

Number _____

Surname _____

Name _____

Father's Name _____

THE G C SCHOOL OF CAREERS



ENTRANCE EXAMINATION

SCHOOL YEAR 2011-2012

MATHEMATICS

(This examination paper consists of 20 pages including this page)

THE G C SCHOOL OF CAREERS



ENTRANCE EXAMINATION

SCHOOL YEAR 2011-2012

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.

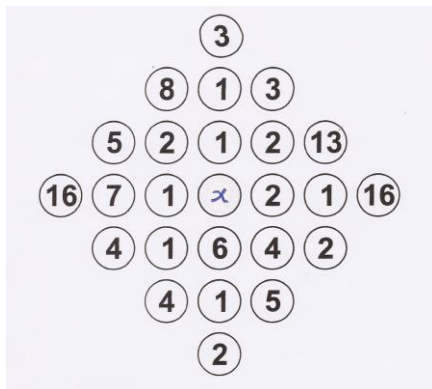
1. Yesterday, Christina came across an old book. When she opened it, she realised that some pages were missing. The number at the bottom of the page on the left hand side was 24, and the number at the bottom of the page on the right hand side was 45. Find how many pages are missing.

(2 marks)

Answer: _____

2. After you work out how the numbers are related to each other, find x , the number in the middle.

(2 marks)



(2 marks)

Answer: $x =$ _____

3. I want to add A and B. Accidentally, I subtract A from B and I get 6. This result is different from the right answer by 14. Find the numbers A and B.

(3 marks)

Answer: _____

4. Rachel had blue and red balloons in the ratio 2:7. She gave away 15 red balloons and bought another 15 blue balloons. Then she found that she had an equal number of red and blue balloons. Find :

(4 marks)

a) how many blue balloons she had at the beginning.

Answer: _____

b) how many balloons she has altogether now.

Answer: _____

5. A car travelling at a constant speed of 60km per hour, covers a certain distance in 6 hours. If the driver needs to reduce the car speed by 20% due to bad weather conditions, how long will it take him to cover the same distance? Give your answer in minutes.

(4 marks)

Answer: _____

6. Peter, George and Marios have an average height of 1.26m. Peter is twice as tall as George, and Marios is 0.12m shorter than Peter. Find how tall Marios is.

(4 marks)

Answer: _____

7. The desks in a rectangular classroom have been arranged in rows. Each row has the same number of desks. Marina's seat is in the third row from the front of the class, which happens to be the fourth one from the back of the class. Her seat is the fourth one from the left side of the room and the sixth from the right side. Find the number of desks in the classroom.

(3 marks)

Answer: _____

8. Work out the following:

a) $2+2-2+2-2+2-2+2-2+2=$

(2 marks)

Answer: _____

b) $\frac{1}{1} + \frac{1}{\frac{1}{2}} + \frac{1}{\frac{1}{3}} + \frac{1}{\frac{1}{4}} + \frac{1}{\frac{1}{5}} =$

(2 marks)

Answer: _____

c) $\frac{3\frac{1}{4}}{3 - \frac{1}{6} \times \frac{2}{3}} =$

(3 marks)

Answer: _____

d) $\left[\left(2\frac{1}{4} \right)^2 + \frac{1}{4} \right] \div \left[3\frac{1}{5} - \frac{7}{10} \right] =$

(3 marks)

Answer: _____

9. I've got 2 dice, and I want to toss them simultaneously. Find the probability of rolling a sum lower than 5.

(3 marks)

Answer: _____

10. On his way to school, Nicholas comes across 17 trees along one side of the road. One day he decided to mark the trees as such: on his way from home to school, he marked every other tree, starting from the first one. On his way back home, he marked every third tree he came across, starting from the first one. Find the number of trees Nicholas did not mark.

(4 marks)

Answer: _____

11. My age is a multiple of 7. In a year, my age will be a multiple of 5. Having in mind that I am older than 20 and younger than 80, find out my age.

(3 marks)

Answer: _____

12. 40% of the students in a class are girls. If 3 boys left the class and were replaced by 3 girls, then the percentage of the girls in the class would become 44%. Find out how many more boys than girls there are in the class.

(4 marks)

Answer: _____

13. Yesterday morning Chris had a box $\frac{5}{6}$ full of candies. He wanted to offer some candies to his friends. By the end of the day, he had given 56 candies to his friends, and his box was only $\frac{1}{4}$ full. Find how many candies Chris needs to buy, so that the box is full again.

(4 marks)

Answer: _____

14. The area of a square with a side of 6cm is equal to 90% of the area of a rectangle. Given that the width of the rectangle is the third smallest prime number, find the perimeter of the rectangle.

(4 marks)

Answer: _____

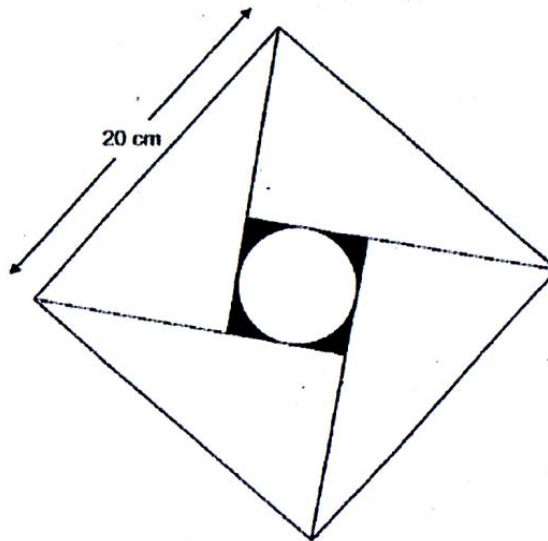
15. Maria did not have any money, so she asked her father to give her €2 every day and €5 every Sunday. If Maria buys a toy for €20.75, how much money will she collect in 18 weeks?

(3 marks)

Answer: _____

16. In the diagram below, there are four identical triangles, each having an area of 91 cm^2 . The triangles have been arranged in a way to form a large square, a small square, and a circle in the middle of the small square. Find the area of the shaded region. Use $\pi = 3.14$.

(5 marks)



Answer: _____

17. Marios, Nick, John and Andrew have all given answers to three questions: A, B and C. Each question is awarded a number of points (not the same). The table below shows the results.

(4 marks)

		A	B	C	
✓ - full points	Marios	✗	●	✓	35
✗ - zero points	Nick	✓	✓	✓	60
	John	●	✓	✗	20
● - half points	Andrew	✓	✗	✓	50

Find the points awarded for each question.

Answer: Question A _____

Question B _____

Question C _____

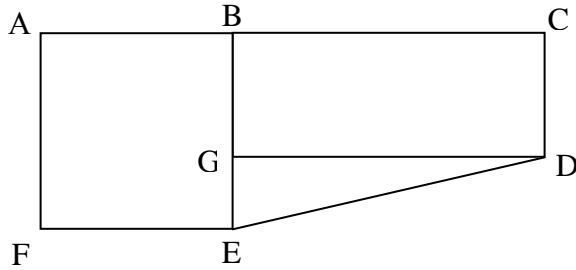
18. Ann, Mary and Kate are helping out at a charity event, by collecting money. Ann collects €7 in 6 minutes, Mary €18 in 10 minutes and Kate collects €23 in 15 minutes. If all 3 girls work simultaneously, in how many hours will they collect a sum of €540?

(4 marks)

Answer: _____

19. In the diagram below, there is a square, a rectangle and a right-angled triangle. The area of square ABEF is 64cm^2 and the area of rectangle BCDG is 75cm^2 . The length of the rectangle is three times as long as its width. Find the area of triangle GDE.

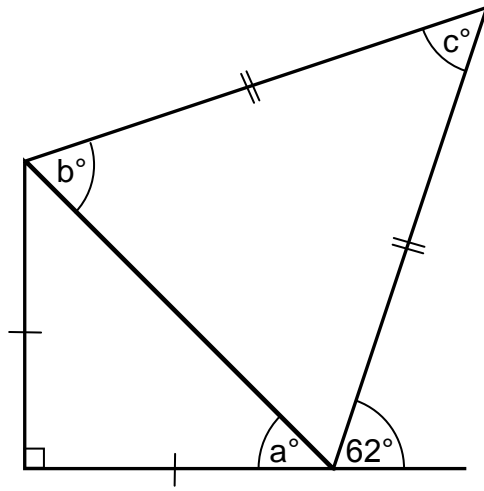
(5 marks)



(Diagram not to scale)

Answer: _____

20. Find angles a° , b° and c° .



(3 marks)

Answer: Angle a _____

Angle b _____

Angle c _____

21. Jake is a grocer who buys coffee at the price of €4.70 per kilo. If he sells the coffee at the price of €1.80 per 250 grams, what is the percentage of his profit? Give your answer to the nearest whole number.

(4 marks)

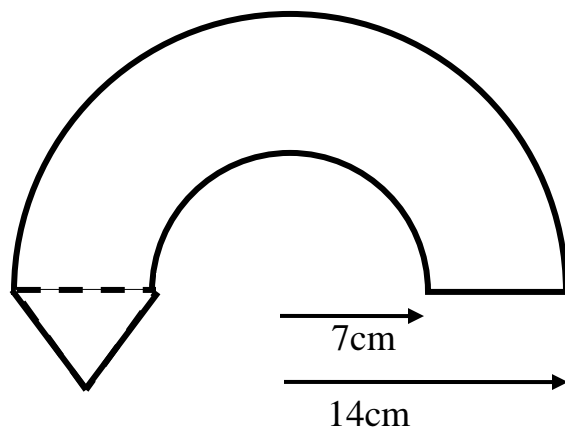
Answer: _____

22. Nick's father's present for Nick's 18th birthday was a new car. The price of the car was €9000. Nick's father paid $\frac{3}{5}$ of the amount on the day he got it. He agreed with the salesman, to pay the rest in 14 months with a 12% interest. Find how much the car will cost Nick's dad.

(4 marks)

Answer: _____

23. Given that the triangle is equilateral, find the perimeter of the diagram below. Use $\pi = 3.14$.



(Diagram not to scale)

(5 marks)

Answer: _____

24. Mr Brown often visits a market where birds are exchanged (see table below). Mr Brown wants to get a goose, a turkey and a duck. Find the smallest number of hens he needs to take to the market to get what he wants.

(4 marks)

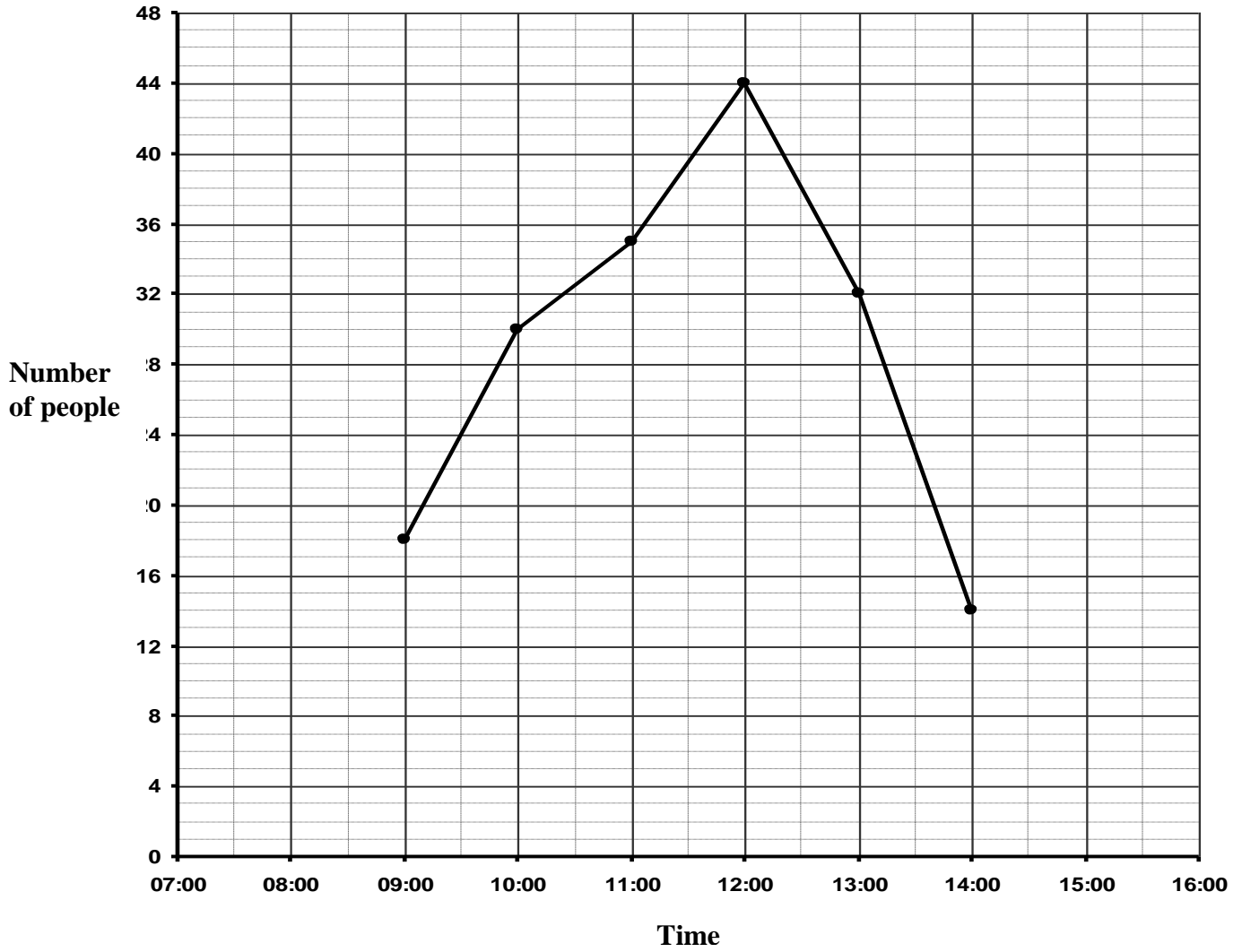
1 turkey = 5 ducks

1 goose and 2 hens = 3 ducks

4 hens = 1 goose

Answer: _____

25. The graph below indicates the number of people who visited a zoo that opens at 07:00 and closes at 16:00.



Work out:

a) the number of people who visited the zoo at 08:00.

(1 mark)

Answer: _____

b) by how much the number of visitors decreased between 12.00 and 13.00.

(1 mark)

Answer: _____

c) between which hours the largest increase/decrease was.

(1 mark)

Answer: _____

d) Complete the graph, given that between 14:00 and 15:00, the number of visitors was the same, and until closing time the number increased by 18.

(2 marks)

END