



BANCROFT'S SCHOOL

11+ EXAMINATION

Mathematics Sample Paper 1

Time allowed 45 minutes

First name	
Last name	
Date of birth	
Name of my school	

Instructions:

- This exam is 45 minutes long
- The exam is out of 65 marks

EQUIPMENT

- All you will need is a pencil or a pen, a rubber and a ruler
- No calculators are allowed

ADVICE

- The questions get progressively harder
- They are designed to challenge you and make you think
- Try your best

1. Calculate

a) $123 + 456$

579.....[1]

b) 12×34

c) $9876 - 5432$

408.....[2]

d) $12345 - 6789$

4444.....[1]

e) $1001 \div 7$

5556.....[2]

143.....[2]

2. a) What is the remainder when 123456 is divided by 5?

.....¹.....[2]

- b) Calculate

$$7 \times 451 + 2 \times 451 + 451$$

.....⁴⁵¹⁰.....[2]

- c) The digits 1,2,3,4,5 and 6 put into the following boxes to make two 3 digit numbers and the second 3 digit number is taken away from the first to give a total.

Each digit from 1 to 6 is used exactly once.

What is the largest total that can be made?

.....⁵³¹.....[2]

3. Put these fractions in ascending order according to their size.
(Ascending means smallest to largest)

$$\frac{4}{5}$$

$$\frac{3}{8}$$

$$\frac{3}{4}$$

$$\frac{1}{2}$$

$$\frac{2}{3}$$

..... $\frac{3}{8}$, $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{4}{5}$ [3]

4. a) 105 has 3 prime factors. List them.
A factor of 105 is a number that divides (goes into) 105. A prime number is a number whose only factors are itself and 1.

..... 3 , 5 and 7 [2]

- b) 105 has 8 factors in total. List **all** the factors of 105.

..... $1, 3, 5, 7, 15, 21, 35, 105$ [2]

- c) Write down the prime factors of 66.

..... $2, 3, 11$ [2]

- d) How many factors does 66 have in total?

..... 8 [1]

5. a) A square has a perimeter of 20cm.
What is the square's area?

25

..... cm²
[2]

- b) A rectangle has a perimeter of 20cm.
Its length is 2cm longer than its width
What is the rectangle's area?

24

..... cm²
[2]

- c) Another rectangle has a perimeter of 20cm.
Its length is 4 times longer than its width
What is the rectangle's area?

16

..... cm²
[2]

- d) Another square has an area of 81cm²
What is the square's perimeter?

36

..... cm
[2]

6. a) A car journey starts at 10:27am and finishes at 1:24pm.
How many minutes did the journey take?

177 minutes
[2]

- b) A child is 13 years old and their parent is 40 years old.
In how many years' time will it be before the parent is exactly twice the child's age?

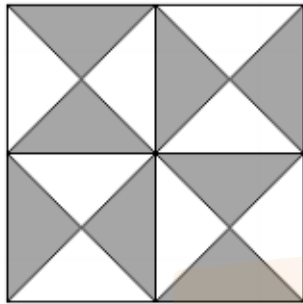
14 years time
[2]

- c) I am facing South East. I then turn 225 degrees anticlockwise.
What direction am I facing now?

West
[2]

7. Calculate the fraction of the following shapes that are shaded.
Give your answers as fully simplified fractions.

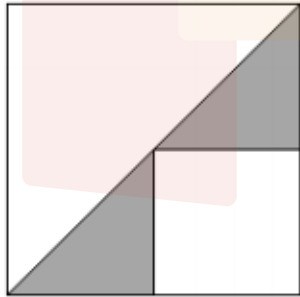
a)



$$\frac{1}{2}$$

[2]

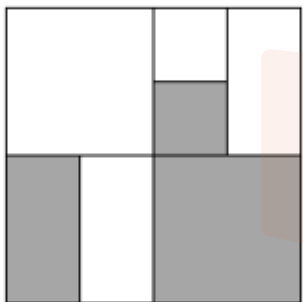
b)



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

[2]

c)



$$\frac{7}{16}$$

[3]

8. By writing a 1 digit number in the big box and an operation (+ , - , x or ÷) in the small box, make the following calculation true.

$$\boxed{8} \quad \boxed{\div} \quad \left(3 - \frac{8}{3} \right) = 24$$

[3]

9. a) I roll 2 fair 6-sided dice and add up the numbers shown on each to get a total score.
What is the most likely total score that I can get?

7

[2]

- b) I now roll 3 fair 6-sided dice and multiply the numbers shown on each dice to get a total score of 80.
What numbers did I roll?

4, 4, 5

[2]

10. 64 players enter a tennis tournament.
Each player plays another player in the first round and the winner of each match progresses to the second round.
Then each player in the second round plays another player who progressed to the second round and the winner of that match progresses to the third round.
And so on, until the final, where one player wins the whole tournament.

a) How many matches does the winner of the entire tournament play?

6

[2]

b) How many matches in total are played in the entire tournament?

63

[2]

c) Using your answer to b), or otherwise, guess the value of:

$$1 + 2 + 4 + 8 + \dots + 1024$$

2047

[2]

11. The digit sum of a number is the sum of the digits of that number. For example the digit sum of 2862 is 18.

a) List all the 5 digit numbers that have a digit sum of 44.

$\underline{\quad 99998 \quad}$
 $\underline{\quad 99989 \quad}$
 $\underline{\quad 99899 \quad}$
 $\underline{\quad 98999 \quad}$
 $\underline{\quad 89999 \quad}$

[2]

b) How many 3 digit numbers have a digit sum of 25?

6

[2]

c) How many 4 digit numbers have a digit sum of 2?

4

[1]

d) How many 100 digit numbers have a digit sum of 899?

100

[2]

END OF PAPER