



Surname _____

Name _____

Father's name _____

THE G C SCHOOL OF CAREERS MATHEMATICS SCHOOL



MATHEMATICS APTITUDE TEST 2020-2021

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.

45 marks

1. Nicolas found that $\frac{1111}{101} = 11$.

Work out the value of $\frac{3333}{101} + \frac{4444}{202}$.

- (a) 5 (b) 9 (c) 55 (d) 60 (e) 99
-

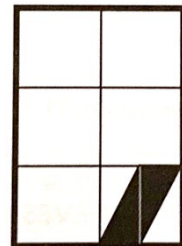
2. A full barrel can fit 200 litres of oil. Initially there were some litres of oil in the barrel. If we remove 50 litres of oil then the barrel is $\frac{3}{5}$ full. How many litres of oil were initially in the barrel?

- (a) 170 (b) 165 (c) 160 (d) 150 (e) 100
-

3. Work out the value of 50% of 18.3 added to 18.3% of 50.

- (a) 9.15 (b) 18.3 (c) 27.15 (d) 59.15 (e) 68.3
-

4. How much bigger is the area of the large rectangle compared to the shaded area?

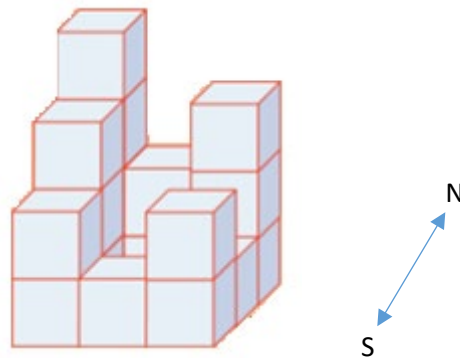


- (a) 6 times (b) 8 times (c) 9 times (d) 12 times (e) 15 times
-

5. Which number below is divisible by all integers between 1 and 10 inclusive?

- (a) 23x34 (b) 34x45 (c) 45x56 (d) 56x57 (e) 67x78
-

6. The diagram shows an architectural 3D-image of a building. What is the picture you get if you look at the building from the North side?



-
7. A company has 500 employees. 12% of these employees are women. The manager then hires 80 more people and as a result the percentage of women in the company is now 20% of all employees. Work out the percentage of women that the manager hired.

- (a) 40% (b) 50% (c) 60% (d) 70% (e) 80%
-

8. When you add the first 98 numbers, 1, 2, 3, 4,, 95, 96, 97, 98 the result is a four digit number. Find the last digit of this number.

(a) 9

(b) 8

(c) 0

(d) 2

(e) 1

9. A school has 1200 students. The students have lesson 5 hours per day. Each class consists of 30 students and each teacher, teaches 4 hours per day. How many teachers are there in the school?

(a) 30

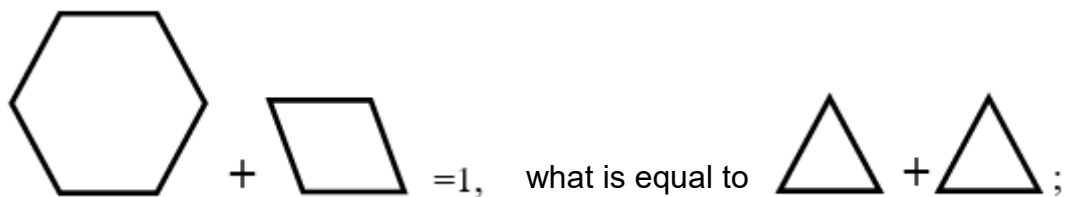
(b) 35

(c) 40

(d) 50

(e) 60

10. If



(a) $\frac{1}{3}$

(b) $\frac{1}{6}$

(c) $\frac{3}{4}$

(d) $\frac{1}{4}$

(e) $\frac{1}{5}$

11. Katerina bought chocolates of all three different sizes (small, medium, large). The large chocolate costs €0.40, the medium €0.20 and the small one €0.10. She bought a total of 10 chocolates and paid €1.60. Find how many big chocolates she bought.

(a) 1

(b) 2

(c) 3

(d) 4

(e) none

12. John and Kevin are trying to figure out each other's age by using mathematical clues.

Jack: "Last year my age was a perfect square number, while next year my age will be a cubic number. Can you guess my age?"

(a) 25 (b) 26 (c) 27 (d) 28 (e) 29

13. Diagram 1 below shows a rectangle divided into three equal smaller rectangles. If you remove the middle rectangle and attach it to the right side of the shape, you get the shape in Diagram 2.

Find the ratio of perimeter of Diagram 1 to the perimeter of Diagram 2.



Diagram 1

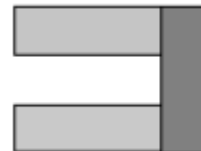


Diagram 2

(a) $\frac{1}{1}$ (b) $\frac{3}{5}$ (c) $\frac{1}{2}$ (d) $\frac{2}{3}$ (e) $\frac{5}{8}$

14. The following sequence repeats itself.



Find the symbols in positions 100 and 101.

- (a) (b) (c) (d) (e)

15. The magic square below has the following properties:
The sum of all numbers in each row, column and diagonal is equal.
Find the value of $x + y$.

4		
	7	y
6	5	x

- (a) 10 (b) 11 (c) 12 (d) 13 (e) 14

END OF PART A
YOU CAN CONTINUE WITH PART B

PART B – PROBLEMS

- Answer ALL questions.
- Show your workings clearly.
- 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.

55 marks

1. Find the value of:

(3 marks)

$$128 \times \frac{3 \times 5 \times 7 \times 9 \times 11 \times 13 \times 15 \times 17}{34 \times 30 \times 26 \times 22 \times 18 \times 14 \times 10 \times 6} =$$

Answer: _____

2. Twenty eight students took part in a Mathematics competition. The number of students who scored lower than Stefanos was twice the number of students who scored higher than him. What was Stefanos' ranking position?

(3 marks)

Answer: _____

3. First, we add all the even numbers from 1 to 101. Then we subtract all the odd numbers between 0 and 100. What is the result?

(3 marks)

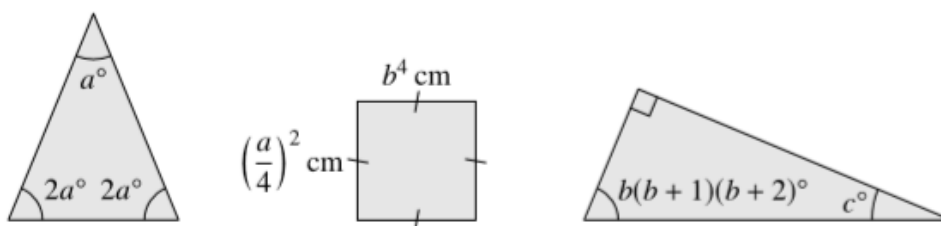
Answer: _____

-
4. In a team of students, the ratio of girls to boys is 2 girls for every 1 boy. If another 24 girls join the team, then the ratio will be 5 girls for every 1 boy. Find how many boys are on the team.

(3 marks)

Answer: _____

5. Use the angle and side relationships as given in the diagrams below to find the value of c .



(4 marks)

Answer: $c =$ _____

6. In a Mathematics test, Nicki scored 5 points below the class average mark, George scored 8 points above the class average mark and Marina scored 82 marks. The average mark of Nicki, George and Marina was the same as the class average mark. Find the class average mark.

(4 marks)

Answer: _____

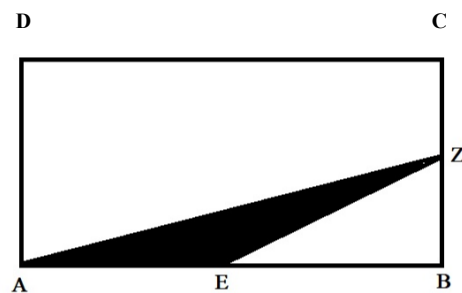
7. You are given a square. If we enlarge one side of the square by 3 cm and decrease the other side by 2 cm, we end up with a rectangle, which has an area of 24 cm^2 . Find the perimeter of the original square.

(4 marks)

Answer: _____

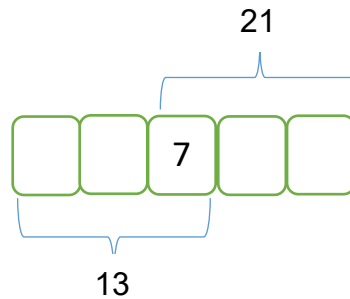
8. ABCD is a rectangle. E and Z are the midpoints of AB and BC respectively. Given that the area of triangle AEZ is 7 cm^2 , find the area of the rectangle ABCD.

(4 marks)



Answer: _____

9. A five-digit number has the number 7 in the place of hundreds. The sum of the first three digits is 13, and the sum of the last three digits is 21, as shown below.



- a) Find if this number is divisible by 9.
Justify your answer.

(2 marks)

Answer: _____

- b) Find the missing digits of the number if you know that:

- the number is divisible by 4,
- if you write the digits in the reverse order, the new number is divisible by 5.

(3 marks)

Answer: _____

- 10.** George and Demetris are playing a game for two. In every round the winner gets 3 points and the looser gets 1 point, while there is no tie. When the game ended, George won 9 rounds and Demetris got 42 points. Find how many points George has got.

(4 marks)

Answer: George _____

- 11.** There are some marbles in a box, which are divided amongst 4 friends. The first friend takes a few, the second takes half the amount of what the first one took, the third friend takes half of what the second one took and the fourth friend takes half of what the third one took.

a) Find the smallest possible number of marbles in the box.

(2 marks)

Answer: _____

b) If there were 90 marbles in the box, how many did the third friend take?

(2 marks)

Answer: _____

12. Numbers are written on a 4x4 table. In the squares with a common side, the numbers differ by 1. Number 3 is in the top left square as shown, and the number 9 is one of the hidden numbers. Find and write all the numbers that appear on the table.

3			

(3 marks)

Answer: _____

-
13. With the money that Andreas has in his pocket, he is planning to buy 18 music records. The salesman gives him a discount of €2 per record, so now he can buy 4 more records.

Find:

- a) how much he paid for each record.

(2 marks)

Answer: _____

- b) how much money he had in his pocket.

(2 marks)

Answer: _____

14. Letters A, B and C represent different digits in the following multiplication.

$$\begin{array}{r} \text{A A B} \\ \times \quad \text{B} \\ \hline \text{C B 5 B} \end{array}$$

Find the value of $A+B+C$.

(3 marks)

Answer: _____

15. The room numbers of a hotel are all three-digit numbers. The first digit represents the floor and the last two digits represent the room number. The hotel has rooms on five floors, numbered 1 to 5. It has 35 rooms on each floor, numbered k01 to k35 where k is the number of the floor.

In numbering all the rooms, how many times will the digit 2 appear?

(4 marks)

Answer: _____

END

TOTAL MARKS 100