DULWICH COLLEGE
FOUNDED 1619

Year 7 Entrance and Scholarship Examination Mathematics

Specimen Paper C

TIME allowed for this paper: 60 minutes

Instructions

- Attempt all the questions.
- Do all your written work on this paper, **showing all your working.**
- Calculators must not be used.
- The numbers in square brackets are the marks available for each part of a question
- You must not write in the squares at the bottom right of each page
- There are 100 marks in total

1. $617 + 385$

Answer:_____ [2]

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2. $617 - 385$

Answer:_____ [2]

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3. 617×6

Answer:_____ [2]

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4. $385 \div 7$

Answer:_____ [2]

Page total:

5. Fill in the missing numbers from these sequences:

(a) 18 , 25 , 32 , ____ , 46 , ____

(b) 5 , 9.5 , 14 , ____ , ____ , 27.5

[4]

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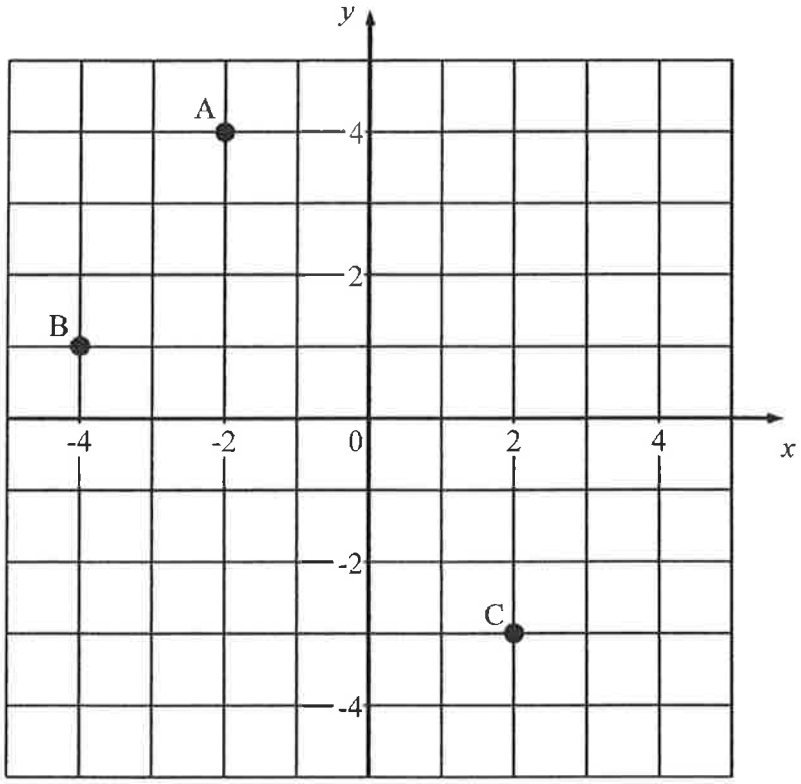
6. The grid below contains three points, labelled A, B and C.
A has co-ordinates (–2, 4) and B has co-ordinates (–4, 1).



(a) Write down the co-ordinates of the point C.

Answer: C is at (____ , ____)

[2]

(b) Add a fourth point to the grid, labelling it D, so that when they are joined in the order ABCD the four points create a rectangle. Write the co-ordinates of point D below.

Answer: D is at (____ , ____)

[2]

Page total:

7. By how much is four and a half greater than three and seven eighths?
Write your answer as a **fraction**.

Answer: _____ [3]

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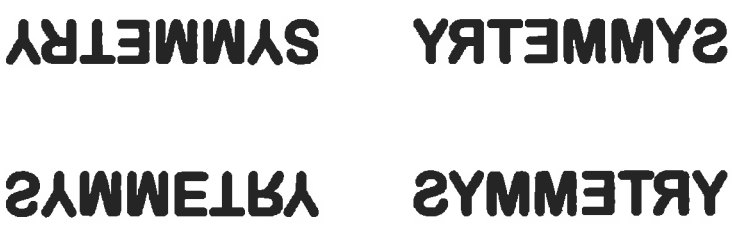
8. (a) Circle which of the four options below shows a correct **rotation** of the word:

FLIPPED

[1]

(b) Circle which of the four options below show a correct **reflection** of the word:

SYMMETRY



[2]

Page total:

9. The pie chart below represents data collected in a survey of the favourite sports of a sample of school children. Note that, between them, Rugby and Football were the favourite of half of the children surveyed.

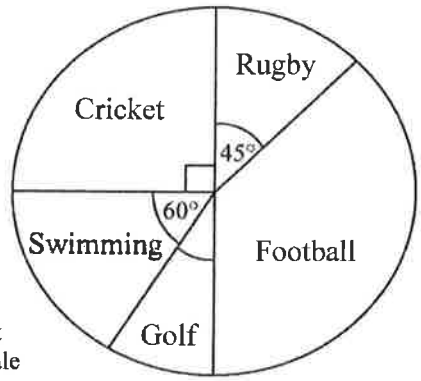


Diagram not drawn to scale

(a) Write down the angle of the wedge representing the number of school children who said Golf was their favourite sport.

Answer: _____ [1]

(b) Write down the fraction of the children who said that Rugby was their favourite, giving your answer in its simplest form.

Answer: _____ [2]

(c) A total of 240 children were asked to complete the survey. Calculate how many of the children listed Football as their favourite.

Answer: _____ [2]

(d) The whole school has 1320 pupils. Estimate how many of them you would expect to describe Swimming as their favourite sport, judging by the information in the pie chart.

Answer: _____ [2]

Page total:

10. (a) Write twelve fiftieths as a decimal.

Answer: _____ [2]

(b) Write one eighth as a percentage.

Answer: _____ % [3]

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11. A sleeper train leaves London at 22:45 and reaches Aberdeen at 06:30 the next morning.

(a) Work out how long the journey takes in hours and minutes.

Answer: _____ hours _____ minutes [2]

A jumbo jet also leaves London at 22:45 and takes a total of 11 hours, 35 minutes to fly to Hong Kong. Hong Kong is 7 hours ahead of London (i.e. when the time is 13:00 in London, it is 20:00 in Hong Kong).

(b) Work out what the local time is in Hong Kong when the flight lands. Give your answer in 24 hour form.

Answer: _____ : _____ [3]

Page total:

12. Clare went to the sweet shop with her weekly pocket money. She saw that lollipops cost 35p, and she worked out that if she bought 8 lollipops she would end up with 30p left from her pocket money.

(a) Work out how much money Clare had in total, giving your answer in pounds and pence.

Answer: _____ [2]

She then worked out that if she bought only 5 lollipops, she would have exactly the right amount of money left over to buy 3 packets of jelly gums.

(b) Work out the price of one packet of jelly gums.

Answer: _____ [3]

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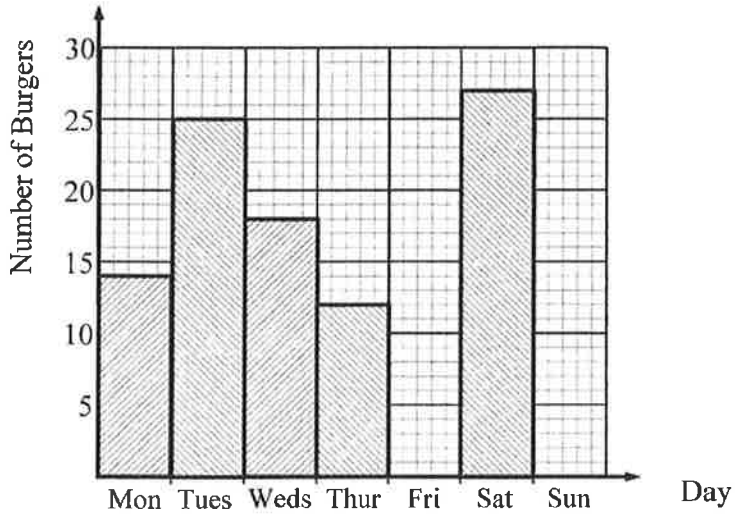
13. At the school medical centre, there are enough plasters to patch up 12 cut knees per day for 30 days. Work out how long the plasters would last if the medical centre were having to treat 20 boys with cut knees a day.

Answer: _____ days [3]

Page total:

14. The table and bar chart below shows the number of burgers sold by a cafe each day for a week.

Day	Mon	Tues	Weds	Thur	Fri	Sat	Sun
Number of burgers sold	14	25		12	21	27	



(a) Use the information in the table and the bar chart to complete the entry for **Wednesday** in the table and the bar for **Friday** on the chart.

[2]

(b) The total number of burgers sold in the week was 140. Use this information to help complete both the table and the bar chart with **Sunday**'s entry.

[3]

Page total:

15. Arafin has four rectangular tiles which he arranges as shown below, leaving a square hole in the middle of the tiles.

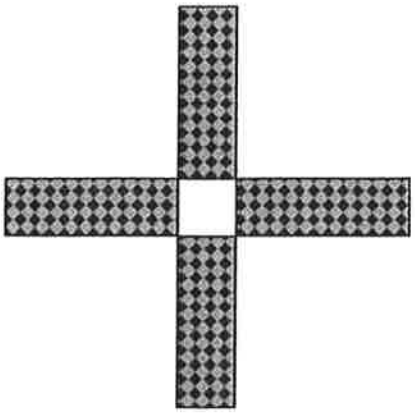


Diagram not drawn to scale

The hole in the middle has an area of 400 cm^2.

(a) Calculate the width of one of the tiles.

Answer: _____ cm [2]

The area of the four tiles combined is 12 times as large as the area of the hole in the middle.

(b) Calculate the length of one of the tiles.

Answer: _____ cm [3]

(c) Work out the perimeter of one of the tiles, giving your answer **in metres.**

Answer: _____ m [2]

Page total:

16. Searching in the sock drawer of his wardrobe, Graham is able to find 30 loose socks of assorted colours. A third of them are white, and of the non-whites remaining, two fifths are blue. The rest are all red.

(a) Work out how many blue socks he finds.

Answer: _____ [2]

(b) Write down how many pairs of red socks he could make.

Answer: _____ [2]

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17. On the five school days of a given week, Joshua recorded how many minutes late his school bus arrived each morning. Here is what he found:

Monday	–	5 minutes
Tuesday	–	8 minutes
Wednesday	–	4 minutes
Thursday	–	10 minutes
Friday	–	8 minutes

(a) Write down the mode of the amount of minutes the bus was late over the week.

Answer: _____ minutes [1]

(b) Work out the range of the five times that Joshua recorded.

Answer: _____ minutes [2]

Page total:

(c) Calculate the mean average time that the bus was late over the course of the week.

Answer: _____ minutes [3]

The following Monday, Joshua again records how many minutes late the bus arrives, and combining this with his results from the previous week, the mean average late time is now at 6 minutes.

(d) How much was the bus late by on that second Monday?

Answer: _____ minutes [3]

Joshua keeps recording this information each morning. By the end of the Thursday of the second week, the mean average has now fallen to 4 minutes.

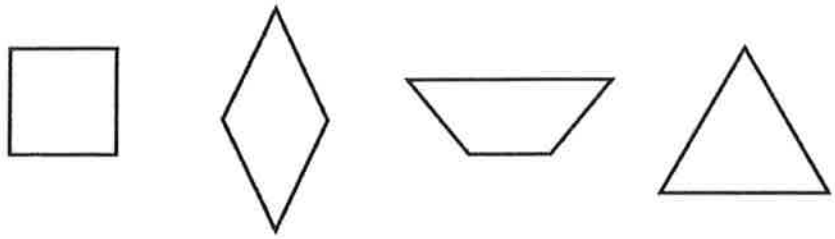
(e) Explain what this tells us about the number of minutes that the bus was late over the middle three days of the second week.

.....

..... [2]

Page total:

18. (a) Circle which of the following shapes has two both lines of symmetry and rotational symmetry of order 2.



[1]

(b) Give the **full name** of the shape above which has exactly three lines of symmetry.

Answer: _____ [2]

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19. The competitors in the Tour de France cycling race are all given race numbers to wear. Based on last year's results, the captain of the leading team has the honour of wearing number 1 and the other members of his team wear the numbers 2 to 9.

The captain of the next team in the rankings wears number 11 and his team-mates are given the race numbers from 12 to 19. The third team get allocated the race numbers from 21 to 29, and so on.

This process continues until all riders have been given a unique number that identifies them individually, but also identifies which team they are on.

(a) Write down how many riders there are in each team.

Answer: _____ [1]

Page total:

(b) The last race number to be issued is number 209. Write down how many teams there are in the race.

Answer: _____ [1]

(c) Calculate how many riders there are in the race in total.

Answer: _____ [2]

(d) Calculate how many zeros occur in the list of all the race numbers from 1 to 209.

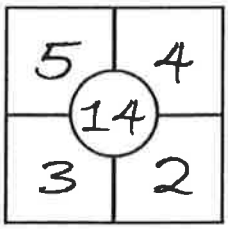
Answer: _____ [2]

(e) If 42 riders failed to finish the 3-week-long race, either through crashing out or abandoning the race, work out what fraction of the number of riders who started the race actually **completed** the whole event. Leave your answer in its simplest form.

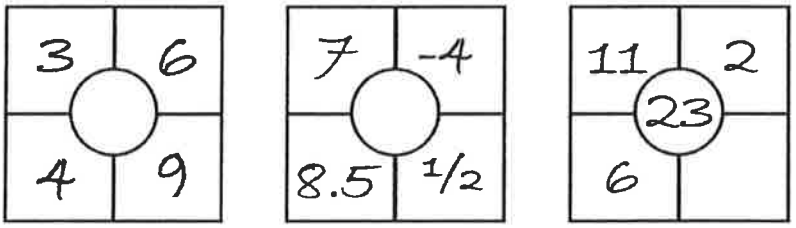
Answer: _____ [3]

Page total:

20. In the each of the grids below, the numbers in the four square boxes around each circle must be added together to give the number in the circle. For example, 5 + 4 + 3 + 2 = 14, so:

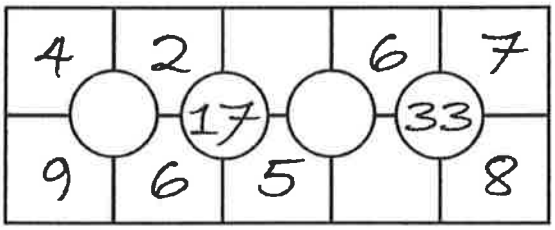


(a) Complete the three grids below with the correct number into each of the relevant squares or circles.



[3]

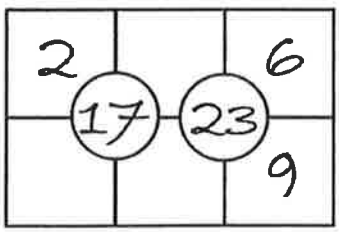
(b) Complete the network of grids below with the correct number into each of the relevant squares or circles.



[4]

In the final network of grids below, the numbers must all be whole numbers greater than zero, and **the same number must not appear more than once**.

(c) Complete this final network below with the correct number into each of the relevant squares or circles.



[3]

Page total:

21. The number 21 can be written as the sum of **three** different prime numbers:

$$21 = 3 + 5 + 13$$

Show which numbers between 9 and 19 inclusive can be written as the sum of 3 different prime numbers, writing your answers in the spaces at the bottom of the page and using the gap between for rough working as necessary. If it is not possible to make a particular number, tick the box on the right hand side.

9 = _____ or not possible: ☐

10 = _____ or not possible: ☐

11 = _____ or not possible: ☐

12 = _____ or not possible: ☐

13 = _____ or not possible: ☐

14 = _____ or not possible: ☐

15 = _____ or not possible: ☐

16 = _____ or not possible: ☐

17 = _____ or not possible: ☐

18 = _____ or not possible: ☐

19 = _____ or not possible: ☐

[4]

Page total:

End of the Examination

If you have time, go back and check your answers and make sure that you have shown all of your working.