North London Collegiate School

Frances Mary Buss Foundation

11+ ENTRANCE EXAM

Friday 11th January 2008

MATHEMATICS

Time allowed: 1 hour 15 minutes

Name: .....

Instructions

Only use a pencil and a rubber.

Work through the paper carefully without rushing.

Do your work clearly in the space near each question.

Do not rub out your working: you may get marks for it.

If you cannot answer a question go on to the next one.

No calculators or rulers allowed.

1.

$$\begin{array}{r} 5784 \\ +\ \ 419 \\ \hline \\ \hline \end{array}$$

2.

$$\begin{array}{r} 2605 \\ -\ \ 832 \\ \hline \\ \hline \end{array}$$

3.

$$\begin{array}{r} 927 \\ \times\ \ \ \ 7 \\ \hline \\ \hline \end{array}$$

4. $8\overline{)29648}$

5. Write down the number which is 5 less than eight thousand and three.

_____

6. Fill in the missing numbers to make the sum correct.

$$\begin{array}{r} 3\ \square\ 5 \\ +\ \square\ 8\ 7 \\ \hline 8\ 6\ 2 \end{array}$$

7. A chocolate bar costs 36p. How many can Nikita buy for £3.00?

_____

8. There are 24 children in Alfie's class. Five eighths of the class have school lunch. How many children have school lunch?

_____

9. Fill in the missing numbers in each of these number patterns:

a) 2 8 14 20 ____ 32 ____

b) ____ 3 9 27 ____ 243

c) 8 6½ 5 ____ 2 ____

10. What fraction of the parallelogram below is shaded?

_____

11. Write down the number between 41 and 51 which is divisible by both 3 and 4.

_____

12. Jenny pays £156 for six nights Bed and Breakfast accommodation. How much would it cost her to stay there for 8 nights?

_____

13. a) Dita watched television from 5:35pm until 7:10pm. How long did she spend watching television?

_____

b) Dita watches the television for 2 hours 45 minutes each weekend. How much time does she spend watching television over three weekends?

_____

14. Arrange these numbers in order, starting with the smallest.

0.7 $\quad$ $\frac{3}{4}$ $\quad$ $\frac{4}{5}$ $\quad$ 0.65 $\quad$ five twelfths

_____ _____ _____ _____ _____

15. Shade the diagram so that the dotted line is line of symmetry.

16. Jamie got seven questions wrong in a test out of 25 questions. What percentage of the questions did he get wrong?

_____

17. The second hand of a clock points to the number 2. After one minute and twenty seconds what number will it be pointing to?

_____

18. Charlotte buys 500g of cheese which costs £5.30 per kilogram, six bananas at 15p each and two chocolate bars at 56p each. How much change will she have from a ten pound note?

cheese _____

bananas _____

chocolate bars _____

change _____

19. Hui Ling measures her pencil before she sharpens it.

What is the length of the pencil?

_____

20. Arrange the letters for each of these events in order, starting with the least likely:

A *Rolling a dice and getting a three*
B *Rolling two dice and getting a total of 15*
C *The next person who walks in the door was born on a Wednesday*
D *The last digit of a telephone number is NOT a 9*

Least likely — Most likely

21. Maria telephoned Priya on her mobile. The rate for the first three minutes was 7p per minute. After that the telephone call cost 5p per minute. The telephone call lasted 21 minutes. How much did it cost?

_____

22. Which two shapes can be fitted together to make the larger shape?

1.

2.

3.

4.

_____

23. 15 x 34 = 510

Use this information to work out:

a. 150 x 340 _____

b. 15 x 17 _____

c. 510 ÷ 17 _____

24. Clara has four brothers.
Sam's age added to Ben's age gives 12.
The total of Frederick's and Sam's and Ben's ages is 28.
Mylo's age added to Sam's age gives 20.
The total of all the brothers' ages is 39.

Work out the ages of Clara's brothers.

Sam _____

Ben _____

Frederick _____

Mylo _____

25. The time in Australia is 9 hours ahead of our time in the UK.

a) I wish to ring a friend in Australia so that for them the time is between 6.30 pm and 8.30 pm. Between what times in the UK should I ring them?

_____

The time in the USA is 5 hours behind UK time.

b) What time is it in Australia when it is 4 am in the USA?

_____

26. 8 3 5 4 9

Using all these digits once only make

a) the largest number ☐☐☐☐☐

b) the largest number divisible by 4 ☐☐☐☐☐

c) the smallest even number ☐☐☐☐☐

27. Zac had a 24 hour digital clock.
2am is shown as 02:00 and 8.35pm is shown as 20:35.
The numbers glow in the dark.
The numbers are displayed as shown.

What is the time when the glow from the clock is least?

What is the time when the glow from the clock is greatest?

least glow_____

greatest glow_____

28. At a party all the children were put into groups of 4 to play a game. Two children had to sit out.

For another game they were put into groups of 5. Two children had to sit out.

For the next game they were put into groups of 6. No one had to sit out.

How many children were at the party?

_____

29. Write down how many cubes and triangular blocks are used to make the ship shown below.

Cubes: _____

Triangular blocks: _____

30. A B and C represent different digits.

A	**B**	+	**C**	=	50
B	**C**	+	**A**	=	41

What are the values of **A**, **B** and **C**?

A _____

B _____

C _____

31. This shape is made from 9 identical squares.

The area of the shape is $144cm^2$.
What is the perimeter of the shape?

_____

32. Look carefully at this example to see how the 4 numbers in the corners of the square are used to make the number in the middle.

$3 \times 6 - 4 \times 2$
$= 18 - 8$
$= 10$
So 10 goes in the middle

(a) Find the missing numbers in each of the following.

(b) In each of these squares the 2 missing numbers are the same. Fill in the missing numbers.

(c) None of the missing numbers in this square is the same.
Fill in 4 numbers which would work.

33. Here is a sequence of whole numbers

7 22 11 34 17

The rule for the next number in the sequence is:

- if the last number is odd then multiply it by 3 and add 1
- if the last number is even then halve it.

In the following sequence the first three numbers have been left out. Fill in the numbers to show three different possible sequences which obey the rule above.

☐	☐	☐	16	8	4	2	1	4
☐	☐	☐	16	8	4	2	1	4
☐	☐	☐	16	8	4	2	1	4

34. Three pet rabbits cost £19.70.
The second rabbit cost £2 more than the first.
The third rabbit cost 80p less than the second.
What is the cost of the first rabbit?

_____

35. Sarah spilt juice all over her calculator. Now only the five buttons shown work, as well as the equals and clear buttons.

[C] is the clear button.

[=] is the equals button.

The other working buttons are:

[3] [6] [8] [×] [–]

Buttons can be used as many times as you like.

Starting with the clear button, show how to use five more buttons to make the answer shown.

a) [C] [ ] [ ] [ ] [ ] [ ] = 45

b) [C] [ ] [ ] [ ] [ ] [ ] = 1

c) [C] [ ] [ ] [ ] [ ] [ ] = 32

36. Zoe, Laura, Sam, Ali and Craig each gave one of the others a present. No one got two presents.

Laura received a CD. Ali received a book. Craig gave a video. Ali gave a scarf, but not to Craig. Sam gave a puzzle and did not receive the scarf.

Fill in the spaces to show who received which present from whom.

Zoe received _____ from _____

Laura received _____ from _____

Sam received _____ from _____

Ali received _____ from _____

Craig received _____ from _____

37. In this number sequence two numbers next to each other are added together to give the following number.

____	3	____	____	19

Find the missing numbers in the sequence.

38. On ordinary dice the number of spots on opposite faces add up to 7.

(a) How many spots are on the face opposite the one with 3 spots?

_____

Rajni is playing with some dice. She places them on a table and adds up all the spots she can see.

For example in this case she can see 15 spots.

(b) How many spots can she see in the cases below?

_____

_____

(c) Rajni tries arranging 2 dice on the table. What is the smallest number of spots she can see if she arranged them:

like this?

_____

or like this?

_____

39. The different shapes stand for eleven of the numbers from 0 to 12.
Each shape is a different number.

Can you work out what they are from the multiplications above?