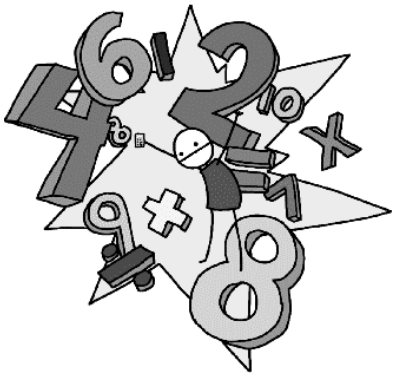
THE G C SCHOOL OF CAREERS

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.**
- **Answer ALL questions in the space provided.**
- **Show <u>all your workings</u>.**
- **Write your answers <u>clearly</u>.**

PART A – MULTIPLE CHOICE QUESTIONS

Circle the correct answer for each of the following 15 questions.
There is only one correct answer to each question.

1. Which of the following expressions gives the largest result?

A	**B**	**C**
$21\times 20-18+19$	$18\times 19-21+20$	$20\times 18-19+21$

D	**E**
$21\times 18-20+19$	$20\times 19-21+18$

2. $\boxed{622\times 110=68420}$

What is the value of 55×622;

A	**B**	**C**	**D**	**E**
34210	11405	31605	13704	34420

3. Which three numbers should be written in the shaded box in the table?

	Divisors of 55	**Divisors of 70**
<10	1,5	1,2,5,7
Primes	5,11	

A	**B**	**C**	**D**	**E**
1,2,5	2,5,7	7,14,35	5,7,11	5,7,10

4. Circle the number which cannot be expressed as the sum or difference of two other numbers on the list.

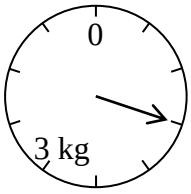
A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
2	5	7	10	12	15	16	19

5. How many thirds are in 9?

A	**B**	**C**	**D**	**E**
3	18	9	27	30

6. Which of the following scales points to 750 grams?

A



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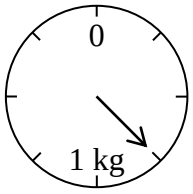

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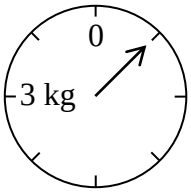

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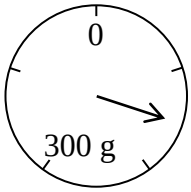

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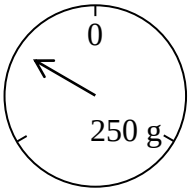


7. A group of children is riding on bicycles and tricycles outside Bill's house. Bill counted 7 children and 19 wheels.
How many tricycles were there?

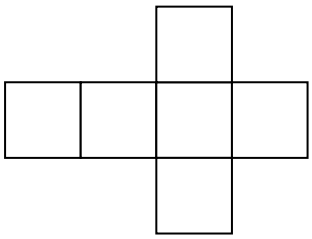
A	**B**	**C**	**D**	**E**
2	4	5	6	7

8. Jack enjoys creating cubes. At first he draws shapes on cardboard which he then folds along the lines to create a cube.

The designs below present six attempts.

Unfortunately, only five are correct. Which shape is wrong?

A



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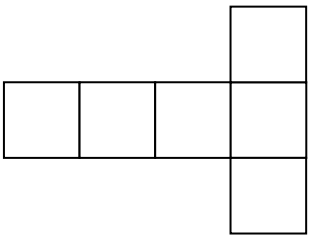

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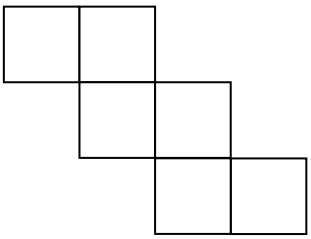

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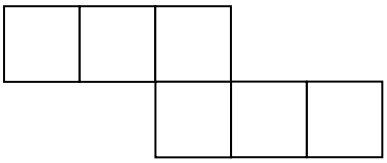
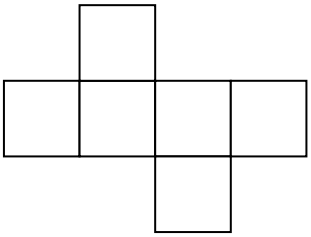
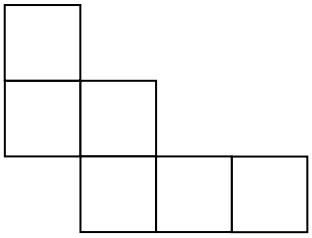


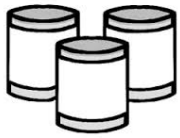
E



F

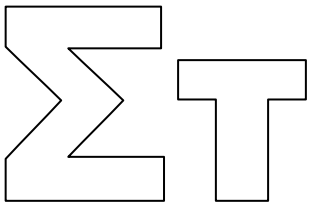


9. The GCS soft drink is sold in packets of 6, 12 and 24 cans. What is the minimum number of packets that someone needs in order to buy exactly 90 cans of soft drink?



A	**B**	**C**	**D**	**E**
4	5	6	8	15

10. How many right angles are there in total in the shape below?

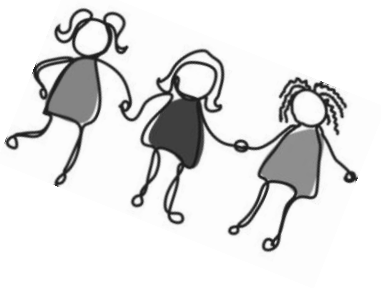


A	**B**	**C**	**D**	**E**
10	12	18	20	None of the above

11. Christina, Foteini and Demetra are friends of different ages.

Only **one** of the following statements is correct.

* Foteini is the eldest
* Christina is not the eldest
* Demetra is not the youngest



Put the friends in order from the eldest to the youngest.

A	**B**	**C**
Foteini, Christina, Demetra	Christina, Foteini, Demetra	Demetra, Christina, Foteini

D	**E**
Demetra, Foteini, Christina	Christina, Demetra, Foteini

12. It took Eleni 6 minutes to walk half the distance from her house to school when she realised she was late. She started running at three times the speed she was walking. How many minutes did it take Eleni to get from her house to school?

A	**B**	**C**	**D**	**E**
7	7.3	7.7	8	8.3

13. The year 2002 is called a palindrome (a number read the same from left to right and from right to left). Find the product of the digits in the next year after 2002 that will also be a palindrome.

A	**B**	**C**	**D**	**E**
0	4	9	16	25

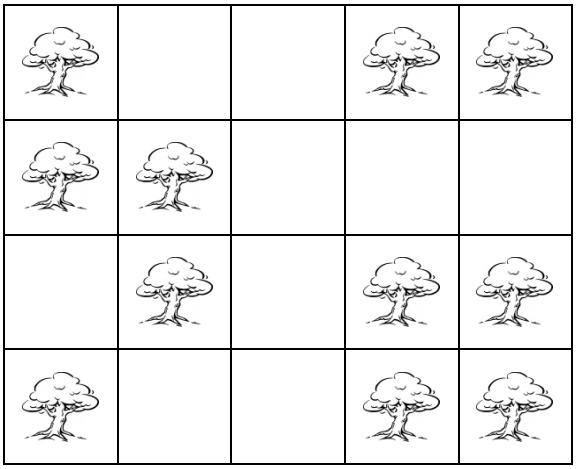
14. In the following addition, each letter corresponds to a different digit.

$$\begin{array}{cccc} & P & Q & R \\ + & P & Q & R \\ \hline S & R & T & U \end{array}$$

If $P = 7$ and the letter R corresponds to an even number, what is the only possible value for Q?

A	**B**	**C**	**D**	**E**
0	1	2	3	4

15. What percentage of the following squares contains trees?

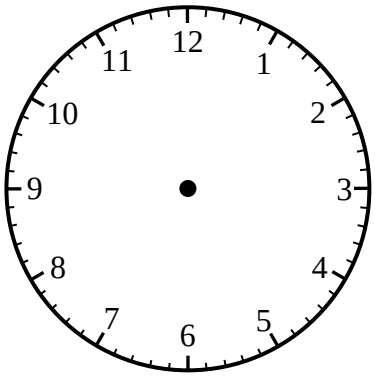


A	**B**	**C**	**D**	**E**
11%	22%	33%	44%	55%

PART B – PROBLEMS

Answer the following problems.
Pay attention to the presentation of the reasoning that you use to solve each problem.

1. Complete the hour hand and the minute hand on the clock below so that the time is 22:30.



2. In the square below, each column, row and diagonal gives a sum of 15. Which number should be placed in square A?

		6
9	5	
	A	

3. You are given the following multiplication

$$\begin{array}{rrrrr} & & 5 & 7 & 6 \\ \times & & & 4 & 8 \\ \hline & 4 & 6 & 0 & 8 \\ 2 & 3 & 0 & 4 & 0 \\ \hline 2 & 7 & 6 & 4 & 8 \end{array}$$

Without doing any further calculations, find the following:

a) 576×8 _____

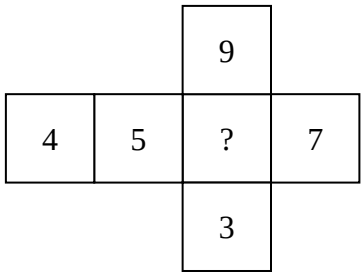
b) 576×4 _____

c) $27648 \div 576$ _____

d) $27648 - 23040$ _____

4. Maria is 11 years old and Christina is 3 years younger than her.
What will be the sum of their ages in 6 years?

5. When the following shape forms a cube, its opposite sides give a sum of 12.
Which number is missing?



6. The symbol 4! is used as an abbreviation for the product $4\times3\times2\times1=24$. Similarly, $9!=9\times8\times7\times6\times5\times4\times3\times2\times1=362880$.

Calculate the value of the following:

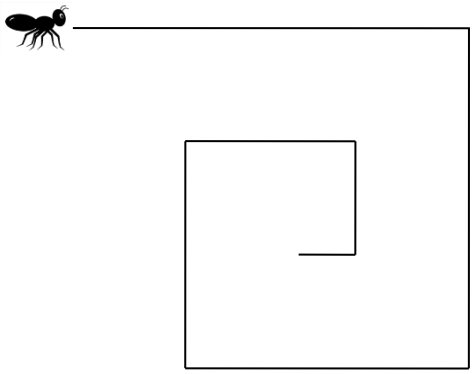
a) 3! _____

b) 10! _____

c) $\frac{100!}{98!}$ _____

7. Sofia thought of a number, doubled it and added 8. The answer was 26.
What was the number?

8. The diagram below presents the route followed by an ant looking for food. On this route the ant walked a specific distance and then turned right. Every time the ant turned right it walked 2 metres less than the previous time.



On the last part of the route the ant walked one metre before stopping.
What was the total distance it walked?

9. When I divide my age by 2,3,4 or 6 I always have a remainder of 1. When I divide it by 7 the remainder is 0.
How old am I?

10. If January has 5 Mondays, 5 Tuesdays and 5 Wednesdays, which day of the week does February 1st fall on?
(January has 31 days).

11. The cost of 3 apples, 5 oranges and 2 bananas is €3.02.
The cost of 5 apples, 7 oranges and 4 bananas is €5.12.
What is the **total** cost of one fruit of each kind?

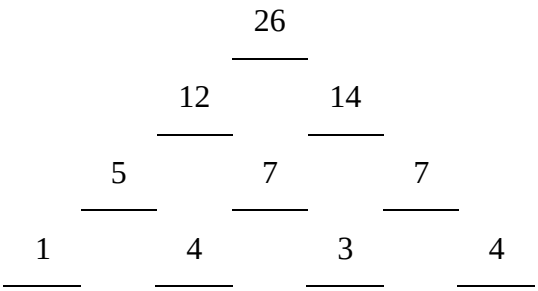
12. A passenger train with 3 carriages had a total of 70 passengers when it started. At the first stop 6 passengers got off the first carriage, 8 from the second and 2 from the third, while no passengers got on the train. Each carriage now had the same number of passengers.
How many passengers were on each train carriage when it started?

13. Nicholas wrote down all integers from 1 to 1000, inclusive:

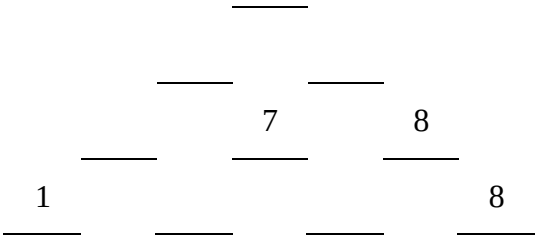
1,2,3,4,…,9,10,11,12,13,…,99,100,101,102,103,…,999,1000.

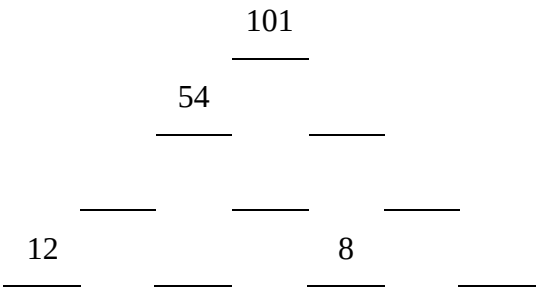
How many digits did he write in total?

14. In the triangles below, each number is the sum of the two numbers below it.
For example, $26 = 12 + 14$ and $5 = 1 + 4$.



Complete the following triangles.





15. A group of four people need 6 hours to build a fence.

a) How long will a group of 8 people need for the same project?

β) Mr Costas has to build a similar fence with twice the length, but he needs to complete it in less than five hours.

What is the minimum number of people needed?

END