Number _____

Surname _____

Name _____

Father's name _____

THE G C SCHOOL OF CAREERS

ENTRANCE EXAMINATION

SCHOOL YEAR 2016-2017

MATHEMATICS

(This examination paper consists of 18 pages, including this page).

THE G C SCHOOL OF CAREERS

ENTRANCE EXAMINATION

SCHOOL YEAR 2016-2017

GOOD LUCK

Time: 1 hour and 30 minutes

MATHEMATICS

- This paper consists of **25 questions**.
- Answer **ALL** the questions in the space provided.
- Show **all your workings**.
- The use of a calculator is **not allowed**.
- Write your answers **clearly**.

1. Corina has a piece of string measuring $\frac{2}{3}$ of a metre. She would like to cut it into pieces in such a way that each piece will have a length of $\frac{1}{9}$ of a metre. Find out how many pieces she has to cut it into.

(2 marks)

Answer: _____

---

2. Demetris has 30 markers in 4 different colours: red, blue, green and yellow. 23 of them are not yellow, 4 are red and 18 are not blue. How many green markers has Demetris got? **(3 marks)**

Answer: _____

---

3. Find the sum of:

a) $\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}\times 4=$ **(2 marks)**

Answer: a) _____

b) $2-1+3-2+4-3+5-4+6-5+\ldots+101-100=$

(2 marks)

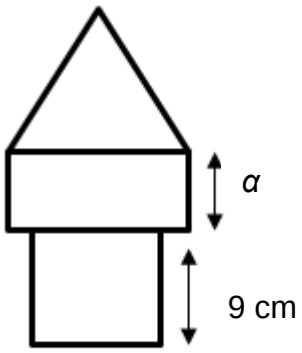
Answer: b) _____

---

4. The shape below consists of a square, a rectangle and an equilateral triangle. All three shapes have the same perimeter.
If the side of the square is 9 cm,

a) calculate the side of the rectangle, lettered a .

(3 marks)



Answer: α) _____

b) calculate the perimeter of the whole shape.

(2 marks)

Answer: b) _____

5. Uncle Costas bought a new car. When Maria asked him about his license plate number, he replied: “The letters are KMT and the four-digit number is the smallest possible number for which the sum of its digits is 8 and it is divisible by 4 and by 5”. What is the number of the license plate?
(you can use a number more than once)

(3 marks)

Answer: _____

---

6. What is the missing number A in the table?

(2 marks)

1	2	4	7
1	A	7	13

Answer: _____

---

7. A sports team has won 70% of the 20 matches played so far. Find how many of the remaining 10 matches the team must win to have an 80% total win record for the season.

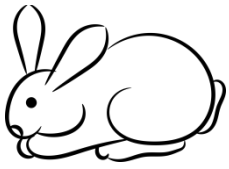
(4 marks)

Answer: _____

---

8. A rabbit eats cabbage and carrots. Every day the rabbit eats 2 cabbages and 3 carrots or 1 cabbage and 5 carrots. During the last week the rabbit has eaten 27 carrots. How many cabbages has the rabbit eaten during this last week?

(4 marks)



Answer: _____

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9. When a number is multiplied by itself, the result is a square number. For example, $3 \times 3 = 9$ and $6 \times 6 = 36$ are square numbers.
How many square numbers smaller than 1000 are there?

(3 marks)

Answer: _____

---

10. Maria has some sweets in her bag.

(3 marks)

2 blue
4 green
5 red
9 yellow

If she picks a sweet at random from her bag, complete the following sentences using the correct colour.

- The probability of it being _____is 0.2.
- The probability of it not being _____ is $\frac{3}{4}$.
- The probability of it being _____ is 45%.

---

11. In the rectangle below, the line MN cuts the rectangle into two regions. Find x, the length of segment NB, so that the area of the quadrilateral MNBC is $\frac{4}{9}$ of the total area of the rectangle.

(5 marks)

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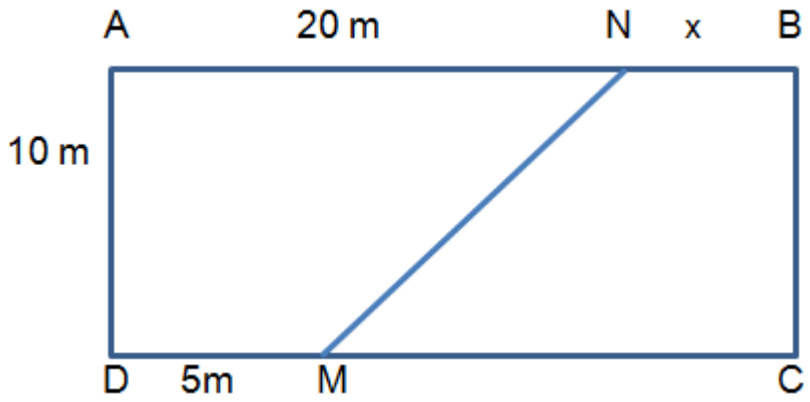


Answer: _____

12. What is the ones (last) digit in the following product?

$$19 \times 18 \times 17 \times 16 \times 15 \times 14 \times 13 \times 12 \times 11$$

(2 marks)

Answer: _____

---

13. A water tank contains $\frac{7}{8}$ of its capacity. If we remove 420 litres of water, then the container will be half full. Find how many litres of water the container can hold when full.

(4 marks)

Answer: _____

---

14. Christos tells his friend George that he has found a new type of motor oil, which will save him 5 % in fuel consumption. If George drives 24000 km every year and for 32 km, 3 litres of fuel are enough, find how many litres of fuel George will consume in 1 year if he uses the new type of motor oil.

(5 marks)

Answer: _____

---

15. Write numbers in the boxes so that the fractions are in ascending order.

(4 marks)

$$\frac{1}{4} \quad \frac{\square}{7} \quad \frac{1}{\square} \quad \frac{3}{5} \quad \frac{2}{\square} \quad \frac{\square}{10}$$

---

16. In a restaurant there are 16 tables, some with 3, 4 or 6 chairs. All together the tables that can hold 3 or 4 chairs can provide seats for 36 people. If the restaurant can accommodate 72 people in total, find the number of tables with three chairs around them.

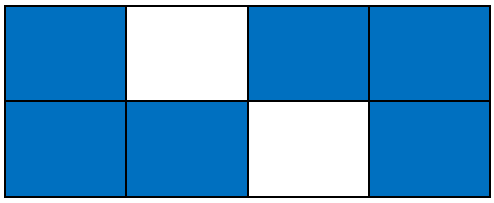
(4 marks)

Answer: _____

---

17. a) Find the percentage of the shaded area.

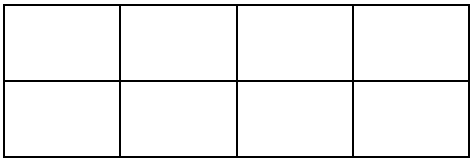
(2 marks)



Answer: _____

b) Shade $37\frac{1}{2}\%$ of the shape below.

(2 marks)



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18. After finishing their shopping, Olga, Demetra and Mary went to different checkouts. Mary noticed that in front of her she had twice as many customers waiting in line as Demetra had, while Olga had 4 more than Demetra. There were 16 customers in total waiting in front of the 3 friends. Find how many customers were in front of each one.

(4 marks)

Answer: Olga: _____ , Demetra:_____ , Mary: _____

---

19. Katerina and Fani each thought of a number. Katerina divided her number by 4 and then added 8 to it. The result she found was 40. Fani's number was $\frac{1}{8}$ smaller than Katerina's number. Find Katerina's and Fani's numbers.

(4 marks)

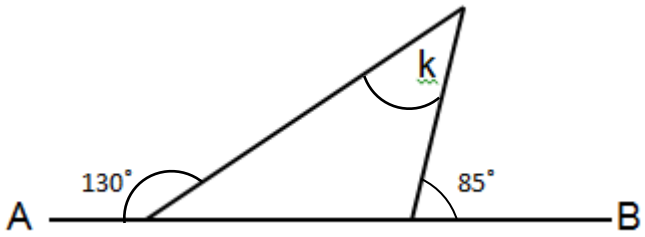
Answer: Katerina: _____, Fani: _____

---

20. Find the angles marked with the letters.

(Diagrams not accurately drawn)

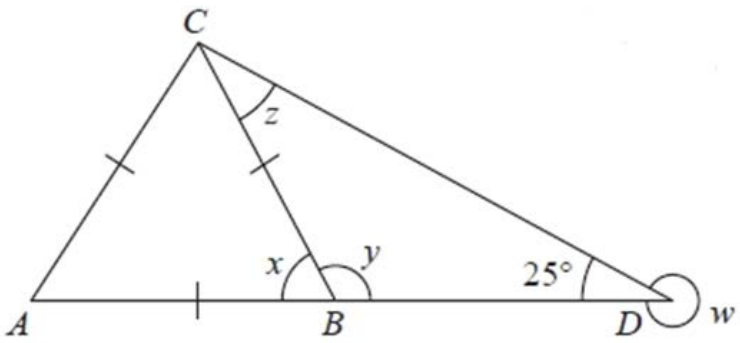
a)



(3 marks)

Answer: a) k = _____

b)



(4 marks)

Answer: b) x = _____

y = _____

z = _____

w = _____

21.

Join us for an unforgettable birthday party on a boat

If you want to celebrate your birthday on a boat then you can rent our boat. The following formula enables you to calculate the cost for your party.

$$\cos t = €12.50 \times number\ of\ \ children + €22$$

a) Calculate the cost for a party of 9 children .

(2 marks)

Answer: a) _____

b) If another party costs €234.50, find the number of children who will attend the party.

(3 marks)

Answer: b) _____

22. Four friends, Vasilis, Costas, Marios and John are going on holiday to four different countries. Each one of them has a different job: doctor, nurse, engineer and teacher (not with this order).

Find each person's **job** and **holiday destination**.

- The doctor is not going to Greece or Poland.
- Vasilis is going to Italy.
- John, who is not the doctor, is going to France.
- Mario's friend, who is a nurse, will go to Greece.
- The teacher is going to Poland.

(4 marks)

Answer: Vasilis:_____

Costas: _____

Marios: _____

John: _____

23. John read a science fiction book of 200 pages in eight days. Since the book gradually got more interesting, from day 2 to day 7, John was reading 5 pages more than the previous day. On the eighth day, he read the last 32 pages. How many pages did John read on the first day?

(4 marks)

Answer: _____

---

24. A shop owner buys coffee at €5.60 per kilo (Kg) and sells coffee for €1.40 per 200 grams (gr). Find his percentage profit.

(4 marks)

Answer: _____

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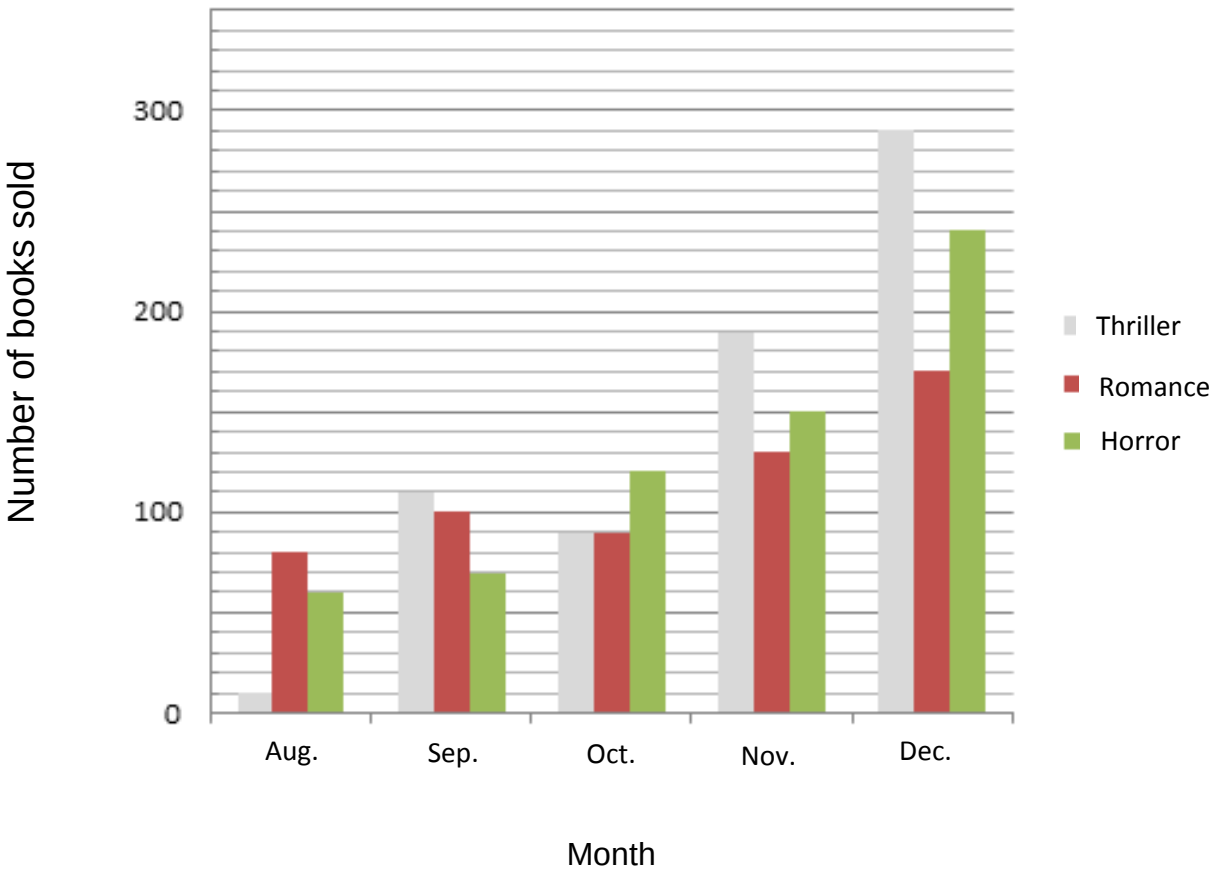
25. The graph shows the number of books sold online by a book store in each month from August to December in 2015. If the total number of books sold from August to December is 1900, find:



a) the total number of books sold in November.

(2 marks)

Answer: a) _____

b) the percentage of romance books sold from August to December.

(3 marks)

Answer: b) _____

c) Find the type and the maximum difference of books that were sold.

(2 marks)

Answer: c) _____

END