



**English School**

**ENTRANCE EXAMS 2008**

**MATHEMATICS**

**YEAR 1**

**Time: 1 hour and 30 minutes**

- \* Answer all questions.
- \* Show all your working.
- \* The marks for each question are given in brackets.
- \* If you can not find the answer to a question move to the next one without wasting time.
- \* Calculators are not allowed.
- \* The symbol for division : is the same as  $\div$ .
- \* Leave the margin empty.

1. Calculate the following giving your answers in the space provided.

a)  $3,02 \text{ km} + 3020 \text{ cm} + 302 \text{ mm}$

Answer  
.....m

b)  $1.25 \text{ hours} - 1500 \text{ seconds}$

Answer.....min.  
(marks 2)

2. An equilateral triangle and a square have the same perimeter. If the side of the triangle is 14 cm, find the area of the square.

Answer .....cm<sup>2</sup>  
(marks 2)

3. Given that the thirteenth term of the series:  $1, 2, 4, 8, 16, \dots$  is 8192, find:

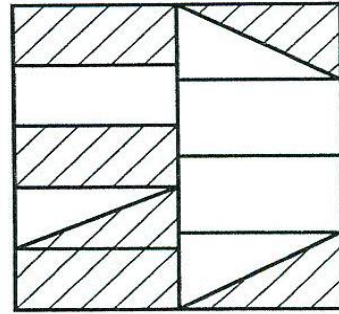
a) The twelfth term of the series.

Answer: .....  
(mark 1)

b) The fifteenth term of the series.

Answer: .....  
(mark 1)

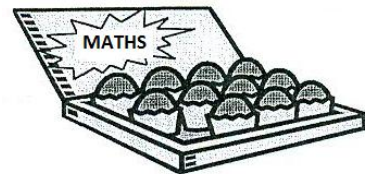
4. Half of the square opposite is divided into five parts and the other half in four parts. Find the shaded part of the square as a percentage of the total square



Answer: .....%

(marks 3)

5. A box of 8 chocolates "MATHS" weighs 180 grams. The same box with 20 chocolates "Maths" weighs 324 grams. What is the weight of the box on its own?



Answer .....grams

(marks 3)

6. Maria's watch runs 7 minutes faster every hour, while Ani's watch runs 5 minutes slower every hour. If both watches show the same time now, after how long will the two watches have a difference of one hour?

Answer .....  
(marks 2)

7. Calculate the following:

a)  $20 + 5 : 0.05 - 1.2 \times 0.3 : 0.04 =$

Answer .....  
(marks 2)

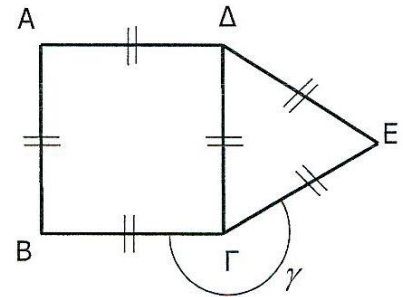
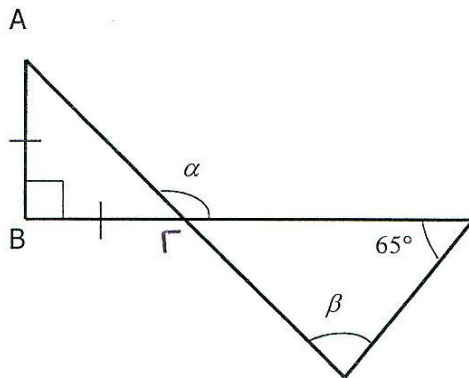
b)  $5\frac{1}{8} - 2\frac{1}{6} \times 1\frac{1}{2} =$

Answer .....  
(marks 2)

8. Find the unknown angles  $\alpha$ ,  $\beta$ ,  $\gamma$ . (The shapes are not accurately drawn.)

$AB = B\Gamma$

$AB = B\Gamma = \Gamma\Delta = A\Delta = \Gamma E = \Delta E$



$\alpha = \dots\dots\dots^\circ$

$\beta = \dots\dots\dots^\circ$

$\gamma = \dots\dots\dots^\circ$

(marks 4)

9. A sweetshop owner sells 4 magazines for every 12 newspapers he sells. If in a week he sold 112 pieces (magazines and newspapers together), how many of these were the newspapers?

Answer .....newspapers

(marks 2)

10.  $\frac{5}{7}$  of the pupils in the sixth form, are involved in athletics.  $\frac{1}{5}$  of the remaining pupils are involved in music. The number of pupils who are involved in other activities besides athletics and music are 24. Find the number of pupils in this sixth form class.

Answer .....pupils  
(marks 3)

11. A basketball team won 7 out of the 12 games played so far. How many more games this team must win in the remaining 8 games in order to have a success of 65%?

Answer .....games  
(marks 2)

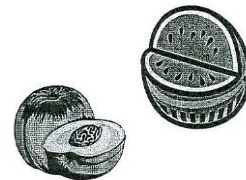
12. Melina is a jewellery designer. She wants to buy pearls in order to make a necklace.  
 Pearls are sold in packets:  
 A packet of 60 white pearls, costs €1.20  
 A packet of 36 red pearls, costs €0.80  
 A packet of 24 green pearls, costs €0.40  
 What is the smallest amount of money Melina will spend, if she needs the same number of pearls in all three colours?

Answer €.....  
 (marks 5)

13. In the island of fruits, people, instead of using money they use fruits.



- 100 plums = 1 melon
- 3 melons = 15 peaches
- 18 peaches = 12 water melons
- 240 water melons = 1 boat.



How many plums does a boat cost in the island of fruits?

Answer .....plums  
 (marks 3)

14. A tailor uses  $32\frac{2}{3}$  m, of material to make blouses. He uses  $1\frac{5}{9}$  m of material for every blouse. He sold all the blouses and collected €630.
- a) For how much money did he sell each blouse?

Answer €.....  
(marks 3)

- b) How much does each blouse cost him, if he made a profit of 20% on each blouse?

Answer €.....  
(marks 2)

15. A group of walkers has covered a certain distance in 5 days. During the first day they covered a distance of 12 km. The second day they covered half of the remaining distance. The third day they covered a distance of 8 km. The fourth day they covered half of the remaining distance. The fifth day they covered a distance of 3.5 km. What was the total length of the distance?

Answer .....km  
(marks 3)



16. A small water tank has dimensions 40 cm x 40 cm x 1 m (1m is the height). The tank is half full.

a) How many bottles of  $1\frac{1}{2}$  litres can be filled from this tank?

Answer .....bottles  
(marks 4)

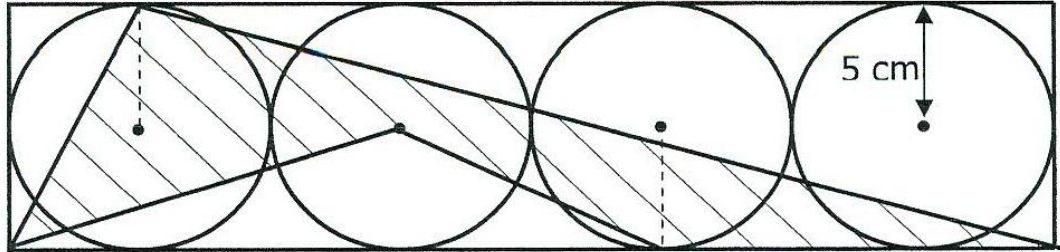
b) If from the original half full tank we empty 8 bottles of  $1\frac{1}{2}$  litres each bottle, find how much the level of the water will be lowered.

Answer .....cm  
(marks 2)

17. An electric goods salesman gets a salary of €800 per month. In addition, he gets a commission of 12% on his sales. How much will he get in a month were he has €2500 sales?

Answer €.....  
(marks 2)

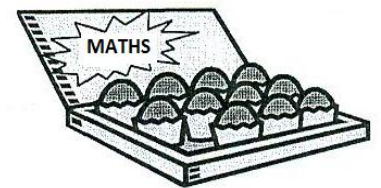
18.



The diagram (not drawn on scale) shows 4 circles touching each other. Each circle has a radius of 5cm. The centre of each circle is shown by a dot. Find the shaded area.

Answer .....cm<sup>2</sup>.  
(marks 3)

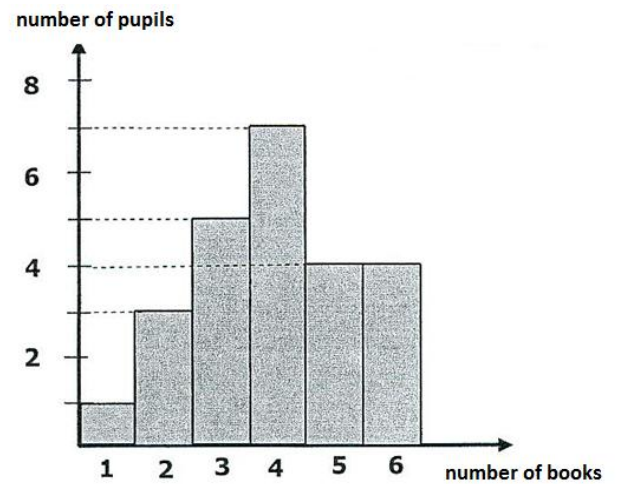
19. The “MATHS” chocolate factory had 400 employees. During the last 4 years the number of employees in the factory has changed as follows:  
Increase by 20%, then decrease by 50%, then increase by 25% and finally decreased by 5%. What is the number of employees in this factory now?



Answer .....employees

(marks 3)

20. The diagram shows the number of books read by the pupils in a certain class.



a) How many pupils are there in this class?

Answer .....pupils  
(mark 1)

b) How many books did all the pupils read?

Answer .....books  
(mark 1)

c) Find the average number of books read by each pupil in the class.

Answer .....books  
(mark 1)

d) At the end of the year there will be a lottery. The winner of the lottery will get €15 per book that he/she read. Find the probability that the prize will not exceed €45.

Answer .....  
(mark 1)

21.



Andrew has covered the distance from point A to point B without stopping. It took him 40 minutes to cover one third of the distance with constant speed of 15 km per hour. He then covered the remaining distance with a constant speed of 12 km per hour. He arrived at point B at 11:30 in the morning. What time did he start from point A?

Answer .....

(marks 4)

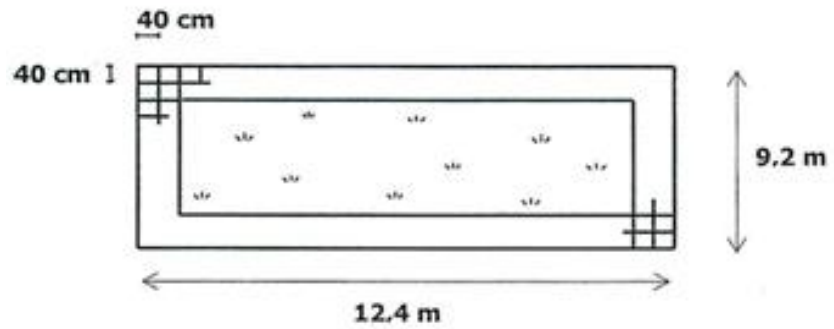
22. A salesman sold a dress and a coat for € 50 each piece. He had a profit of 25% from the sale of the dress but he had a loss of 25% from the sale of the coat. Did the salesman make a profit or loss and how much? (Give your answer to the nearest hundredth.

Answer €.....profit/loss.

Delete the wrong word

(marks 4)

23.



A yard has the shape of a rectangle of length 12.4 m and width 9.2 m. The owner wants to plant grass in the centre and leave a path around the yard of equal width. Part of the path can be seen in the shape. For the path he is going to use square tiles of length 40 cm.

a) Find the area that the grass will cover.

Answer .....m<sup>2</sup>  
(marks 3)

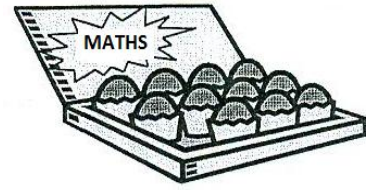
b) Find the number of tiles he will need to cover the path.

Answer .....tiles  
(marks 3)

c) Every tile costs €2.60. Labour costs are measured per square metre. The tiles together with the labour cost €1000. Find the cost of the path per square metre.

Answer €.....  
(marks 3)

24. The “MATHS” chocolate factory is celebrating its success in the market by giving presents. Inside every chocolate wrapping there is a coupon. With every three such coupons one gets a free chocolate. If you buy 81 chocolates how many free chocolates will you get?



Answer .....free chocolates)  
(marks 3)

25. Nick wants to buy a DVD and a CD. Find the price of the DVD and of the CD if:  
Three DVDs and two CDs cost €102 together.  
Two DVDs and one CD cost €63 together.

Answer €.....for 1 DVD  
€.....for a CD)  
(marks 3)

26. In a morning, the temperature in the Cold Village was  $-8^{\circ}\text{C}$ . At midday the temperature was increased by  $10^{\circ}\text{C}$ , in the afternoon it was decreased by  $3^{\circ}\text{C}$  and in the evening it was decreased by  $4^{\circ}\text{C}$ . What was the temperature in the evening?

Answer ..... $^{\circ}\text{C}$   
(mark 1)

27. If

$$1^* = 1$$

$$2^* = 2 \times 1 = 2$$

$$3^* = 3 \times 2 \times 1 = 6$$

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$$6^* = 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720$$

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Find the following:

a)

$$\frac{8^*}{6^*}$$

Answer .....  
(mark 1)

b)

$$\frac{7^*}{5^* \times 2^*}$$

Answer .....  
(mark 1)

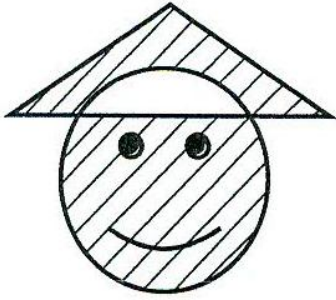
c) Use a **clever method** with the minimum number of calculations to find the value of

$$\frac{1000^*}{998^*} \times \frac{110^*}{111^*}$$

Answer .....  
(marks 2)



28.





$\frac{2}{3}$  of the triangle and  $\frac{11}{12}$  of the circle are shaded. If the area of the circle is  $10 \text{ cm}^2$ , how much is the area of the triangle?

Answer .....  
(marks 2)

29. A and B are builders. A on his own can finish a job in 5 hours. B can finish the same work in 10 hours. If they work together in how many hours will they finish the work?

Answer .....  
(marks 3)


30. In this exercise the symbol  represents the same operation, in all cases as in the following examples.

Given that the operations are done with the  symbol such that

$$10 \text{  3 = 23$$

$$15 \text{  4 = 34$$

complete the following:

$$6 \text{  5 = \square$$

$$\square \text{  8 = 26$$

$$[ 5 \text{  \square ] \text{  9 = 43$$

(marks 4)