



SCHOLARSHIP EXAMINATION

MATHEMATICS

2010

Time: 1 hour

Name:

School:

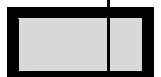
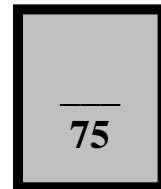
Non Calculator

Do not worry if you find some of the questions very hard.

They are supposed to be.

It is very rare for candidates to answer all questions.

Just do as much as you can in the time available.



1) Find the answers to these. Give the answer as a mixed number or as a fraction in its simplest form. YOU MUST SHOW YOUR WORKING.

a) $2\frac{1}{3} + 1\frac{3}{7} =$

_____ (2)

b) $3\frac{1}{9} - 1\frac{4}{5} =$

_____ (2)

c) What is $\frac{3}{8} \div \frac{18}{32}$?

_____ (2)

d) What is $\frac{3}{11} \times \left[\frac{1}{7} + \frac{5}{3} \right]$?

_____ (3)

e) What is the value of this fraction?

$$\frac{1}{1 + \frac{1}{1 + \frac{1}{4}}}$$

_____ (3)



2) The date 8th Feb 2080 would be 08022080 and is a palindrome because it is the same number read from left to right as from right to left. List all the dates which are palindromes from the 1st January 2000 up until today's date.

_____ (4)

3)

What is the total when all the prime factors of 2010 are added up?

_____ (4)

4)

What fraction of a 24-hour day does school take up, if school starts at 8.13 am and finishes at 3.25pm ?

_____ (3)



5)

Which of the following expressions gives the largest number ? (show all working out)

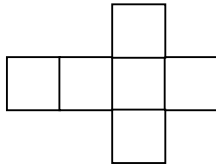
a) $3 \times 5 + 5 \times 3$ b) $3 + 5 \times 5 + 3$ c) $3 + 5 + 5 \times 3$

d) $(3 + 5) + (5 \times 3)$ e) $(3 \times 5 + 5) \times 3$

_____ (3)

6)

The perimeter of this net of a cube is 42cm.
What is the volume of the cube?



_____ (3)

7)

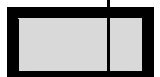
Each day Jenny ate 20% of the jellybeans that were in her jar at the beginning of that day. At the end of the second day, 32 remained. how many jelly beans were in the jar originally?

_____ (3)

8)

What is the angle between the hands of a clock that shows 20 past 7?

_____ (3)



- 11) $56 \times 924 = 51744$
Use this to answer the following

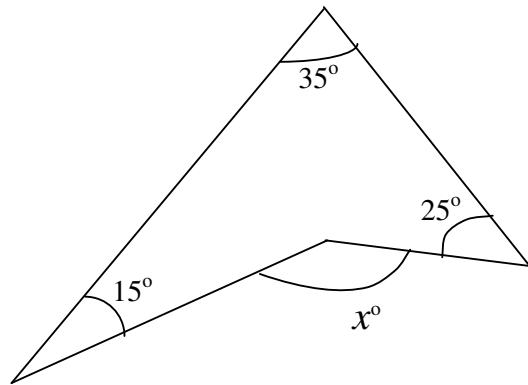
$$5.6 \times 9.24 = \dots\dots\dots$$

$$0.56 \times 0.924 = \dots\dots\dots$$

$$\frac{51.744}{9.24} = \dots\dots\dots$$

(3)

- 12) Find the value of x°



_____ (3)



13)

I think of a number, subtract 3 and then multiply the answer by 7.
I then subtract twice the original number from the result and add 6.
What is the answer always a multiple of?
Try to prove this by using algebra.

_____ (3)

14) At a holiday camp the ratio of boys to girls is 4 : 5 and ratio of girls to adults is 6 : 7. The ratio of adults to supervisors is 5 to 1. What is the ratio of girls to supervisors at the camp?

_____ (3)



15)

The Queen of Spades always lies for the whole day or always tells the truth for the whole day. Which of these statements can she never say? Explain your reasoning carefully.

A “Yesterday, I told the truth”

B “ Yesterday, I lied”

C “ Today I tell the truth”

D “ Today I lie”

E “ Tomorrow I shall tell the truth”

_____ (3)

16) A T-shirt marked down by 40% in a sale was sold for £15. What was the original marked price before the sale?

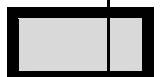
£ _____ (3)

17)

My recipe for raspberry jam requires 3kg of sugar to every 2.5kg of fruit. One day I found after making several batches of jam that I had 3kg of fruit still left.

How much sugar is needed to make the rest of the fruit into jam?

_____ (3)



18)

Fussy Finney wants to buy a new house but he doesn't like house numbers that are divisible by 3 or 5. If all the houses numbered between 100 and 150 inclusive are for sale, how many houses can he choose from?

_____ (3)

19)

In the *Soft Boulder Café* each table has 3 legs, each chair has 4 legs and all the customers and the three members of staff have two legs each. There are four chairs at each table at a certain time, three-quarters of the chairs are occupied by customers and there are 206 legs altogether in the café. How many *chairs* does the café have?

_____ (3)

20) In this magic square each row, column and the two main diagonals add to the same total. Which number replaces *n* in this square which uses all the whole numbers from 7 to 15 inclusive.

<i>n</i>		
		7
		14

(3)

END OF PAPER

