CSSE

The Consortium of Selective Schools in Essex

MATHEMATICS PAPER FOR 2022 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 (5)		
3 (6)		
4 (6)		
5 (6)		
6 (5)		
7 (6)		
8 (5)		
9 (5)		
10 (4)		
11 (3)		
12 (2)		
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 $4348 + 74 =$		
(b) Calculate $4263 - 45 =$		
(c) Calculate $348 \div 6 =$		
2 (a) Calculate $\frac{3}{4} + \frac{3}{5} =$		
(b) Calculate $\frac{6}{7} - \frac{1}{6} =$		
(c) Calculate $2\frac{2}{3} \div \frac{1}{3} =$		
(d) Calculate $(12 \times 5) \div (24 \div 3) =$		R W (7)

Question (and working space)	ANSWER	Please do not write in this space
3 (a) Calculate $\frac{1}{2} + \frac{1}{8} + \frac{1}{16} =$		
(b) Find the average (mean) of $\frac{3}{4}$ and $\frac{4}{5}$		
4 (a) How many millimetres are there in 3·12m?	.....mm	
(b) A rectangular area of length X metres and width Y metres is paved with square slabs, each of area $1m^2$. If exactly 500 slabs are used find values of X and Y which would make the area closest to being a square.	X =..... metres Y =..... metres	R W (5)

GO TO NEXT PAGE

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

5 In a certain game there are 7 points for a goal from open play and 3 points for a penalty. It is therefore impossible to score 1, 2, 4, 5 or 8 points.

(a) What is the next lowest score that is impossible?

(b) What is the lowest score that can be achieved in two different ways?

(c) A score of 42 can be achieved through 6 goals or alternatively through 14 penalties.

Find another different way of scoring 42 which involves goals and penalties.

..... Goals

..... Penalties

6 B = 2A and 2C = A

If A + B + C = 7 find:

(i) A

(ii) C

R W

(6)

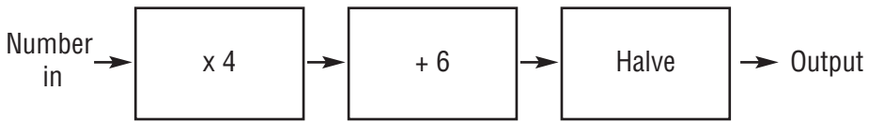
Question (and working space) | ANSWER | Please do not write in this space

7 Mana is completing a table of values for the formula **6n-2**.
Complete the table with the two missing values.

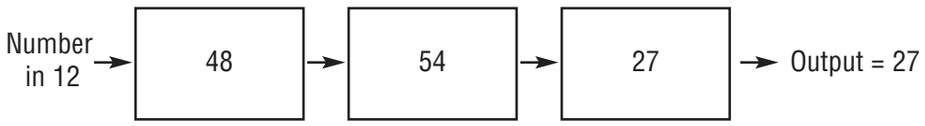
n	*6n–2*
1	4
2	10
8	
	88

(ii) Arun uses the formula $\mathbf{n^2 + 3}$.
Give the value from Arun's formula when **n** = 11.

8 A formula machine works as follows:



So, for example, if you input 12:



(a) Find the output if 36 is the number put in.

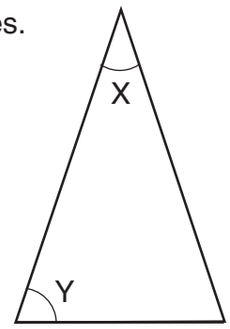
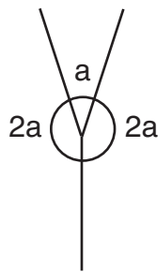
(b) Find the number put in if 163 is the output.

(c) Find a negative input so that the output equals the input.

R
W
(6)

GO TO NEXT PAGE

Question (and working space)	ANSWER	Please do not write in this space
9 X and Y are whole numbers. X rounded to the nearest 10 gives 350. Y rounded to the nearest 10 gives 320.		
(a) What is the largest possible value of X?		
(b) What is the smallest possible value of Y?		
(c) What is the largest possible value of X+Y?		
(d) What is the smallest possible value of X–Y?		
10 It takes 600cm^3 of petrol for a car to travel 8km.		
(a) How far can the car travel on 2100cm^3 of petrol?	.....km	
(b) How much petrol in litres is needed to travel 100km? (1 litre = 1000cm^3)	.....litres	
		R W (6)

Question (and working space)	ANSWER	Please do not write in this space
11 Jenna plays a computer game. After 7 attempts her average (mean) score is 13.		
(a) What is the total of all her scores from the 7 attempts?		
(b) On her 8th attempt she achieves a record score of 21. What is her new average score?		
12 The triangle below is isosceles. 		
(a) If X = 30° find Y.	Y = ... degrees	
(b) If Y = 81° find X.	X = ... degrees	
(c) Three lines below meet at a point. Find the value of **a**. 	**a** = ... degrees	
		R W
	(5)	

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

13 State whether the following are **true** or **false**.

(a) All prime numbers are odd.

.....
True or False

(b) Some square numbers are even.

.....
True or False

(c) Some square numbers are prime.

.....
True or False

(d) The average of two odd numbers is always even.

.....
True or False

14 Mr Brown buys a coat. The original price of the coat is £64. In the sale it has 15% off. Mr Brown also has a loyalty card which entitles him to 10% off so he expects to get 25% off.

(a) What did Mr Brown expect to pay?

£.....

(b) In fact the shop gives him 10% off the sale price, not the original price. What did Mr Brown actually pay?

£.....

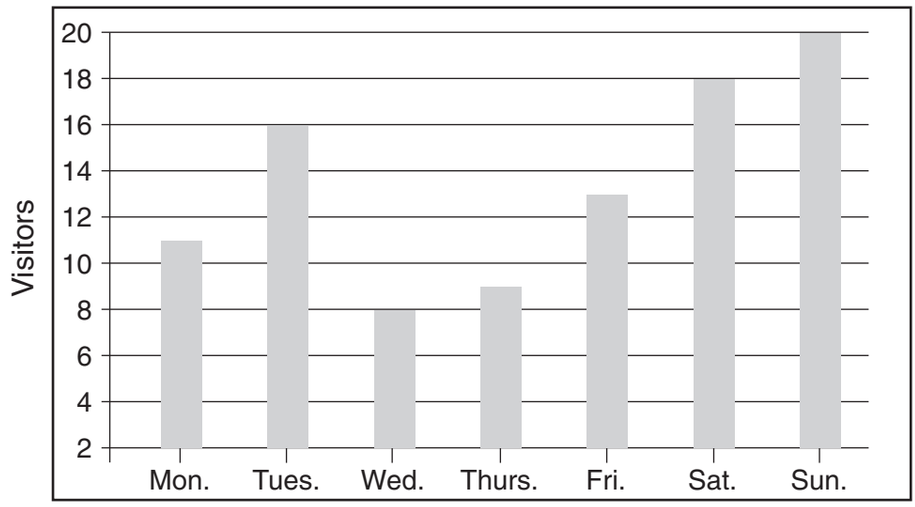
R W

(6)

GO TO NEXT PAGE

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

15 The number of visitors to a local museum on seven consecutive days was as follows.



(a) How many visitors in total were there on the first 5 days (Monday to Friday)?

(b) What was the average (mean) number of visitors on Wednesday, Thursday and Friday?

(c) Tickets cost £2 from Monday to Friday, but £2.50 on Saturday or Sunday. Find the total money from ticket sales in the seven days.

£.....

16 (a) Find 30% of £240.

£.....

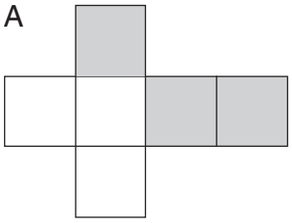
(b) $17\frac{1}{2}\%$ of X is 70. Find X.

R
W
(5)

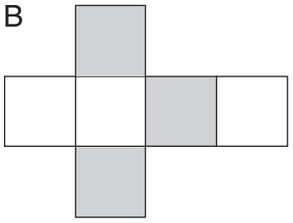
Question (and working space) | ANSWER | Please do not write in this space

17 Theo draws 5 nets for a cube and shades 3 of the sides in different ways as shown. He then cuts out the nets and assembles the cubes. For which one A, B, C, D or E is the shading on the final cube different to all the others?

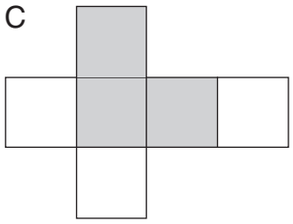
A



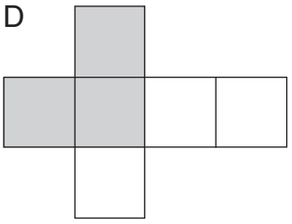
B



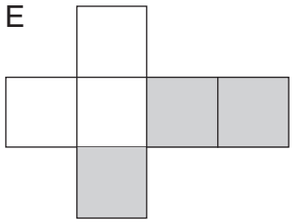
C



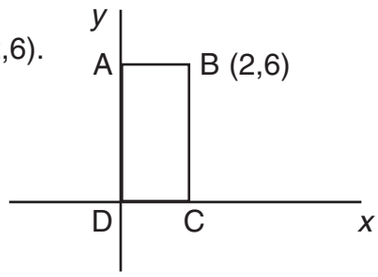
D



E



18 A rectangle ABCD is drawn on axes with D at the origin (0,0) and B at (2,6).



(a) The rectangle is rotated **clockwise** by 90° about the corner C. What will the new co-ordinates of B be?

(.....,.....)

(b) The rectangle is rotated a **further** 90° **clockwise** about C. What will the co-ordinates of B be now?

(.....,.....)

R
W
(5)

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

19 The timetable below gives times of the morning and afternoon trains from Borchester to Dryden with the stops at Ister and Eccleford.

	Morning	**Afternoon**
Borchester	08:40	15:22
Ister	09:33	16:12
Eccleford	10:25	17:01
Dryden	11:14	17:50

(a) How long does the morning train take to get from Borchester to Dryden in hours and minutes?

..... hours and

..... minutes

(b) What is the difference between the time that the morning train takes to get from Ister to Eccleford and the time that the afternoon train takes to do the same stage?

..... minutes

(c) How long could someone spend in Ister if they took the morning train to Ister and then the afternoon train from Ister to Dryden?

..... hours and

..... minutes

(d) There is a plan to electrify the track from Borchester to Ister. This would cut the journey time by 20%. How long should the afternoon train then take to get from Borchester to Ister?

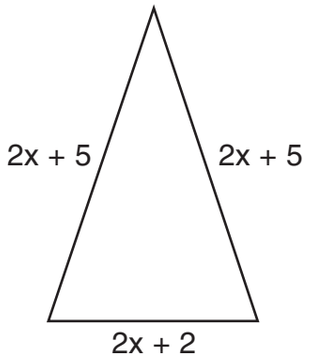
..... minutes

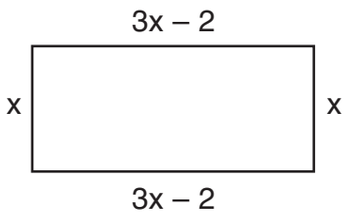
R W

(4)

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

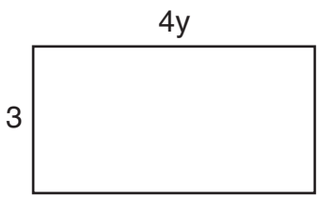
20 (a) These two shapes have the same perimeter – find x.

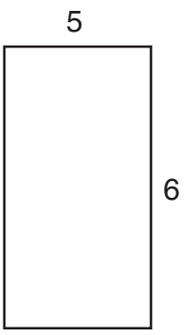




x = ...

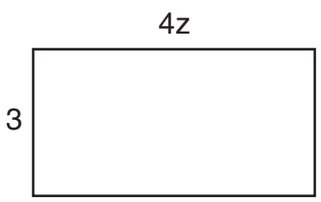
(b) These two rectangles have the same area – find y.

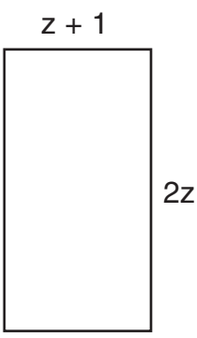




y = ...

(c) These two rectangles have the same area – find z.





z = ...

R W (3)

GO TO NEXT PAGE

Question (and working space)	ANSWER	Please do not write in this space
21 (a) Jack thinks of a number. When he multiplies it by 17 he gets 153. What was the original number?		
(b) Pippa thinks of a positive number. She notices that when she multiplies her number by 6 she gets the same answer as when she squares her number. What was the original number?		

END OF TEST **(You should have completed 21 questions.)**

R
W
(2)

CSSE

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