BANCROFT'S SCHOOL
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SAMPLE PAPER

11+

MATHS

ENTRANCE EXAMINATION

BANCROFT'S SCHOOL
11+ ENTRANCE EXAMINATIONS
GUIDANCE NOTES FOR PARENTS

MATHEMATICS

Candidates will sit one paper, which is in two sections and lasts 75 minutes. A ruler, pencil and protractor will be needed, but not a calculator.

Section A:

Consists of about thirty questions in increasing order of difficulty. Questions will cover numeracy, problem solving and shape and space, and should be broadly accessible to children who are working towards level 5 at Key Stage Two. Some of the later questions may include elements from level 6.

Section D:

Contains more difficult, non-standard problems. We try to make these problems original yet accessible to mathematically talented children. Children should not attempt these questions until they have completed as much as they can in Section A. A high score in this section is not expected, but we will use the Section D score as additional evidence when we are identifying Scholarship candidates or as supplementary evidence for borderline candidates.

Preparation:

Children who are likely to cope comfortably with mathematics at Bancroft's should only need an experience of solving problems under timed conditions.

We find that excessive coaching for the paper can be counter-productive in the longer term. Section D questions are designed to test how the candidate copes with unfamiliar problems, and it is not intended that children should be taught any particular methods in preparation for this.

B A N C R O F T ' S S C H O O L

ENTRANCE AND SCHOLARSHIP EXAMINATION 2017

MATHEMATICS (1 hour 15 minutes)

SURNAME	
FIRST NAME(S)	
DATE OF BIRTH	
PRESENT SCHOOL	

INSTRUCTIONS

1. Answer as many questions as you can. If you get stuck, go on to the next question. **YOU ARE NOT EXPECTED TO BE ABLE TO ANSWER ALL OF THEM.**
2. SHOW ALL WORKING - you may get marks for working even if you don't give the right answer. Use the space beside each question.
3. Write each answer in the space provided. The number in brackets is the number of marks for each question.
4. **No calculators allowed**.

For Examiner's use only.

SECTION	A	D
MARKS		
	100	**40**

SECTION A

DO AS MUCH OF THIS SECTION AS YOU CAN.

IF YOU GET STUCK, GO ON TO THE NEXT QUESTION.

1. Fill in the missing numbers in the boxes.

$123 - \square = 78$

$(24 \div 3) + (12 \div 12) = \square$

$18 - \square + 22 = 37$

$\square \times 3 \times 2 \times 1 = 48$

$125 \times 4 = 1000 \div \square$

$1.1 + 2.2 + 3.3 + 4.4 = \square$

(6 marks)

2. Add together 4867 and 285.

…….. (2 marks)

3. Divide 2412 by 9.

…….. (2 marks)

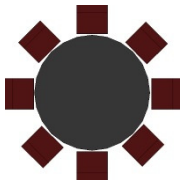
4. Multiply 257 by 37.

…….. (2 marks)

5. What number (written in digits) is two hundred and twenty two **less** than two thousand?

…….. (2 marks)

6. a) The tables in the Dining Hall can each seat 8 pupils.



How many tables are needed to seat 180 pupils ?

……..tables (2 marks)

b) Jake paid a £50 deposit for a bike, then monthly payments of £25 each. The bike cost £275.



How many monthly payments did Jake have to make to buy it?

…….. (2 marks)

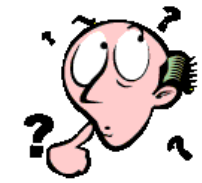
c) There are 500 pupils at Lily's school.



There are 30 more girls than boys.

How many girls are there?

……..girls (2 marks)



7. a) The sum of five consecutive whole numbers is 100.

What is the smallest of these five numbers?

…….. (2 marks)

b) The sum of two numbers is 22 and their difference is 4.

What are the two numbers?

…… and …….. (2 marks)

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8. Add the number of sides of a decagon to the number of sides of a pentagon, then multiply by the number of faces of a cuboid.

What is your answer?

…….. (3 marks)

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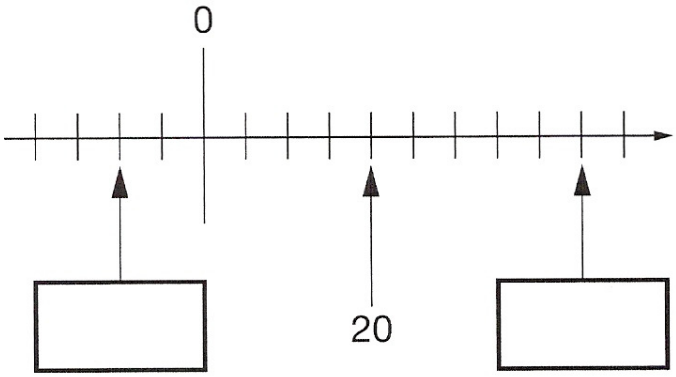
9. It is 165 minutes before midnight. Put one digit into each of the four boxes to show the time on this 24-hour digital clock.

		:		

(2 marks)

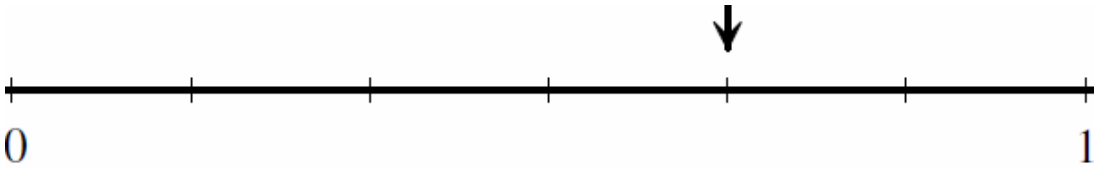
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10. a) In the boxes, write the numbers that their arrows are pointing to.



(2 marks)

b) Write down (in simplest form) the fraction that the arrow is pointing to.

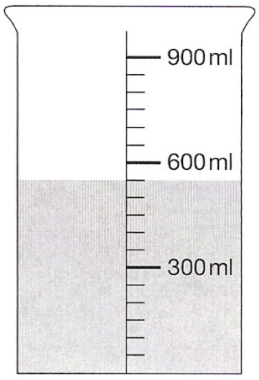


…….. (1 mark)

c) There is some liquid in the container.

How many **more** millilitres must be added

to fill it up to the 900ml mark?



……..ml (1 mark)

11. a) Write the following decimal numbers in order from smallest to largest:

0.505	0.05	0.5005	0.055

……, ……, ……, …… (2 marks)

b) Write down the decimal number that is equivalent to $0.4 - \frac{1}{4}$

…….. (2 marks)

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12. a) Calculate 50% of 20% of 6000

…….. (2 marks)

b) Calculate 20172017 ÷ 2017

…….. (2 marks)

c) Jen correctly worked out that 2793 ÷ 49 = 57.

What is the value of (49 × 57) + 7 ?

…….. (2 marks)

13. At Ali's shop, a multipack of 8 toilet rolls costs £2.40.



At Mya's shop, the cost per toilet roll is twice as much.

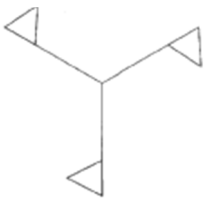
How much is a pack of 3 toilet rolls at Mya's shop?

£…….. (2 marks)

14. Write down the number of lines of symmetry (mirror lines)

for each shape.





…….. …….. (2 marks)

15. Each number in a sequence is calculated by multiplying the previous number by 100 then adding 1.

i) If the first number in the sequence is 0, what is the fourth number?

…….. (2 marks)

ii) If the second number in the sequence is 51, what is the first number?

…….. (2 marks)

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16. A sequence of numbers is formed by always adding the same number to get the next number in the sequence.

The 10^{th} number in the sequence is 23 and the 15^{th} number is 38.

What is the 12^{th} number?

…….. (2 marks)

17. Guy is training for a long distance cycle race.



i) He leaves home and cycles for 10 km at a speed of 30 km per hour.

How many minutes does this take him?

…… minutes (1 mark)

ii) He then cycles for a further 5 km at a speed of 20 km per hour.

How many minutes does this take him?

…… minutes (1 mark)

iii) Next, he returns home by the same route, cycling at 30 km per hour.

How many minutes does his return journey take?

…… minutes (1 mark)

iv) If Guy left home at 9.30am and had no stops, at what time did he arrive back home?

……..a.m. (1 mark)

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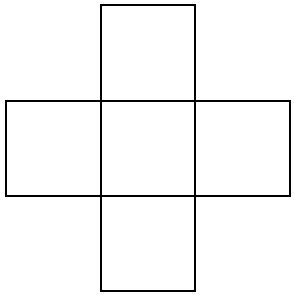
18. Billy is 2 metres and 2 centimetres tall.

Write his height as a decimal, in metres.

……metres (2 marks)

19. The diagram shows a cross made from square tiles.

The area of the cross is 245 cm^2.



i) What is the area of one tile?

.....cm^2 (1 mark)

ii) What is the length of one side of a tile?

.....cm (1 mark)

iii) What is the perimeter of the cross?

.....cm (1 mark)

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20. A square is folded exactly in half and then in half again.

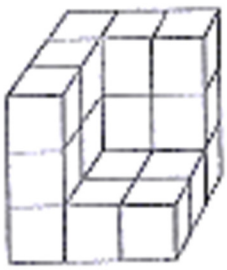
Which one of the following (A, B, C, D or E) could **not** be the resulting shape?



..... (2 marks)

21. It takes 9 litres of paint to cover the surface of the cube on the left.





How many litres of paint would it take to cover the surface of the shape on the right?

……litres (2 marks)

22. Twelve people (and no more) can sit evenly spaced around a square table.

Deesha puts eight of these square tables together in a row to make one very long rectangular table.

What is the maximum number of people that can sit evenly spaced around

this long table?

……people (3 marks)



23. The school site covers an area of 8000 m^2.

i) Buildings take up $\frac{3}{5}$ of the area. How much area is this?

…….m^2 (2 marks)

ii) The playground takes up $\frac{1}{4}$ of what is left. How much area is this?

…….m^2 (2 marks)

iii) The rest of the site is footpaths and grass. How much area is this?

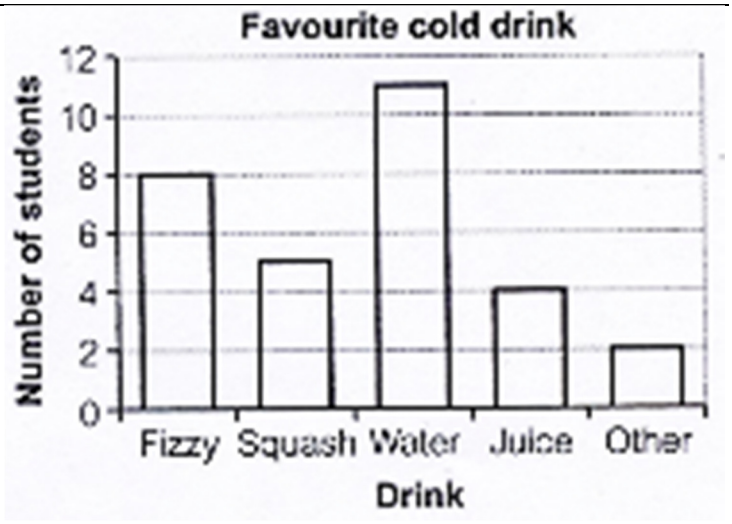
…….m^2 (2 marks)

iv) The area of the grass is seven times the area of the footpaths.

What area is covered in grass?

…….m^2 (2 marks)

24. The bar chart shows the favourite cold drinks of the students in Class 6A.



i) How many students like squash best?

……..students (1 mark)

ii) Four students prefer which drink?

…….. (1 mark)

iii) How many **more** students prefer fizzy drinks to juice?

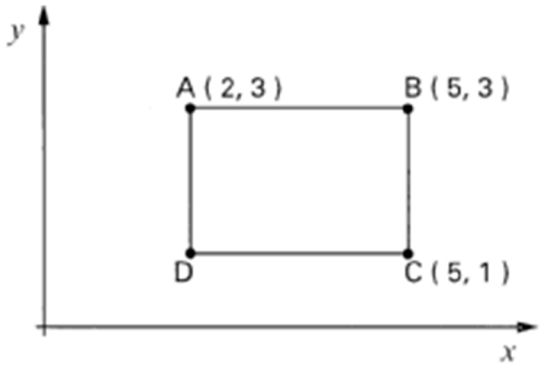
…….. (1 mark)

iv) How many students are in Class 6A?

…….. (2 marks)

25. The diagram shows the coordinates of three points A, B and C.

Shape ABCD is a rectangle.



What are the coordinates of point D?

(……. , …….) (1 mark)

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26. Each of the four different symbols stands for a number.

Work out the number that each symbol stands for.

▲ + ▲ + ▲ = 27 ▲ = …… (1 mark)

▲ + ♫ = 26 ♫ = …… (1 mark)

♫ - ♥ = 9 ♥ = …… (1 mark)

▲ + ♫ + ♥ = ☻ ☻ = …… (1 mark)

27. Toby is given four bags of fruit.

Bag A contains 2 apples, 4 oranges and 3 pears.

Bag B contains 4 apples, 5 oranges and 3 pears.

Bag C contains 3 apples, 6 oranges and 4 pears.

Bag D contains 5 apples, 4 oranges and 9 pears.

Toby is allowed to chose one bag and then he is given one piece of fruit from that bag at random.

i) Which bag should Toby choose to have the **greatest** chance of getting an apple?



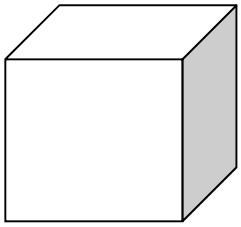
…….. (2 marks)

ii) Which bag should Toby choose to have the **least** chance of getting an orange?



…….. (2 marks)

28. A wooden cube has edges 2cm long.



i) What is the total length of all its edges?

……cm (2 marks)

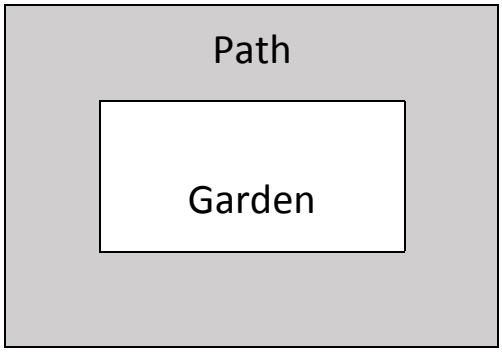
ii) If the cube is now cut into smaller cubes with edges 1cm long,

how many smaller cubes can be made?

……cubes (1 mark)

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29. A rectangular garden is surrounded by a path of a fixed width.



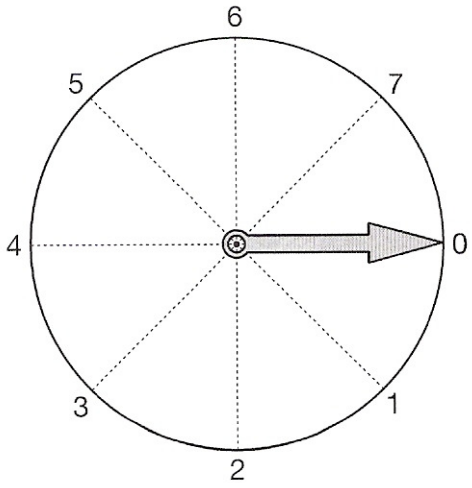
The perimeter of the garden is 24 metres **less** than the distance along the outside edge of the path.

What is the width of the path?

……..m (3 marks)

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30. Look at the dial.



a) The pointer starts at 0 and turns clockwise.

Which number does it point to after turning through 270 degrees?

…… (1 mark)

b) The pointer turns anticlockwise from 1 to 6.

Through how many degrees does it turn?

……degrees (1 mark)

c) The pointer starts at 3 and turns clockwise.

Which number does it point to after turning through 10¼ whole turns?

…… (1 mark)

YOU HAVE NOW FINISHED SECTION A.

NOTE: THERE ARE **NO** SECTIONS B OR C.

THE NEXT SECTION IS SECTION D.

SECTION D

DO NOT START THIS SECTION UNTIL YOU HAVE DONE AS MUCH AS YOU CAN IN SECTION A.

YOU ARE NOT EXPECTED TO BE ABLE TO DO ALL OF THESE QUESTIONS.

IF YOU CANNOT ANSWER A PARTICULAR QUESTION TRY THE NEXT ONE.

DO AS MANY QUESTIONS AS YOU CAN.

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1. Granny takes one a day of each of two types of tablet.

   One type of tablet is in packets of 25 and the other type is in packets of 20.

   She starts new packets of both on 1st March.

   On what date will she next start new packets of both?

…….. (4 marks)

2. a) What is the product of the smallest two-digit prime number and the largest two-digit square number?



…….. (3 marks)

b) 585 and 7227 are examples of **palindromic** numbers as they read the same when the order of their digits is reversed.

i) Which three-digit number is palindromic, has the sum of its digits equal to 7 and has the product of its digits equal to 12?

…….. (3 marks)

ii) Which five-digit number is palindromic, has the sum of its digits equal to 27 and has the product of its digits equal to 0?

…….. (3 marks)

3. Paddy is leading in a race.



He is 81 metres in front of Sam who is in last place.

Martin is between Paddy and Sam.

Martin is 40 metres from the finish line and is twice as far away from Sam as he is from Paddy.

How far has Sam left to run?

……..metres (4 marks)

4. Mr Patel and his sons Humza and Kian have the same birthday.



Today, Mr Patel is 34, Humza is 6 and Kian is 3.

How old will they be when Mr Patel's age is the sum of his sons' ages?

Mr Patel ……..years

Humza ……..years

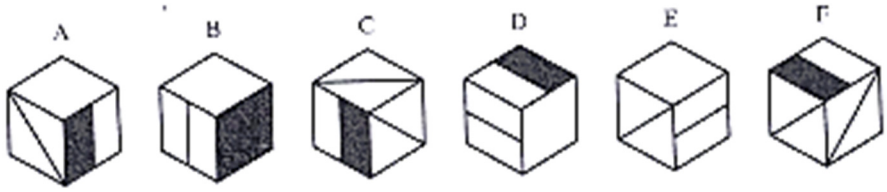
Kian ……..years

(3 marks)

5. a) The diagram on the right is the net of a cube.



Which one of the six cubes shown below could **not** be made from this net?



…… (2 marks)

b) A double-decker bus has just ten seats.

There are five seats in a line upstairs and five downstairs.

Front

Back

Dhanyal is sitting directly below Kim and in front of eight people.

Pranav is sitting right at the back, directly above Noor.

Lucy is directly in front of George and directly above Revan.

Chen is just behind Jo and directly below Becky.

i) Who is directly behind Kim?

…….. (2 marks)

ii) Who is directly in front of Noor?

…….. (2 marks)

6. a) A lottery prize of £5555 was shared equally between a number of people so that each person received a whole number of pounds.

There were between 20 and 100 people.

i) How many people shared the prize?

…….. (1 mark)

ii) How much did each person receive?

£…….. (2 marks)

b) Three boxes (A, B and C) contain red balls or yellow balls or both.

Each box contains the same number of balls.

Box A contains all twelve of the red balls and one-ninth of the yellow balls.

i) How many yellow balls are there altogether?

…….. (2 marks)

ii) How many balls are there in each box?

…….. (2 marks)

7. a) The total of the numbers in the five boxes below is 222 and the sum of the numbers in any three adjacent boxes is always the same.

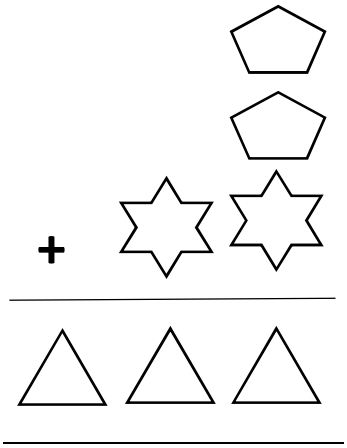
Fill in the numbers in the three empty boxes.

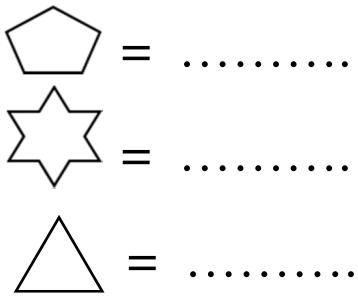
	65		40	

(4 marks)

b) In the addition sum shown below, different shapes represent different digits.

What digit does each shape represent?





(3 marks)

STOP! Now go back and check your work!