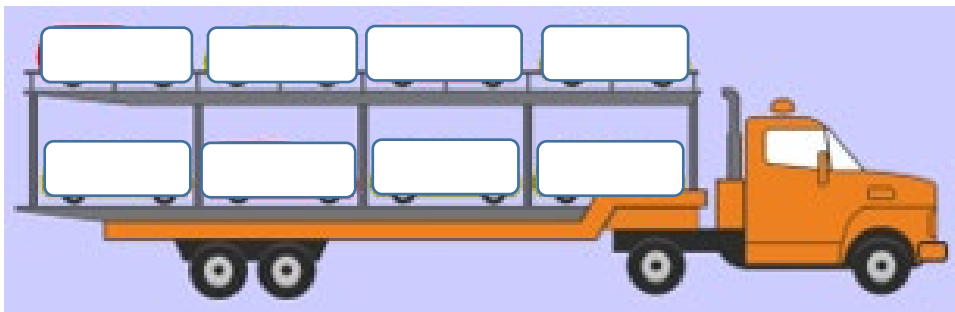
YOU CAN CONTINUE WITH **PART B**

## **PART B – PROBLEMS**

- Answer ALL questions.
- Show clearly your workings.
- If you have difficulties in any question, put a star next to the question number and continue with the next one. If you have time at the end, go back and try again.

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1. A new **red** car is manufactured by a firm every 7 minutes. A new **green** car is manufactured by another firm every 5 minutes. Both firms start work at the same time.

A worker drives the cars as they arrive from the firms and parks them on a big truck. If the cars are put on the top floor first, write **R** for every red car and **G** for every green car to show how the cars will be put on the truck.



**[Total 3 marks]**

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2. If in a drawer there are 3 pairs of black socks, 4 pairs of brown socks, 2 pairs of blue socks and 1 pair of white socks:

(a) What is the least number of socks someone should randomly take from the drawer in order to be certain that he got at least two socks of the same colour?

[2]

(b) What is the least number of socks someone should randomly take from the drawer in order to be certain that he got at least one sock from each colour?

[2]

**[Total 4 marks]**

- 
3. A couple split the money they saved between them and their two children.

The eldest child got the  $\frac{2}{5}$  of the money while the younger one received the 70% of the money that the eldest child got. The parents kept €80.

(a) How much money did they save?

[3]

(b) How much did each child receive?

[2]

**[Total 5 marks]**

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4. In a library there are 35 books on Greek, Geography and Mathematics. The Mathematics books are ten times the number of the Greek books. The Greek books are less than the Geography books and the Geography books are less than the Mathematics books. How many Geography books are there in the library?

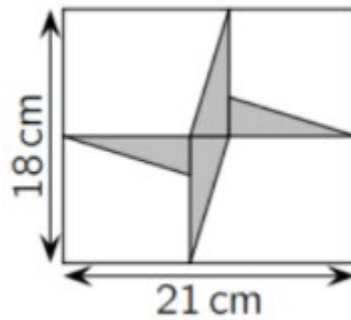
**[Total 4 marks]**

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5. Four men and five women get paid for a particular job a total of €1100 altogether. If men the productivity of 6 men equals the productivity of 9 women, how much will each man and each woman get?

**[Total 4 marks]**

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6. Four identical right angled triangles are placed inside a rectangle, as shown in the shape below. Given that the base of each triangle is 3 cm, find the area of the shaded region.



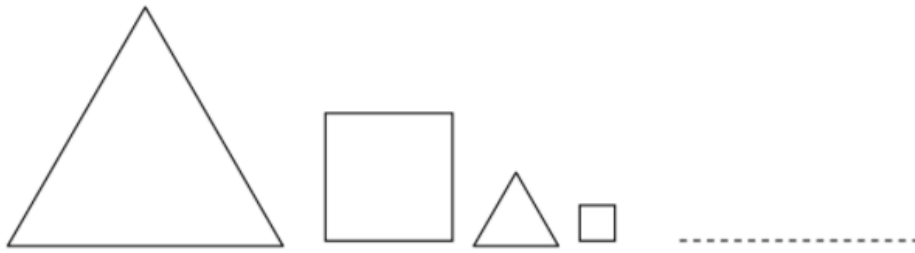
**[Total 3 marks]**

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7. In a supermarket, a basket of apples and a basket of bananas weigh 12 kg (altogether). A basket of bananas and a basket of peaches weigh 18 kg (altogether) and, a basket of apples and a basket of peaches weigh 10 kg (altogether). Find the weight of each basket separately. Show your workings.

**[Total 3 marks]**

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8. In a series of shapes there are equilateral triangles and squares, as shown below.



The side of each shape is equal to half of the side of the previous shape. If the perimeter of the first shape is 3072 cm, find:

- (a) The perimeter of the shape on the 5<sup>th</sup> position.

[2]

- (b) In which position do we find the shape with perimeter 2 cm.

[2]

[Total 4 marks]

- 
9. You have accidentally left the plug out of the bath and are attempting to fill the bath with both taps (hot and cold) full on. The hot tap takes three minutes to fill the bath and the cold tap two minutes, and the water empties through the drain in six minutes. In how many minutes will the bath be filled?

[Total 3 marks]

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10. In a class of 27 students, the scores in a test ranged from 15 to 20. If we know that

8 students scored 19 or 20

10 students scored 18 or 19

12 students scored 17 or 18

11 students scored 16 or 17

2 students scored 15,

Find how many students scored 20, how many scored 19, 18, 17 and 16 and complete the table that follows.

Score	20	19	18	17	16	15
Students						

**[Total 3 marks]**

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11. You have 9 identical shaped balls. One of the balls weighs less than the others and the rest 8 balls weigh the same. Using a scale only twice, find a way to identify the odd one out. Explain your thoughts in words.

**[Total 4 marks]**

- 
12. Find the angle between the two hands of a clock, when the time is 3:30.

**[Total 3 marks]**

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13. In the addition that follows, the letters A, B,  $\Gamma$  and  $\Delta$  represent four different digits. Find the four digits represented by these letters. Show your workings.

$$\begin{array}{r} 6\Gamma\Delta \\ \Gamma\Gamma4 \\ \hline ABAB \end{array} +$$

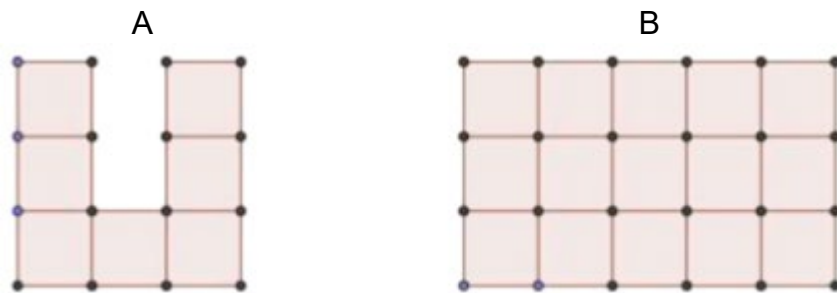
**[Total 4 marks]**

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14. You are given two ropes and a lighter. This is the only equipment you can use. You are told that each of the two ropes has the following property: if you light one end of the rope, it will take exactly one hour to burn all the way to the other end. But it does not have to burn at a uniform rate. In other words, half the rope may burn in the first five minutes and then the other half would take 55 minutes. The rate at which the two ropes burn is not necessarily the same. How can you measure 15 minutes? Explain your answer.

**[Total 3 marks]**

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15. On a table we have a 3D shape made of cubes. The front view and the back view are the same, as shown in figure A. The plan view (the view from above) and the side views are the same, as shown in figure B.



- (a) How many cubes do we have altogether in this 3D shape?

[2]

- (b) We paint the sides of the cubes that can be seen from above or from the sides and the surface area of the shape, but not the base that cannot be seen. How many squares have been painted?

[3]

[Total 5 marks]

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**END – TOTAL MARKS 100**  
**CHECK YOUR ANSWERS AGAIN**