

THE G C SCHOOL OF CAREERS



ENTRANCE EXAMINATION

SCHOOL YEAR 2009-2010

MATHEMATICS

Time: 1 hour and 30 minutes

- This paper consists of **25 questions**.
- Answer **ALL** the questions in the spaces provided.
- You must **show all your working**.
- Your answers must be clearly and neatly presented.
- The use of calculator is not permitted.

1. Mr Costas did some calculations after buying a few things and thought: "If I add €50 to the money I had at the beginning then I would have five times the €25 I have now."

Find how much money Mr Costas had at the beginning.

(2 marks)

Answer: _____

2. Lena bought balloons, paper hats and masks for her party.

Complete the following table.

(3 marks)

	Cost of each in €	Number bought	Total Cost in €
Pack of balloons	4.95	5	
Hats	3.20		41.60
Masks		10	19.50
			Total:

3. Pantelis went to school one day holding some candies. His friends gave him another 17 candies while he handed out a total of 21 candies. When he finished school he had a total of 15 candies. Find how many candies he had when he went to school.

(2 marks)

Answer: _____

4. A warden that was recently appointed at a prison asks a colleague how many prisoners there are in the prison. He says to him:
- $\frac{1}{4}$ of the prisoners are thieves and $\frac{1}{6}$ are debtors for debts.
 - There even exist frauds that are as many as the thieves and the debtors put together.
 - There are 8 more criminals

Find how many prisoners there are in the prison.

(4 marks)

Answer: _____

5.

Biscuits 200g €2.80

Biscuits 160g €2.40

A big box with biscuits weighing 200g costs €2.80 and another smaller box weighing 160g costs €2.40. Two students disagree.

- Philippos says that the box with the biscuits weighing 200g is a better buy.

while

- Vasilis says that the box with the biscuits weighing 160g is a better buy.

Find:

Who is correct. Justify your answer showing all your working.

(4 marks)

Answer: _____

6. The number of workers in a big company doubles every three months. If now there are 4000 workers in the company, how many workers existed in the company a year ago?

(3 marks)

Answer: _____

7. A fisherman caught with his hook 50 fish in 5 days. Each day he caught 3 more fish than the previous day. Find how many fish he caught each day.

(4 marks)

Answer: 1st day _____

2nd day _____

3rd day _____

4th day _____

5th day _____

8. George wants to buy a motorcycle. He has saved $\frac{5}{8}$ of the money needed and he still needs another €1560 to purchase the motorcycle. Find the price of the motorcycle.

(3 marks)

Answer: _____

9. Maria bought a box with 144 films and paid €360. She sold all the films with a profit of 15%. 124 of the films were sold €3 each. Find how much she sold each of the remaining films.

(4 marks)

Answer: _____

10. This year Maria earns €260 per week. This amount is 30 % more than what she was earning last year per week.
Find the weekly salary that Maria was earning last year.

(3 marks)

Answer: _____

11. Find the relationship between the following numbers and complete the boxes with the missing numbers.

30	6	24	12	
3	27	9	21	

(2 marks)

12. Eleftheria bought a carpet of length $4\frac{1}{2}$ m and width $2\frac{2}{3}$ m towards €18.20 per m^2 . In the end she was given a discount equal to $\frac{1}{4}$ of the value of the carpet she bought. How much did Eleftheria pay?

(5 marks)

Answer: _____

13. Place in the the missing fraction so as to form a correct mathematical expression:

a) $\left(\frac{4}{5} + \text{input}\right) - \frac{4}{5} = \frac{3}{4}$

(1 mark)

Answer: _____

b) $\left(\frac{3}{7} - \frac{1}{4}\right) + \text{input} = \frac{1}{2}$

(3 marks)

Answer: _____

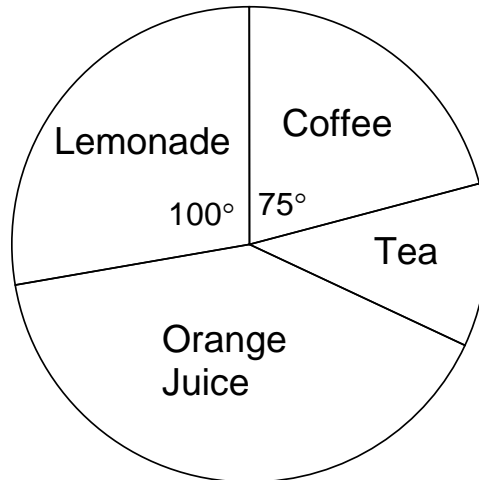
14. The radius of the wheel on Yiannis's bicycle is 35 cm. Find how many **metres** will the bicycle advance, when the wheel makes 55 turns. Use $\pi = 3.14$.



(5 marks)

Answer: _____

15.



The diagram above represents the types of drinks that were sold in a charity event. There were 135 coffees and 81 teas sold.

Find:

a) how many drinks were sold in total.

(2 marks)

Answer: _____

b) the angle representing the orange juice.

(4 marks)

Answer: _____

16. Costas and his family start from city A with direction city B at 9:35 a.m. and travel with a speed of 120 km per hour. If the distance between the two cities is 200 km, find the time that Costas and his family will reach city B.



(4 marks)

Answer: _____

17. A supermarket advertises the following offer:
“If you buy 4 jars of marmalade, you pay only €2 for the fourth one”.
Eleni bought 12 jars of marmalade and paid €30.75. Find what the regular price is of each jar of marmalade.

(4 marks)

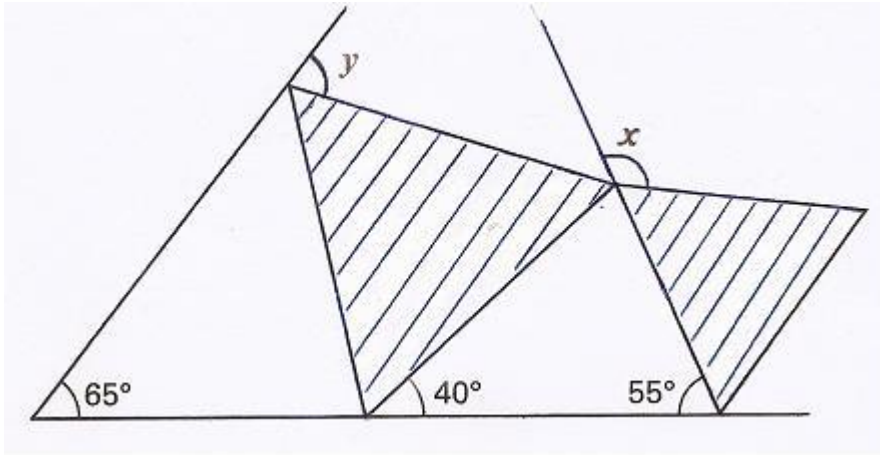
Answer: _____

18. The red container with candies has $\frac{1}{3}$ more candies than the green container. If the green container has 30 candies less than the red container, find how many candies the red container has.

(2 marks)

Answer: _____

19. The diagram below has two shaded **equilateral** triangles.



The diagram is not drawn to scale

(4 marks)

Calculate the size of angles x and y .

Answer: Angle x _____

Angle y _____

20. Three children put their money together in order to buy 1 box with 200 chocolate sweets. Nikos gave €0.80, Costas gave €1.20 and Christos gave €3. Find how many chocolate sweets correspond to each child.

(5 marks)

Answer: Nikos _____

Costas _____

Christos _____

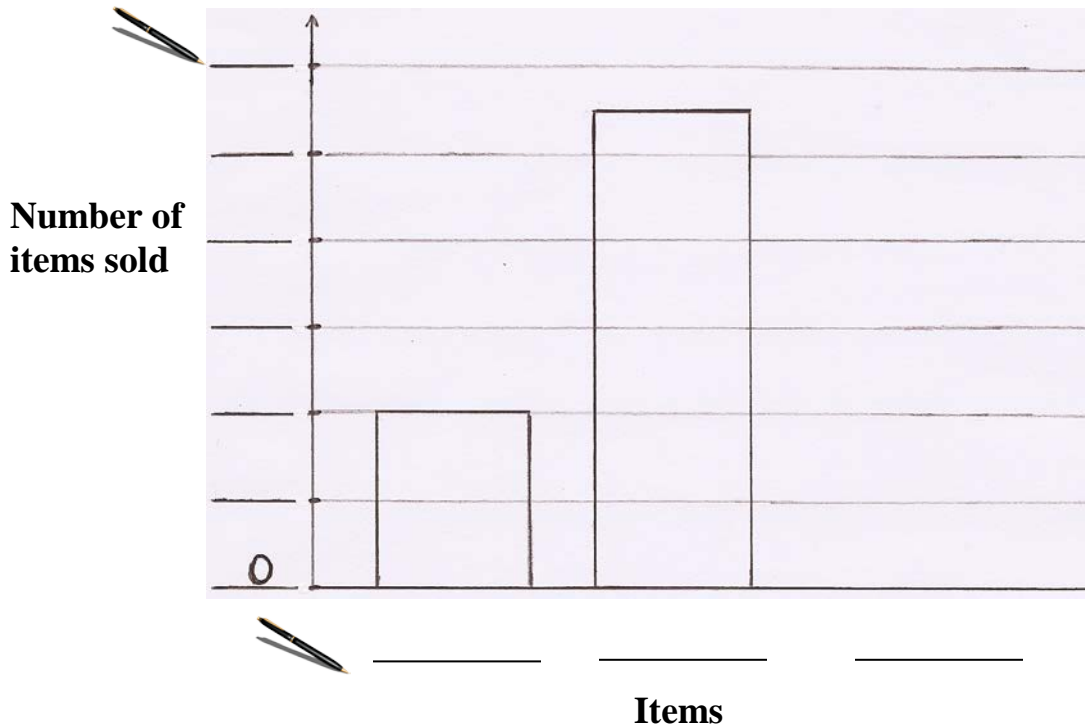
21. The table below shows information on certain items that were sold in the school shop

Items	Number of items sold
Pens	22
Pencils	8
Rulers	14

The diagram below shows the same information.

a) Write down the missing information in the areas indicated by the pencil in order to complete the diagram.

(3 marks)



b) What percentage in the number of pencils? Give your answer to the nearest whole number.

(2 marks)

Answer: _____

22. Below you are given a set of two digit numbers. Find the probability to randomly select:

13 21 36 75 47

52 91 85 68 11

(5 marks)

a) an odd number.

Answer: _____

b) a prime number.

Answer: _____

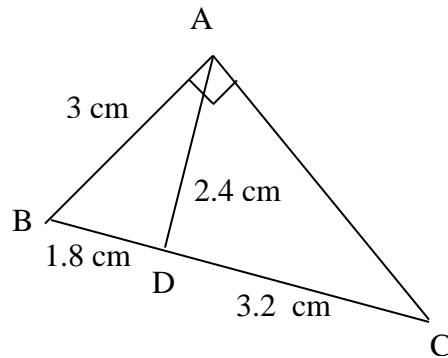
c) a number divisible by 3.

Answer: _____

d) a multiple of 4.

Answer: _____

23. In the diagram below $AB = 3 \text{ cm}$, $AD = 2.4 \text{ cm}$, $BD = 1.8 \text{ cm}$, $DC = 3.2 \text{ cm}$ and angles A and D are right angles.



**The diagram is
not drawn to
scale**

a) Find the area of triangle ABC.

(2 marks)

Answer: _____

b) Find the length of AC.

(2 marks)

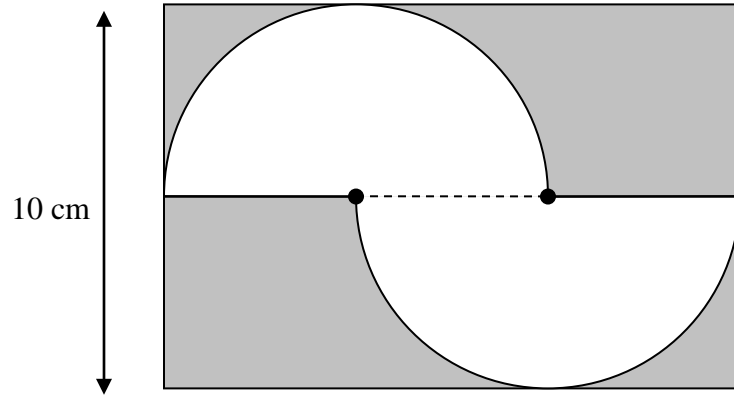
Answer: _____

24. A tap pours 40 litres (L) of water every 30 minutes in a tank with dimensions 5m x 3.5m x 6m. Find how many **hours** are needed to fill $\frac{2}{5}$ of the tank.

(6 marks)

Answer: _____

25. The diagram below shows two semicircles in a rectangle. The width of the shape is 10 cm. Use $\pi = 3.14$.



The diagram is not drawn to scale

a) Find the length of the rectangle

(1 mark)

Answer: _____

b) Find the area of the shaded region.

(3 marks)

Answer: _____

c) Find the perimeter of the unshaded region.

(3 marks)

Answer: _____

END