FOUNDED 1900

THE ENGLISH SCHOOL

A SECOND CENTURY OF EXCELLENCE

ENTRANCE EXAMINATIONS 2009

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.
- There are 27 questions in this paper.
- 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.**

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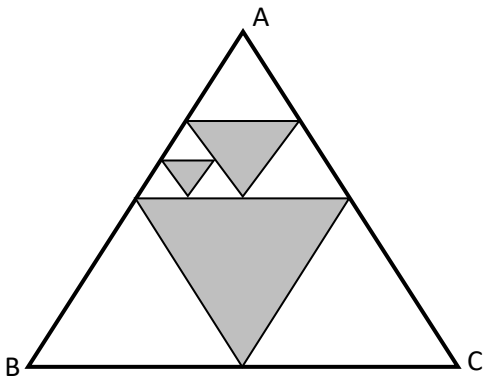
1. A bus ride consists of 10 stops with an **equal** distance between them. The distance between the second and fourth stop is 1200m.
   What is the distance between the first and last stop?

Answer: ……m
(2 marks)

2. Mr. Chirstos needs 12 days to complete a job if he works 7.5 hours each day. How many hours more does he have to work per day if he wants to finish the job 2 days earlier?

Answer: ……hours
(2 marks)

3.



All the triangles are equilateral. The size of the side of each triangle is half the size of the side of the immediately larger triangle.
What fraction of the triangle ABC is shaded?

Answer: ……m
(2 marks)

Leave blank

4. A florist has the following offers for roses:

80 cents	per	rose
€4.20	for	six roses
€8.00	for	twelve roses
€60.00	for	one hundred roses

What is the least amount of money one has to pay in order to buy:

(a) 25 roses?

Answer: ……€

(2 marks)

(b) 110 roses?

Answer: ……€

(2 marks)

(c) Mr. Andreas owns a flower shop and wants to buy a lot of roses to make bouquets. What is the **largest** number of roses he can buy with €160?

Answer: ……roses

(2 marks)

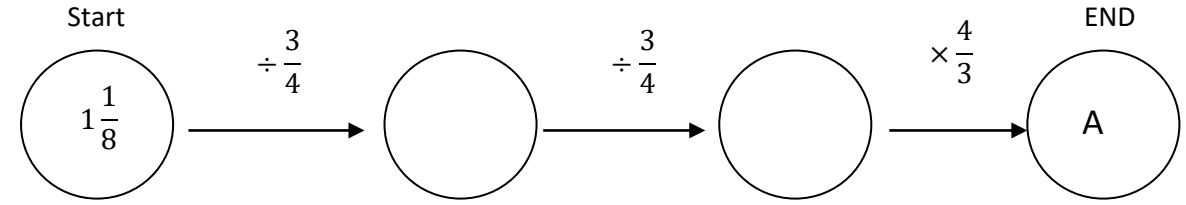
5. 4% of the weight of potatoes is *lost* when the skin is peeled off. If someone buys $7\frac{1}{2}$ kilos of potatoes for €2.80 per kg, how much will he be paying for the potato skin?

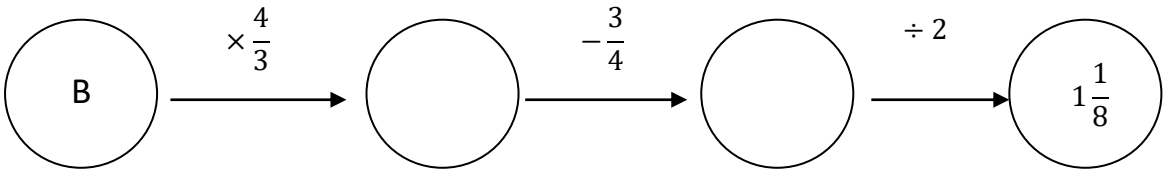
Answer: ……€

(2 marks)

Leave blank

6. Complete the circles with the missing numbers in order to find the numbers A and B.





Answer: A= …… , B = ……

(4 marks)

7. In 2006 a school had 400 students. During the last 3 years the number of students changed in the following way:
   It reduced by 10%, it increased by 25% and increased again by 10%.
   How many students does the school have **now?**

Answer: ……students

(3 marks)

Leave blank

8. Anna is a jewellery designer and wants to make a necklace made out of the beads she has at her workshop. The number of beads she has are more than 100 and less than 150. If she makes necklaces of 12 beads each she will have 5 beads remaining. If she makes necklaces of 15 or 20 beads each, she will have 5 beads remaining also.

(a) Find the number of beads Anna has in her workshop.

Answer: ……beads
(3 marks)

(b) Anna wants to make all the necklaces with either 12 beads each or 20 beads each. The necklace with 12 beads will be sold for €25 and the necklace with 20 beads for €40. If Anna sells all the necklaces she makes, what will be best for her: To make **all** the necklaces with 12 beads or to make **all** the necklaces with 20 beads? Give clear reasons for your answer.

Answer: Make all the necklaces with …… beads because ……
(3 marks)

Leave blank

9. A piece of meat weighs 1.5 kilos when raw and 1.2 kilos when cooked.

(a) What percentage of its weight is *lost* when cooked?

Answer: ……%

(2 marks)

(b) If someone wants 2 kilos of cooked meat, how much should this piece of meat weigh when raw (before being cooked)?

Answer: ……kilos

(2 marks)

10. Calculate the following and write down the letters in order starting from the **largest** answer.

$A.\ (30 + 30 \div 2)\%$ $B.\ 1\frac{2}{3} - \frac{7}{6}$ $C.\ \frac{15-3\times3}{15}$

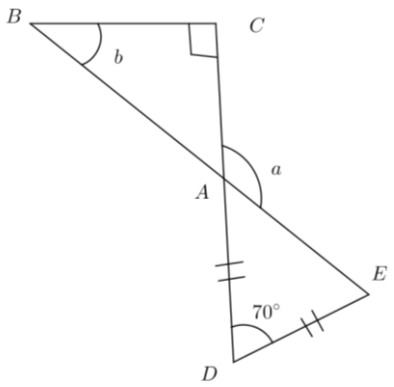
Answer: …… , …… , …….

(3 marks)

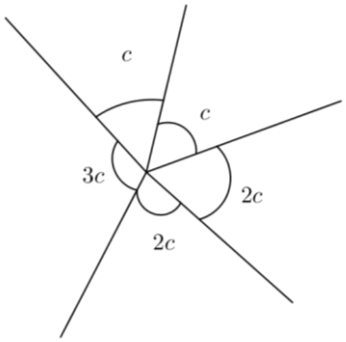
Leave blank

11. Find the missing angles in the following diagrams.
(The diagrams are not drawn accurately)

(i) The triangle ADE is isosceles.



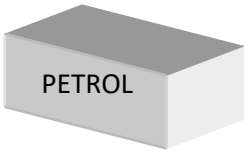
(ii)



a= …….. b= …… c= ……..

(4 marks)

12. The petrol tank of car is a cuboid with dimensions 0.5m x $\frac{4}{5}$m x 12cm. The car consumes one litre of petrol for every 12 kilometres travelled. How many kilometres can the car travel for if the tank is **half full?**



Answer: ……km

(4 marks)

Leave blankLeave

13. There are 800 people at a concert. 60% of them are students. 30% of the students at the concert are from the English School. $\frac{5}{8}$ of the students from the English School are girls.
How many boys are there at the concert from the English School?

Answer: ……boys from the English School
(4 marks)

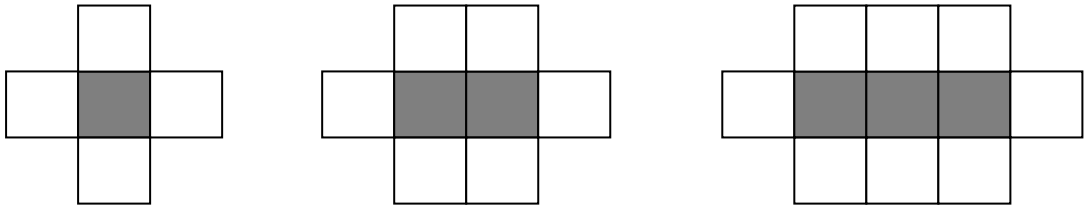
14. During a week, a craftsman and his assistant worked for 5 days and earned a total of €445.
The next week the craftsman only worked for 3 days and his assistant worked for 5 days, they earned a total of €335.

Find how much the craftsman earns per day and how much his assistant earns per day.

Answer: Craftsman €……
Assistant €……
(3 marks)

Leave blank

15. The Maths Department of a University wants to build a variety of footpaths with white and grey squares like the ones in the diagrams below.



(a) Complete the boxes with the missing numbers:

Number of Grey Tiles	1	2	7	45	…….
Number of White Tiles	4	6	…….	……	170

(4 marks)

(b) Each tile has a side of 30 cm. How many **grey** tiles will be needed if a path that has a total length of 21 metres is made?

Answer: ……grey tiles

(2 marks)

Leave blank

16. Mrs. Georgia is preparing cups of coffee. Using $\frac{3}{5}$ of one packet of coffee she can prepare 24 cups of coffee. How many cups of coffee can she prepare if she uses 4 packets?

Answer: ……cups

(2 marks)

17. The numbers below follow a pattern. To find the next number you **triple** the previous number and **subtract** 3. The fifth number is 42.

A, B, C , D , 42

Find the values of A, B, C and D.

A = …… , B=…….. , C = …….. , D = ……..

(3 marks)

18. Find the new temperature if:

(a) The temperature was - 9°C , it increased by 6°C and then decreased by 2°C.

Answer: ……°C

(b) The temperature was - 4°C, it decreased by 5°C and then increased by 12°C.

Answer: ……°C

(2 marks)

Leave blank

19. The cost of renting a motorcycle is

€12 for one day only.
€8 for every extra day.

(a) How much will someone have to pay if he rents a motorcycle for 3 days?

Answer: ……€
(1 mark)

(b) Someone rented a motorcycle and when he returned it he had to pay €60. How many days did he rent the motorcycle for?

Answer: ……days
(2 marks)

20. Tickets were sold for a show at a theatre. 20% of the tickets were sold for €6 each, $\frac{7}{15}$ of the tickets were sold for €5 each and the rest were sold for €2.50 each. How much was the total income from the ticket sales if there were 60 tickets sold for €6 each?

Answer: ……€
(4 marks)

Leave blank

21. A rectangle and a square have the **same perimeter.** The rectangle has a width of 6.3 cm and a length of 12.5 cm. How much bigger is the area of the square than the area of the rectangle?

Answer: ……cm^2

(4 marks)

22. Maria is an athlete that runs long distance races. She completed $\frac{7}{9}$ of the distance she had to run in 2 hours and 34 minutes. If Maria runs the whole distance at a steady pace, how many minutes **more** will she need to complete the race?

Answer: ……minutes

(3 marks)

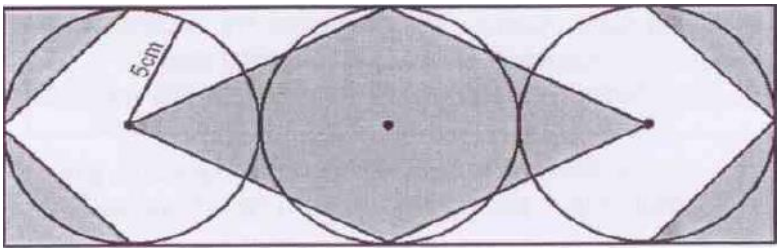
23. A market trader buys four oranges for 52 cents and sells them for 90 cents per five.
How many oranges must he buy and sell in order to make a profit of €15?

Answer: ……oranges

(3 marks)

Leave blank

24. (The diagram is not accurately drawn.)



The diagram shows 3 circles touching one another. The radius of each circle is 5cm. The centre of each circle is shown by a dot. Find the area of the darker shaded surface.

Answer: ……cm^2

(4 marks)

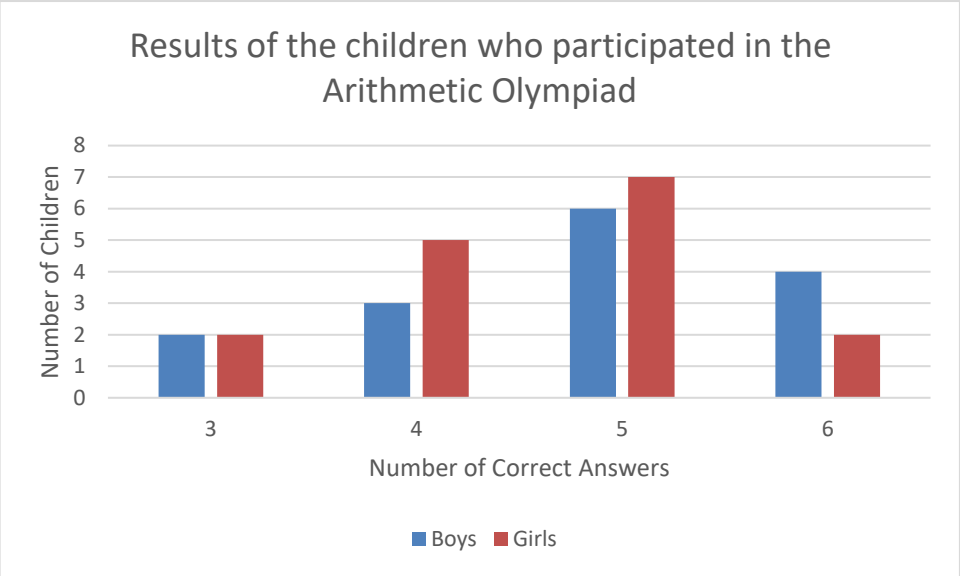
25. The Maths School wants to put a fence around where the children play sports. The space is a square with a side of 30 metres. Every 3 metres there will be a pole placed and between them barbed wire will be used.
Each pole costs € 5 and barbed wire costs € 2.50 per metre. How much will the fencing cost all together?

Answer: ……€

(4 marks)

Leave blank

26. A group of children from Panayiotis' school took part in the 'Arithmetic Olympiad' competition. The competition was made up of 6 difficult questions. All the children managed to answer at least half the questions correctly. The results of the team are indicated in the bar chart below.



(a) How many children participated in the team?

Answer: .....
(1 mark)

(b) How many correct answers were given by boys in total?

Answer: ..... correct answers
(2 marks)

(c) A child is chosen at random from this team, what is the probability that the child is,

(i) a girl?

Answer: .....
(1 mark)

(ii) is a girl who has answered 5 questions correctly?

Answer: .....
(1 mark)

(iii) has answered correctly to more than 4 questions?

Answer: .....
(2 marks)

Leave blank

27. Choose the correct answer for each of the following sections. No calculations are necessary. **Circle the correct answer.**

Double 49 763 is **approximately**

(a) 10 000 (b) 1 000 000 (c) 100 000

One thousand times 0.07998 is **approximately**

(a) 8 (b) 80 (c) 800

Half of $\frac{2999}{6013}$ is **approximately**

(a) 0.025 (b) 0.0025 (c) 0.25

The height of a usual room is **approximately**

(a) 4000 mm (b) 4000 cm (c) 0.4 km

An ordinary apple weight **approximately**

(a) 100 000 mg (b) 100 000 g (c) 0.001 kg

An ordinary cup/glass has a volume of **approximately**

(a) 200 litres (b) 200 ml (c) $\frac{1}{50}$ of a litre

An ordinary postage stamp has an area of **approximately**

(a) 50 cm^2 (b) 0.05 m^2 (c) 500 mm^2

(7 marks)

END OF PAPER