CSSE

The Consortium of Selective Schools in Essex

MATHEMATICS PAPER
FOR 2018 ENTRY – TEST 2

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 (5)		
2 (7)		
3 (5)		
4 (6)		
5 (4)		
6 (5)		
7 (6)		
8 (5)		
9 (4)		
10 (4)		
11 (3)		
12 (3)		
13 (3)		
TOTAL (60)		
INITIALS OF MARKER(S)		

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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

$$435 + 87 =$$

(b) Calculate

$$3014 + 997 =$$

(c) Calculate

$$2035 - 797 =$$

2 In this question, each blank square can be completed by entering one of the single digits, from 1-9. **Each digit may be used only once.**

(a) Fill in the blank squares to show one way in which the following calculation can be completed correctly.

$$5 \times (\square\square + \square) = 195$$

(b) In **how many different ways** can the calculation be completed correctly?

$$5 \times (\square\square + \square) = 195$$

ANSWER

R
W
(5)

Question (and working space)	ANSWER	Please do not write in this space
3 (a) Work out $27 \times 53 =$		
(b) What is the value of $1431 \div 9 =$		
(c) Calculate $(7 - 13) + (4 - 6) =$		
4 (a) Work out $7 \div 8 =$ [Give your answer as a decimal.]		
(b) What is the value of $875 \times 8 =$		
5 (a) How many grams are there in 2.32kg?		
(b) Pratesh has 4m 11cm of wallpaper. He uses 274cm for covering a wall panel. How many cm of wallpaper does he have left over?		R W (7)

Question (and working space)

Please do not write in this space

6 (a) Tom is completing a table of values for the formula 3n–7. He has completed the first row of the table. Complete the table with the two missing values.

n	*3n–7*
5	8
19	
	80

(b) Jon is working on a similar table of values for the formula *2n+5.*

Which formula has the bigger value, when $n = 5$?

[Give your answer as *2n+5* or *3n–7*.]

ANSWER

(c) Which formula has the bigger value, when $n = 19$?

[Give your answer as *2n+5* or *3n–7*.]

(d) For which value of *n* are the two formulas equal?

n = ...

R
W

(5)

Question (and working space)	ANSWER	Please do not write in this space
7 64,395 tickets were sold for a concert.		
(a) How many tickets were sold, rounded, to the nearest thousand?		
(b) How many tickets were sold, rounded to the nearest hundred?		
(c) How many tickets were sold, rounded, to the nearest ten?		

8 This question involves 'powers'. Each blank square can be completed with any of the single digits, from 0-9. Fill in the blank squares to complete the calculations correctly.

(a) ["3 to the power of 4 equals"]

$$3^{4} = \square 1$$

(b)

$$\square^{3} = 64$$

(c)

$$\square^{\square} = 125$$

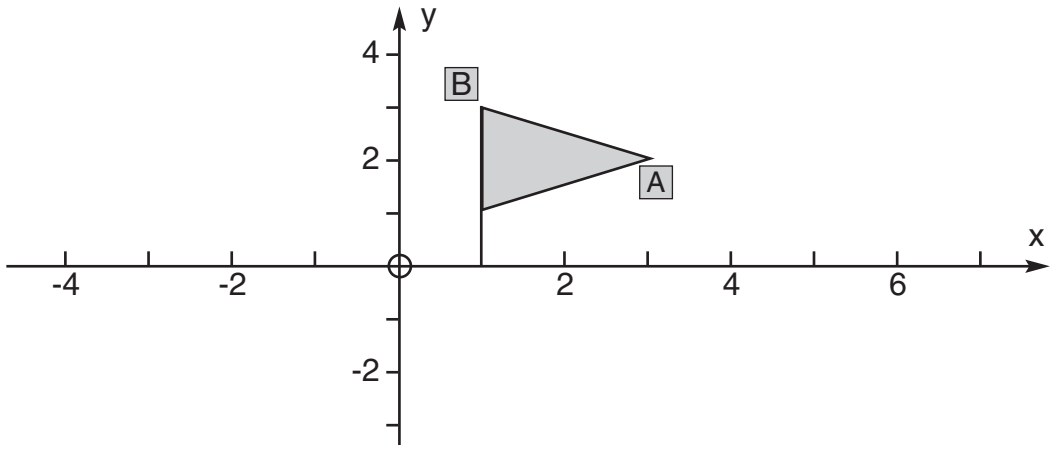
R
W

(6)

Question (and working space)

Please do not write in this space

9



(a) What are the co-ordinates of point A?

ANSWER

(___ , ___)

(b) The shape on the diagram is going to be reflected in the x-axis. What will be the co-ordinates of point A after the reflection?

(___ , ___)

(c) The shape on the diagram is going to be reflected in the y-axis. What will be the co-ordinates of point B after the reflection?

(___ , ___)

(d) The shape on the diagram is going to be rotated 180° around point (0,0). What will be the co-ordinates of point B after the rotation?

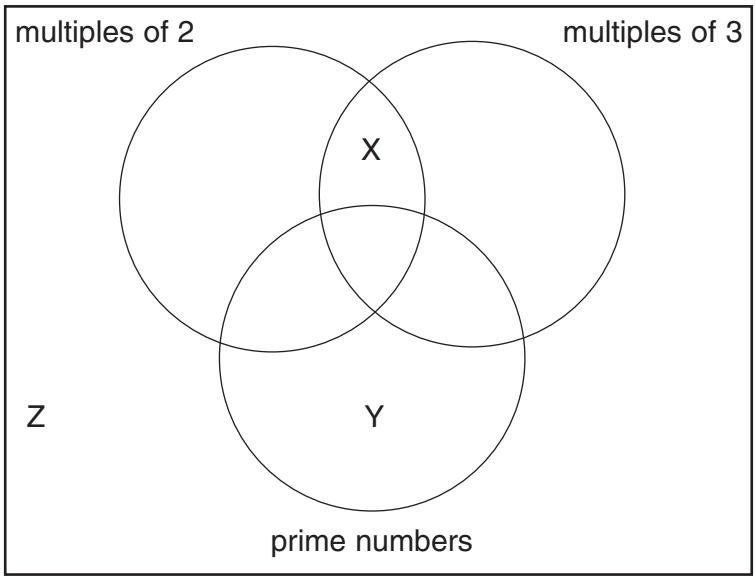
(___ , ___)

R
W

(4)

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

10 This question concerns placing each of the whole numbers from 1 to 9 individually into the correct position on the following Venn (set) diagram.



(a) How many of the whole numbers from 1 to 9 are **multiples of 2**?

(b) List the whole numbers from 1 to 9 that are **multiples of 3.**

(c) Which of the whole numbers from 1 to 9 will appear in the region labelled **X** on the diagram?

(d) Which two prime numbers, between 1 and 9, will appear in the region labelled **Y** on the diagram?

(e) Which is the only whole number from 1 to 9 that must appear on the diagram in region **Z**?

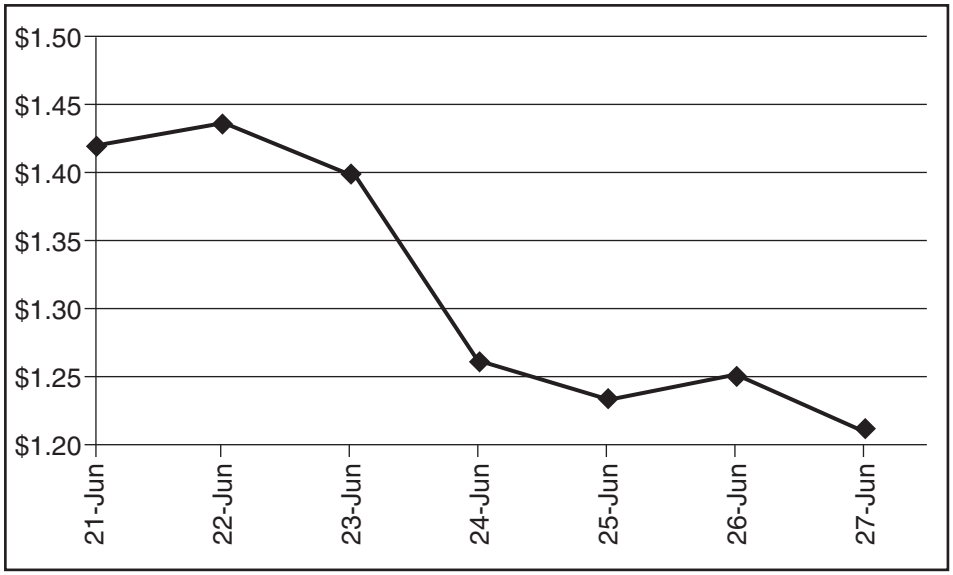
R
W
(5)

Question (and working space)	ANSWER	Please do not write in this space
11 (a) Work out $\frac{2}{5} + \frac{3}{10} =$		
(b) Work out $\frac{9}{7} - \frac{5}{14} =$		
(c) Work out (and simplify) $\frac{2}{3} \times \frac{3}{4} =$		
(d) What is half of $1\frac{3}{8}$?		
(e) What is the value of $5 \div \frac{1}{3}$?		
12 Place the following in the correct order of size: 0·503, 0·53, 0·5003, and 0·529. …… > …… > …… > ……		R W (6)

Question (and working space)	ANSWER	Please do not write in this space
13 Think about the number sequence: 7, 12, 17, 22, 27, ……		
(a) What will be the next term in this sequence?		
(b) What will be the 11th term in this sequence?		
(c) How much bigger will the 167th term be than the 164th?		
(d) The formula for each term of the sequence above is $5n+2$. What is the equivalent formula for each term of the related sequence: 4, 9, 14, 19, 24, ……		
(e) What is the equivalent formula for each term of the similar sequence: 10, 17, 24, 31, 38, ……		R W (5)

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

14 The chart shows the exchange rate – US dollars you could buy for one UK pound – on the days before and after the Brexit vote on the 23rd June 2016.



(a) How many pounds would you have to pay to get $140 on the 23rd June?

(b) How many pounds would you have to pay to get $100 on the 26th June?

(c) How many pounds would you have to pay to get $140 on the 26th June?

(d) What is the percentage increase in the cost of buying dollars from June 23rd to June 26th?

R
W
(4)

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

15 This is part of the timetable for Virgin East Coast trains from London to Newcastle.

London King's Cross	11.30
Peterborough	12.16
Newark	12.44
Doncaster	13.10
York	
Darlington	14.06
Newcastle	14.44

York is exactly half way, in terms of time, between Doncaster and Darlington.

(a) How long, in minutes, does it take to travel from Peterborough to Doncaster?

(b) How long, in minutes, does it take to travel from Newark to York?

(c) A return train, travelling in the opposite direction at the same speed, leaves Newcastle at ten to nine in the evening. What will the timetable show as its arrival time in Darlington?

(d) When will the return train reach London King's Cross?

R W

(4)

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

16 A 'reverse' number is a two digit number written in reverse order. For example, 14 has a reverse of 41. The reverse of 64 is 46.

For each part of this question, indicate if the statement is **always, sometimes** or **never** true.

(a) If a number is prime then its reverse is also prime.

[Indicate: always, sometimes or never true.]

(b) If a number is divisible by 3 then its reverse is also divisible by 3.

(c) A number plus its reverse is a prime.

R
W

(3)

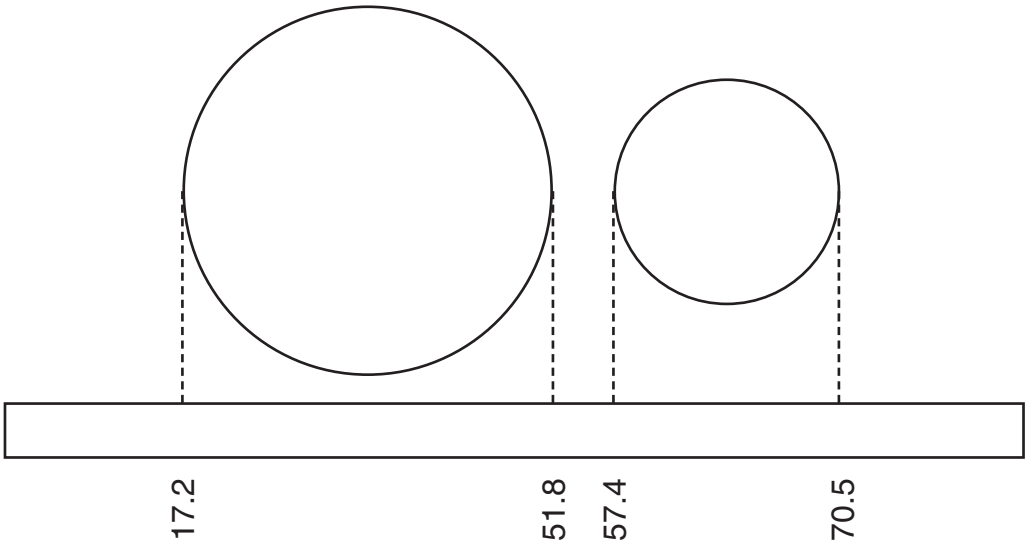
Question (and working space)	ANSWER	Please do not write in this space
17 An acre is a measurement of land area used by farmers. It is a rectangle a furlong long and a chain wide. There are 8 furlongs in a mile and 10 chains in one furlong. How many acres are there in one square mile?		
18 (a) A group of eight pupils obtain scores on their spelling test of 15, 19, 23, 43, 47, 48, 50 and 51. How many of them scored above the average?		
(b) Another group of twenty had to complete the same test. Nineteen of them did it first and had an average of 35. The other pupil did the test a day later and scored 55. What is the average for this group of twenty?		R W (3)

Question (and working space)

ANSWER

Please do not write in this space

19 Two different spheres are placed next to a ruler. The position of the edges of the spheres, in centimetres, is read from the ruler as shown in the diagram.



(a) What is the diameter of the smaller sphere?

(b) What is the radius of the larger sphere?

(c) How far apart are the centres of the spheres?

END OF TEST (You should have completed 19 questions.)

R
W
(3)

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