CSSE

The Consortium of Selective Schools in Essex

MATHEMATICS PAPER FOR 2023 ENTRY – TEST 2

First Name:.....

Last Name: .....

Candidate Number: .....

Primary School:.....

Boy or Girl: .....

Date of Birth: .....

Today's Date: .....

Test Taken At:.....

READ THE FOLLOWING CAREFULLY:

1. **Do not open this booklet until you are told to do so.**
2. You may work the questions out in your head, or by writing on the white area around the question.
3. **Work as quickly and as carefully as you can.**
4. Make any alterations to your answers **clearly.** You will not lose marks for crossing out.
5. You will have **60 minutes** to do the test. If you find you cannot do a question, **do not waste time on it but go on to the next one.**
6. **Once the test has begun, you should not ask about questions in the test.**
7. **The use of electronic calculators of any description (including calculator watches) is NOT permitted.**

NOT TO BE FILLED IN BY PUPIL		
PAGE	SCORE	
	R	W
1 (7)		
2 (6)		
3 (5)		
4 (4)		
5 (5)		
6 (5)		
7 (3)		
8 (6)		
9 (5)		
10 (5)		
11 (6)		
12 (3)		
TOTAL (60)		
INITIALS OF MARKER(S)		

You have sixty minutes to complete this paper.
Do your working out in the spaces on the paper.

Question (and working space)	ANSWER	Please do not write in this space
1 (a) Calculate $3826 + 91 =$		
(b) Calculate $3124 - 467 =$		
(c) Calculate $762 \div 6 =$		
2 (a) Calculate $\frac{2}{5} + \frac{1}{6} =$		
(b) Fill in the box to make the division work. $9 \div \square = 6$	Fill in the box	
(c) Fill in the box to make the subtraction work. $2\frac{17}{20} - \square = 1\frac{3}{5}$	Fill in the box	
(d) Fill in the boxes to make the subtraction work. $\begin{array}{r} 8\ \ 1\ \square \\ -\ 4\ \square\ 2 \\ \hline \square\ 4\ \ 7 \end{array}$	Fill in the boxes	

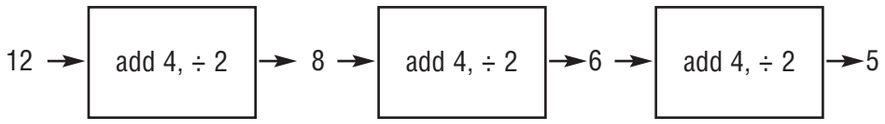
R
W
(7)

Question (and working space)	ANSWER	Please do not write in this space
3 (a) How many metres are there in 7·08km?	..... metres	
(b) A rectangle measures 4m by 6m. What is its area in cm^2?	..... cm^2	
(c) There are 12 inches in a foot and 3 feet in a yard. How many inches are there in 17 yards?	..... inches	
4 (a) Find 15% of 620.		
(b) A T-shirt costs £4.20. If you buy six at a time you get a 20% discount. How much does it cost to buy six T-shirts if you buy them at the same time?		
(c) Six ties bought together also get a 20% discount. Six ties bought together cost £24. How much does one tie cost?		
		R W (6)

Question (and working space) | ANSWER | Please do not write in this space

5 The rule for getting from one number in a sequence to the next is to add 4 and divide by 2.

eg.



Which gives a sequence 12, 8, 6, 5 …

(a) If the first number in the sequence is 60, find the third number.

(b) If the first number in the sequence is 2, find the fourth number (either as a fraction or as a decimal).

(c) If the second number in the sequence is –6, what is the sixth number?

(d) If the third number in the sequence is $13\frac{1}{2}$, find the first number.

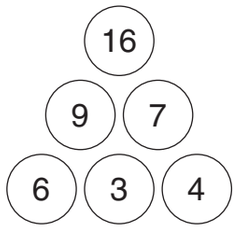
(e) If the first and second numbers in the sequence are equal to each other, find the first number.

R W

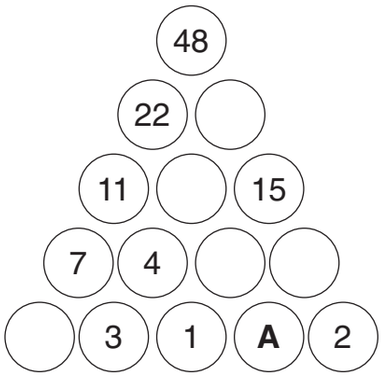
(5)

Question (and working space)	ANSWER	Please do not write in this space

6 In a triangle made of circles the number in each circle is the sum of the numbers in the two circles below it. See the illustration showing a complete 3 row triangle.



(a) In this incomplete 5 row triangle find the number at A.



A= .....

(b) In another triangle all the numbers on the bottom row are equal whole numbers. The top number is 96. What is the **smallest** possible bottom number and in this case how many rows does the triangle have?

..... *smallest number*

..... *number of rows*

(c) In a different triangle the numbers are found by multiplying the two numbers beneath. The top number is zero. Choose the correct statement from A, B or C.

A. A top number of zero will be guaranteed if you know that there is a negative number somewhere on the bottom row.

B. A top number of zero will be guaranteed if you know that there is a zero somewhere on the bottom row.

Correct statement is

.....

C. A top number of zero will be guaranteed if you know that all the numbers in every circle are the same number.

R W (4)

Question (and working space)

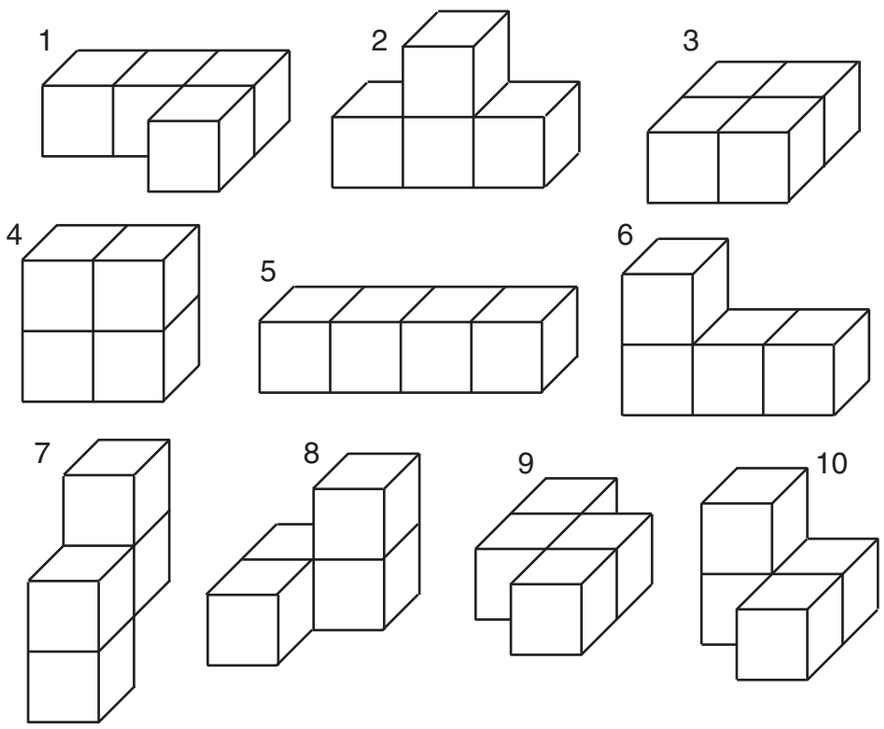
ANSWER

Please do not write in this space

7 Emily is trying to make as many different shapes as possible by gluing together four cubes.

These are the shapes she made. But she realises she has made some shapes that are not truly different; for example 3 and 4.

In the answer box, write the numbers of the other pairs of identical shapes.



3 and 4

Write the other pairs below.

8 In these sums, △ □ ⊗ each stand for a number.

△ + △ + △ + □ = 14

△ + □ + □ + □ = 10

□ + ⊗ + ⊗ + ⊗ = 29

Find the values of:

△

□

⊗

△ =

□ =

⊗ =

R
W
(5)

Question (and working space)	ANSWER	Please do not write in this space
9 Mrs. Jones has three identical costumes to make for a school play. Each costume takes 1 hour 37 minutes to make.		
(a) If she starts at 9.25pm when will she finish?		
(b) If she wants to finish at 10pm, when does she need to start by?		
10 (a) Prime numbers sometimes come in pairs with a difference of 2 eg. 5 and 7, 11 and 13, 17 and 19. Which is the lowest such pair, where both are greater than 80?	..... *and*	
(b) Find a pair of prime numbers with a difference of 22 and where both are less than 40.	..... *and*	
(c) A mathematician claims that it is impossible to find a pair of prime numbers 25 apart. Is this true or false?		R W (5)

Question (and working space) | ANSWER | Please do not write in this space

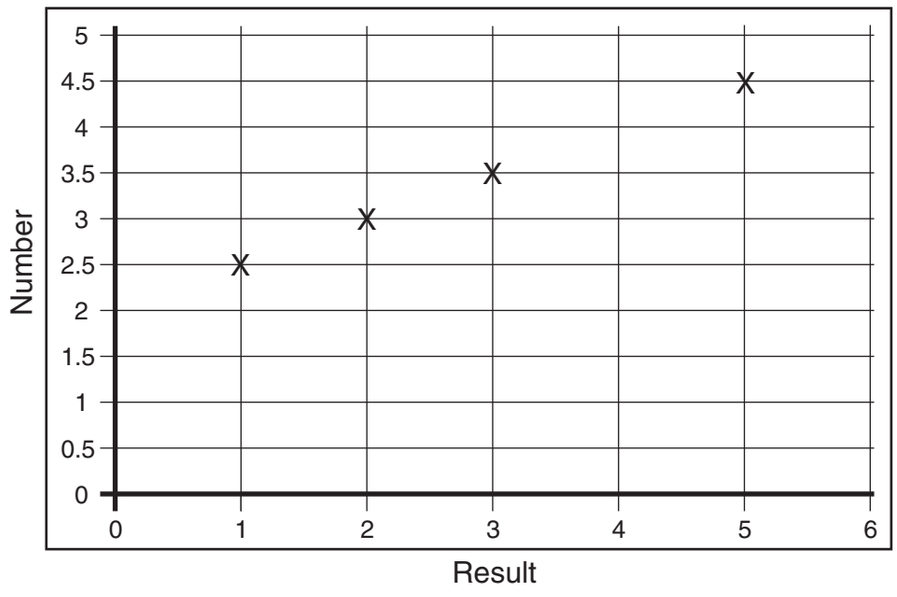
11 In the table the result is found by multiplying the number by 0.5 and adding 2.

Number	1	2	3	4	5
Result	2.5	3	3.5		4.5

(a) Fill in the missing cell in the table.

Fill in table.

(b) Plot the point on the graph below with an X and join up the points with a straight line.

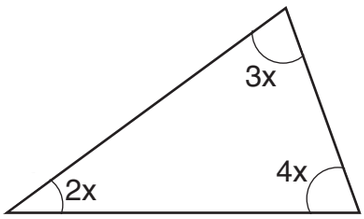


(c) If the result was 100, what would the original number have been?

R
W
(3)

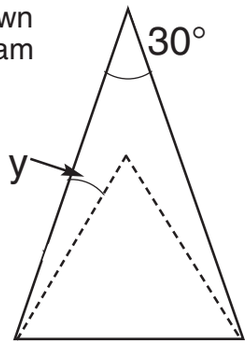
Question (and working space)	ANSWER	Please do not write in this space

12 (a) Find the value of **x** if the angles in a triangle are 2x, 3x and 4x (the diagram is not to scale).



X =.....
degrees

(b) Isosceles and equilateral triangles are drawn with the same base as shown in the diagram (which is not to scale).
Find the size of the angle marked y.



y =.....
degrees

13 (a) Calculate

$3{\cdot}5 + 4{\cdot}67 =$

(b) Calculate

$4{\cdot}2 - 1{\cdot}46 =$

(c) Calculate

$2{\cdot}1 \times 3 =$

(d) Calculate

$22{\cdot}5 \div 9 =$

R
W
(6)

Question (and working space)	ANSWER	Please do not write in this space

14 In the rectangle below, the length is 20cm rounded to the nearest 10cm and the width is 5cm rounded to the nearest cm.

20cm (to nearest 10cm)

5cm (to nearest cm)

(a) Find the smallest possible value for the perimeter of the rectangle.

..... cm

(b) Find the smallest possible value for the area of the rectangle.

..... cm^2

15 For each flowchart, find an input number to give the required output.

(a) Input → x3 → square → 81

Input = ...

(b) Input → square → x3 → 75

Input = ...

(c) Input → square → x4 → 25

Input = ...

R
W
(5)

Question (and working space) | ANSWER | Please do not write in this space

16 A restaurant menu has these choices:

Side Dish	**Main Course**
Tomato Salad	Bean Stew
Avocado	Chicken
Fish Paté	Pasta Bake
Chips	

(a) If a guest decides to choose one side dish and one main course, how many different meals are possible?

(b) If a guest decides to choose two different side dishes and one main course, how many different meals are possible?

17 A mother was born on 1st January 1930 and her daughter on 1st January 1962. So for example in 1980 the mother was 50 and her daughter was 18.

(a) In what year was the daughter half the age of her mother?

(b) In what year did the mother's and the daughter's age add up to 120?

(c) Find a year in which the mother's age and the daughter's age were both square numbers.

R
W
(5)

Question (and working space)	ANSWER	Please do not write in this space

18 This question is about four positive numbers A, B, C and D. You are not told the value of these numbers, but you are told that they obey these rules.

$A = B + 3$

$C = 3B$

$D = B^2$

Find the value of:

(i) $3A - C$

Find the value of:

(ii) $C \div (A - 3)$

Find the value of:

(iii) $AB - C - D$

19 (a) The scores of six children in a test were:

3, 5, 7, 8, 9, 10

Find the average (mean) score.

(b) In a different test, five boys averaged a score of 7 and ten girls averaged a score of 10. Find the average (mean) for all fifteen children.

(c) A different test was sat by two boys and a certain number of girls. The children achieved an average score of 9. The average for the two boys was 6 and the average for the girls was 10. How many children were there in all?

R
W
(6)

Question (and working space)	ANSWER	Please do not write in this space
20 (a) £60 is divided between Joel and Priya so that Priya gets £8 more than Joel. How much does Joel get?	Joel gets	
(b) £110 is divided between Dylan, Sasha and Jordan so that Sasha gets £6 more than Dylan and Jordan gets twice as much as Sasha. (i) How much does Dylan get? (ii) How much does Jordan get?	Dylan gets ..... Jordan gets	R W (3)

END OF TEST (You should have completed 20 questions.)

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The Consortium of Selective Schools in Essex

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