



English School

ENTRANCE EXAMS 2002

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) α) Shade two thirds of the following shape



b) Write the fraction three fifths as a decimal number.

c) i) Write the number three millions and two using numeric digits only.

ii) Write 25480 to the nearest hundred

2) Calculate the following, giving your answers as fractions

$$(\alpha) 2\frac{1}{5} + 1\frac{1}{15} + 3\frac{1}{3}$$

$$(\beta) 4\frac{1}{9} - 2\frac{5}{18} + 5\frac{1}{3}$$

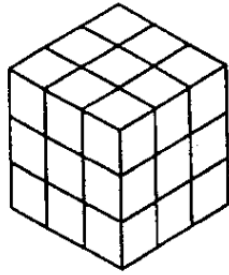
$$(\gamma) 7\frac{1}{10} \div \left(6\frac{1}{5} - 2\frac{1}{4}\right)$$

3) Calculate the following

$$(\alpha) \frac{0.05 \times 200}{0.4}$$

$$(\beta) 0.64 \div (0.02 \times 32 \times 0.01)$$

4)



The above cube has dimensions $(3 \times 3 \times 3)$. It is made out of 27 smaller cubes. If the six faces of the big cube are coloured with a green colour, how many of the smaller cubes will have

a) Three faces with green colour?

b) Two faces with green colour?

c) One face with green colour?

d) No face with green colour?

e) Another similar cube has dimensions $(n \times n \times n)$. This cube is also painted green. How many of the smaller cubes have three faces green?

5) a) Write the next two terms of the series

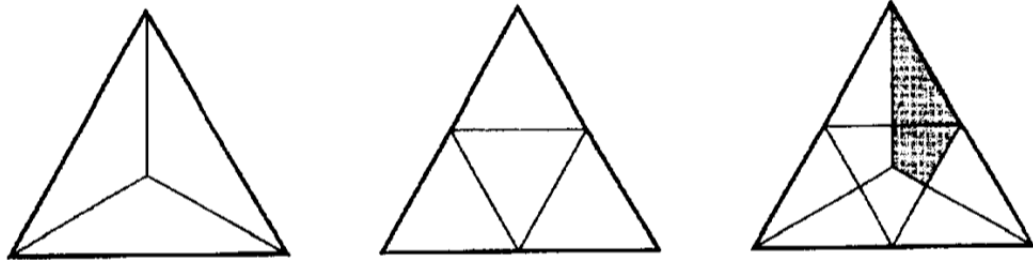
2, 3, 6, 11, 18,,

b) Each next term of the following series can be found by dividing the number located before it with its previous number.

Write the next three terms of the series

3, 6,,,

6) The following triangles are exactly the same.



The first triangle has been divided into three equal triangles.

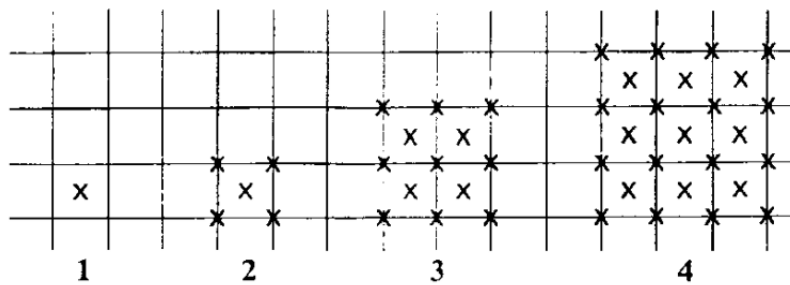
The second triangle has been divided into four equal triangles.

Which part of the third triangle is shaded?

7) I am thinking of a number and I add 14 to it. If I subtract 5 from the original number, I will get exactly half of what I got before. What number am I thinking of?

8) How many degrees does the hour hand of a clock cover when it moves from 3.30 p.m. to 5.45 p.m.?

9) The following shapes are made of <<x>>.



a) Complete the table

Shape	1	2	3	4	5
Number of <<x>>	1	5	13	25

b) How many <<x>> will the 8th shape have?

10) The students of a school decided to decorate their school lockers with stickers. Their lockers are numbered from 1 to 150.

They used the following.

- Blue stickers on every 4th locker starting from locker number 4.
- Red stickers on every 10th locker starting from locker number 10.
- Green stickers on every 15th locker starting from locker number 15.

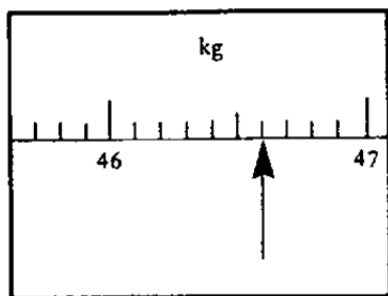
Which of the lockers will have all three colours of stickers?

11) When the time is 1 o'clock the clock is ticking once.
When the time is 2 o'clock the clock is ticking twice, etc.
When the time is 6 o'clock the ticking lasts on for 30 seconds.

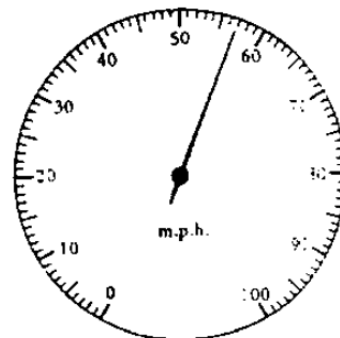
a) For how many seconds does one tick last?

b) For how long is the clock ticking at 3 o'clock?

12) Write the readings of the following



a)kg



b)m.p.h.

13)



In the above photo John has a height of 4 cm and Petros has a height of 3 cm (Shape not accurately drawn). In reality John is 1.60 cm tall. Find how tall is Petros.

14) How many centimetres do you need to add to 5.71 to get a result of 6?

15) A bottle of water can hold 1.5 litres. How many glasses of 125 ml capacity are needed to fill up this bottle?

16) Costas is dividing £8 by 3 on his calculating machine. The calculator gives as a result the number 2.66666666...

a) Give the result to the nearest cent.

b) If Costas gives the amount in (a) to Erica and exactly the same amount to John, how much will he have left?

18) A wrestling match consists of 12 rounds. If each round lasts 3 minutes and there is one minute break in between two rounds, how long does the match last for?

19) At 7.30 a.m. Katherine leaves her house and starts walking towards her school with a speed of 6km per hour. Her school is 5 km away from her house. Ten minutes later her mother realises that she left her books at home and starts following her with a speed of 8 km per hour.

a) How far has Katherine travelled during the ten minutes?

b) At what time will her mother manage to catch up with her and what will their distance from school be at this time?

20) Find the result of each of the series, giving your answer in its simplest form.

Series 1: $\left(\frac{1}{1} - \frac{1}{2}\right) =$

Series 2: $\left(\frac{1}{1} - \frac{1}{2}\right) + \left(\frac{1}{2} - \frac{1}{3}\right) =$

Series 3: $\left(\frac{1}{1} - \frac{1}{2}\right) + \left(\frac{1}{2} - \frac{1}{3}\right) + \left(\frac{1}{3} - \frac{1}{4}\right) =$

Series 30: $\quad \quad \quad =$

21) A machine produces x amount of toys per hour.

- a) How many toys does the machine produce in 3 hours? (give your answer in terms of x)

Another machine needs twice the time to produce the same amount of toys.

- b) How many toys does the second machine produce in 1 hours? (give your answer in terms of x)

22) The time needed for a chicken to be cooked is calculated according to the following:

- 40 minutes per kg weight of chicken, plus
- 20 minutes extra on the total time

- a) How much time will be needed to cook a chicken which weights 3.5 kg?

- b) If a chicken needs 1 hour and 40 minutes to be cooked, what is the weight of the chicken?

23) On Sunday George begun to read a book of 400 pages. On Sunday he managed to read $\frac{1}{8}$ of the book.

a) How many pages did he manage to read on Sunday?

b) On Monday he managed to read $\frac{1}{7}$ of the remaining part of the book. How many pages are still left for George to read?

24) Papadopoullos family read the following advertisement for their vacaton

Special offer!!! 5 Days to Athens. £240 for each adult – children under 15 years old half price – children under 6 years old £20 only! People over 65 years old pay one third of the adult prices! Further £50 discount for over £700 reservations .

Pavlos and Athena Papadopoulloou (aged 43 and 38), their two children age 12 and 5 together with grandmother Anastasia (age 68), decide to benefit from the offer. How much will their vacations cost?

25) The year 2002 has the following property. When you read the number from left to right is equal to the number when read from right to left.

a) Which is the next year with the same property?

b) The date 20th of February 2002 when written in the form 20.02.2002 has the same property. Which is the next date that has the same property?

26) If Costas and George work together they can build a wall in 8 hours.

a) How much time will Costas take to build the wall on his own?

b) Haris wants to help them build the wall. If all three of them work together how long in minutes, will it take for them to build the wall?

27) The population of a country doubles every 50 years. In the year 200 the population of the country is 2 million.

a) When will the population of the country become 8 million?

b) When was the population of the country 250 000?

28) The cost of an overseas call depends on the time of the day that it is made and its duration.

Overseas charges are the following:

12 cents per minute for calls between 2.00 p.m and 6.00 p.m

8 cents per minute for calls between 6.00 p.m and 6.00 a.m

Helen calls Melina who lives in America and talks to her from 5.55 p.m. until 6.15 p.m. At 6.20 p.m. Helen calls Georgia who lives in Athens and they talk until 6.45 p.m.

a) How much did the call to America cost?

b) How much did the call to Athens cost?

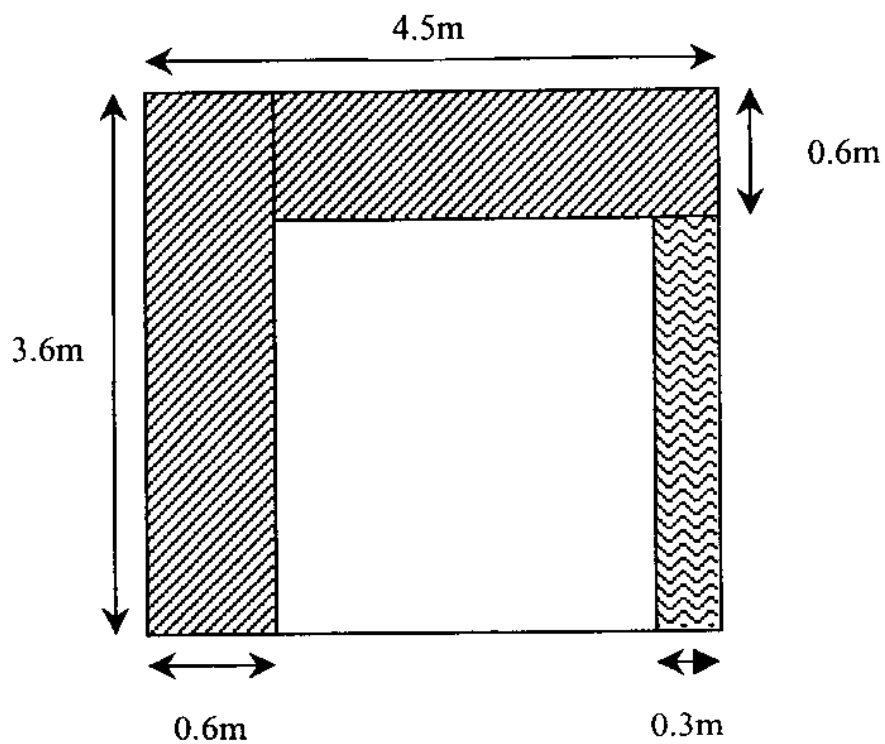
29) Given that

$$\triangle + \triangle + \bigcirc = \square$$

$$\square + \bigcirc = \triangle + \triangle + \triangle$$

How many circles correspond to one triangle?

30)



The diagram shows a kitchen with dimensions 3.6m x 4.5m. The shaded part shows cabinets of width 60cm and 30 cm. The floor only will be covered with square tiles of side 20cm. Each tile costs 50 cent.

Find.

- The area of the floor
- How many tiles are needed to cover the floor
- How much will it cost to cover the floor with tiles?