ENTRANCE EXAMINATIONS 2007

MATHEMATICS

FIRST FORM

Time allowed: 1 hour and 30 minutes

- Answer ALL questions.

- Show all necessary working on the question paper in the spaces provided and write your answers in the appropriate places.

- The marks for each question are given at the end of the question in brackets.

- The total number of marks is 100.

- If you cannot do a particular question, move to the next question without losing time.

- **CALCULATORS ARE NOT ALLOWED**.

- **DO NOT WRITE IN THE RIGHT-HAND MARGIN.**

1. (a) Write the number ten thousand and ten and one hundredth in digits.

Answer: ………………

(1 mark)

(b) What is the **sum** in cm, of 20% of 2m and 15% of 1.5mm?

Answer: ………………cm

(2 marks)

2. Given that 314 × 86 = 27004 find the value of following:

(a) 31.4 × 8600 = ………………………………..

(b) 54008 ÷ 8.6 = ………………………………..

(2 marks)

3. Salt is made up of grains. If each grain weighs 0.002 grams, how many grains are there in one kilo of salt?

Answer: ………………grains

(2 marks)

4. Antonis is writing down three digit numbers using the digits from 0 up to 9 only once.

Find the **difference** between the largest three digit number and the smallest three digit number that Antonis can create. (Keep in mind that the numbers don't have to start with the digit 0).

Answer:…………..

(2 marks)

5. Calculate the following:

(a) $5 + 5 \times 5 - 5 \div 5 =$

Answer:…………..

(1 mark)

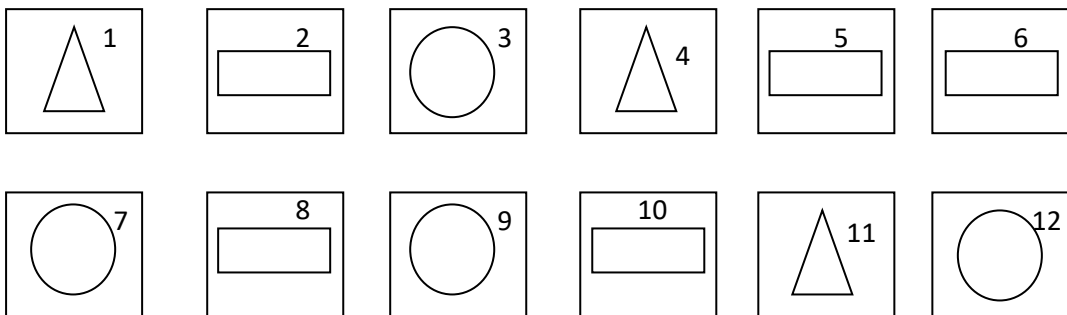(b) $\left(6\frac{1}{2} - 4\frac{5}{8}\right) \div \left(3\frac{1}{2} + 7\frac{3}{4}\right) =$

Answer:………………….

(3 marks)

3

6.   A restaurant that sells pizza sold 20 "Plain" pizzas and 30 "Extra" pizzas in one day and earned €240. The "Extra" pizza costs €1.50 more that the "Plain" pizza.

Find the cost of an "Extra" pizza.

Answer: €................

(3 marks)

7.

The diagram above shows Maria's cards.
Each card has a number and a geometric shape on it.
Maria places all the cards face down on a table and mixes them around.
She then chooses one at random.
What is the probability:

(a) The card has a circle?

Answer: ....

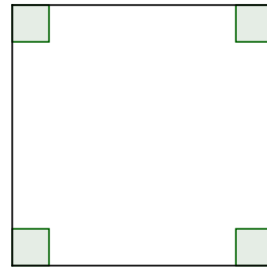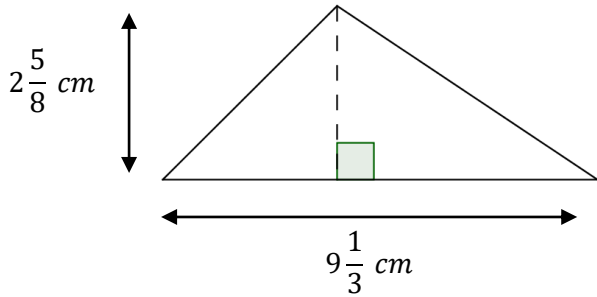(b) The card has a triangle and has an even number?

Answer: ....

(c) The card does not have a rectangle and has an odd number?

Answer: ....

(3 marks)

4

8.

(The diagram is not drawn to scale)

$2\frac{5}{8}\ cm$

$9\frac{1}{3}\ cm$

The area of the square is **four times** the area of the triangle. Find the perimeter of the square.

Answer: ……………… cm

(4 marks)

9. There are 500 children at a primary school. 60% of the children know how to swim. 25% of the girls **do not** know how to swim and 165 boys know how to swim.

How many boys does the school have?

Answer: ………………boys

(3 marks)

10. Eleni is making houses with matches following the pattern below.

Complete the table below:

Number of Houses	1	2	3	40	....
Number of Matches	5	9	....	....	365

(4 marks)

11. Mr. Kiriakos owns a bookshop, he sells pencils at the following prices:

        30 cents   each

or   € 3.00   for twelve pencils

or   € 23.40   for one hundred pencils

(a) What is the smallest amount of money someone must pay to buy 150 pencils?

Answer: € ....

(3 marks)

(b) In the case that 150 pencils are sold at the lowest possible price, by what percentage is the amount he earns less than the amount he would earn if he had sold each pencil separately.

Answer: .... %

(3 marks)

12. Three builders were paid a total of € 315 to build a wall. They want to share the money according to the amount of work each one did. Antonis did double the work Vasislis and George did together. Vasilis did half the work George did.

How much money will each builder receive?

Answer: Antonis €…………………
Vasilis €…………………
George €…………………
(3 marks)

13. The bakery "Fresko" donated 198 savoury treats and 132 sweet treats for the children who were going to the Arithmetic Club trip.

Each child will get the same number of savoury as every other child and the same number of sweet treats as every other child.
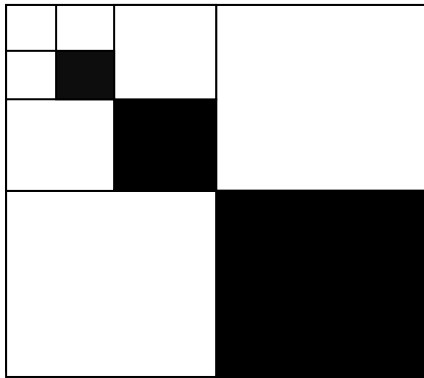
All treats will be used.

(a) What is the largest possible number of children going on the trip?

Answer: ………………children
(3 marks)

(b) How many savoury treats and how many sweet treats will each child get?

Answer: ……………… savoury
……………… sweet
(2 marks)

7

14.

(The diagram is not accurately drawn)

The size of the side of each square is half the size of the side of the immediately larger square. The area of the largest square is $1\ m^2$.

Find the area of the shaded region and give your answer as a fraction in its simplest form.

Answer: …………………… m^2

(3 marks)

15. At a concert, $\frac{1}{5}$ of the tickets were sold for €4 each, $\frac{2}{3}$ of the tickets were sold for €3 each and the rest of the tickets were sold for €2 each.

If there were 90 tickets sold for €4 each, what was the total amount of earnings from the concert?

Answer: € …………………

(4 marks)

8

16. On a Winters' day the meteorological service in Finland recorded the following temperatures.

	Midnight	4 a.m.	10 a.m.	3 p.m.	9 p.m.
Temperature in °C	-6	-9	2	7	-1

(a) What was the difference in temperature:
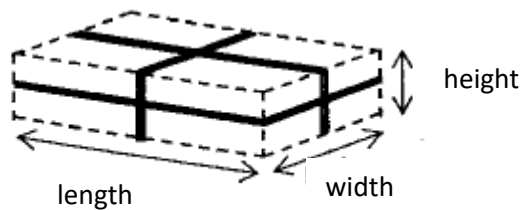
i)   Between midnight and 3 p.m.   ………………

ii)   From 4 a.m. to 9 p.m.   ………………

At 11 p.m. the temperature dropped by 3°C from the temperature at 9 p.m.

(b) What was the temperature at 11 p.m.?   ………………

(3 marks)

17. Constantina use three pieces of coloured ribbon to wrap a gift, as shown in the diagram below.

The gift box is a cuboid and each piece of ribbon fits exactly around the box, without going over the edges. The three pieces of ribbon have a length of 40 cm, 60 cm and 80 cm respectively.

(a) Find the dimensions of the box.

Answer: length ………………cm

width ……………… cm

height ……………. cm

(4 marks)

(b) Find the volume of the box.

Answer: ………………cm^3

(1 mark)

9

18. A bottle of milk weighs 390 grams when it is a quarter full and 440 grams when it is one third full.

   (a) How much does the bottle weigh when it is empty?

   Answer: …………………. grams

   (b) How much does the bottle weigh when it is half full?

   Answer: ………………… grams

   (4 marks)

19. 70% of the human body consists of water.

   (a) Yiannis weighs 55 kg. How much does the water in Yiannis' body weigh?

   Answer: ……………. kg

   (1 mark)

   (b) The water in Andreas' body weighs 56 kg. How much does Andreas weigh?

   Answer: ………………. kg

   (2 marks)

20. Miss Eleni bought an apartment and gave a down payment of € 13500.

(a) How much did she buy the apartment for, if she had to pay a further 77.5 % of the price to pay it off?

Answer: € ....
(3 marks)

(b) How long will it take Ms Eleni to completely pay off the apartment if she gives a € 750 every three months?
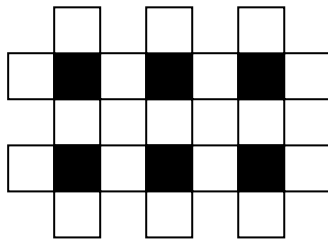
Answer: .... Years .... months
(3 marks)

21. A 5p coin has a thickness of 1.3 mm. Find the value of a stack made up of 5p coins that has a height of 10.4 cm.

Answer: € ....
(2 marks)

22. The Nicosia Municipality wants to build footpaths in a park called 'Smart Squares' using square tiles and they will use following the pattern below.
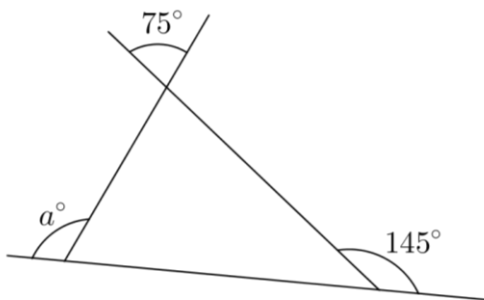

(a) How many white tiles will be needed if 50 black tiles are used?

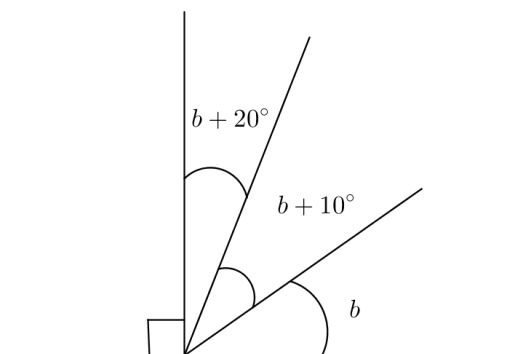Answer: ……………… Grey tiles

(2 marks)

(b) What will be the length of a footpath be if 50 black tiles are used and the side of each tile is 0.4 m?

Answer: ……………… m

(2 marks)

23. Find the size of the angles marked with a and b. (The diagrams are not drawn to scale)

$a =$………………………..

$b =$ …………………………

(2   marks)

12

24. On a test, half the class scored an A.
    One third of the rest scored a B.
    One quarter of the rest scored a C.
    One fifth of the remaining scored a D.

    What fraction of the class scored an E?

    Answer: ……………………..
    (3 marks)

25. A pool can fit 27000L of water. At a one moment when the pool contains 8420 L we open a tap that pours 840L of water per hour. When the tap is closed the pool needs another 8500L to fill up.

    How long was the tap running for?

    Answer: …………………….. hours
    (3 marks)

26. Complete the missing digits in the empty spaces below:

```
    □ 5 7                5 □ 5 8
  ×       9          -   □ 7 7 □
  ─────────────        ─────────────
    3 □ □ 3                8 □   9
```

(3 marks)

13

27. A train travels with a steady speed of 120 km per hour. It departs Prague heading toward Belgrade at 3 p.m. At 6.30 p.m. a plane departs from Prague heading toward Belgrade travelling at a steady speed of 560 km per hour. When the plane reached Belgrade at 8:00 p.m., how far will the train be from Belgrade?

(Assume that the distance from Prague to Belgrade is the same whether travelling by plane or by train)
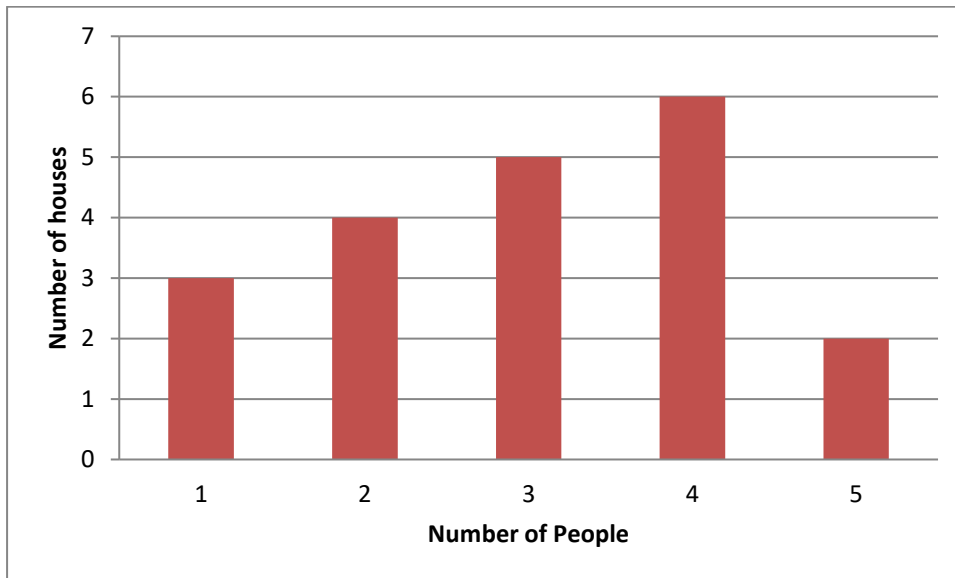
Answer: ………………… km

(3 marks)

28. The sum of the digits of the number 1854 is   1 + 8 + 5 + 4 = 18.

Find which numbers from 1 up to 2000 have digits that have a sum of 27.

Answer: …………………………………………………………………………………………………

(3 marks)

29.

A group of students conducted a survey on how many people live in each house. They went round the houses in a certain area. The chart above shows their results.

(a)   How many houses did the students visit during their survey?

Answer: ………………… houses

(1 mark)

(b)   What is the total number of people living in these houses?

Answer: ………………… people

(2 marks)

(c)   What is the mean number of people living in each house?

Answer: ………………… people

(1 mark)

END OF PAPER