Junior Maths Mastery Challenge Sample

Paper C

Section A

Questions 1 to 5 carry 3 marks each.

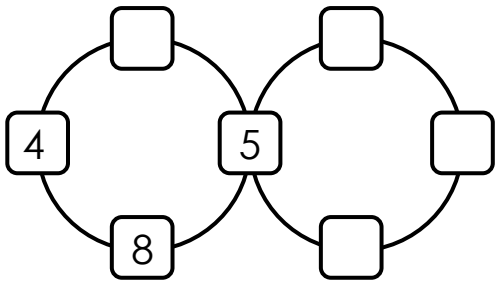
1. Find the missing term in the pattern below.

1, 2, 3, 6, 11, 20, 37, _____, 125, …

(A) 63 (B) 57 (C) 74

(D) 81 (E) None of the above

2. Each box in the magic circle below must be filled with a whole number from 3 to 10 such that the sum of the numbers along each circle is equal. What is the greatest possible sum of the numbers along each circle? (Each number can only be used once.)



(A) 24 (B) 25 (C) 26

(D) 27 (E) None of the above

3. A company rented some boats for 52 employees.
The boats could seat either 6 or 8 of them.
A 6-seater boat cost $12 to rent. An 8-seater boat cost $15 to rent. What was the minimum amount the company had to pay to rent the boats?

(A) $102 (B) $105 (C) $108

(D) $123 (E) None of the above

4. Paul has 36 two-dollar notes and five-dollar notes.
The total value of the notes is $111. How many five-dollar notes does he have?

(A) 17 (B) 15 (C) 13

(D) 11 (E) 9

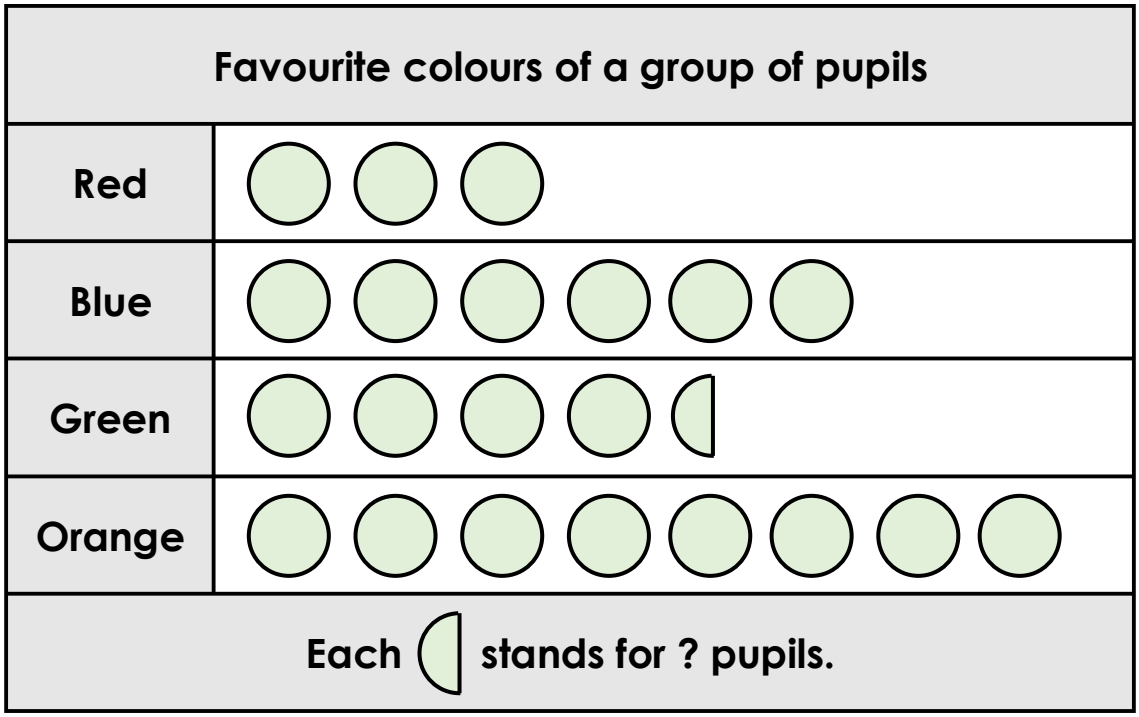
5. Joe wants to pack 20 muffins and 30 egg tarts. He has some boxes and tries to pack an equal number of each pastry into the boxes. What is the greatest possible number of boxes he has if he is short of 4 muffins and has 2 egg tarts left in the end?

(A) 3 (B) 4 (C) 6

(D) 7 (E) 8

Questions 6 to 10 carry 4 marks each.

6. The picture graph shows the favourite colours of a group of pupils.

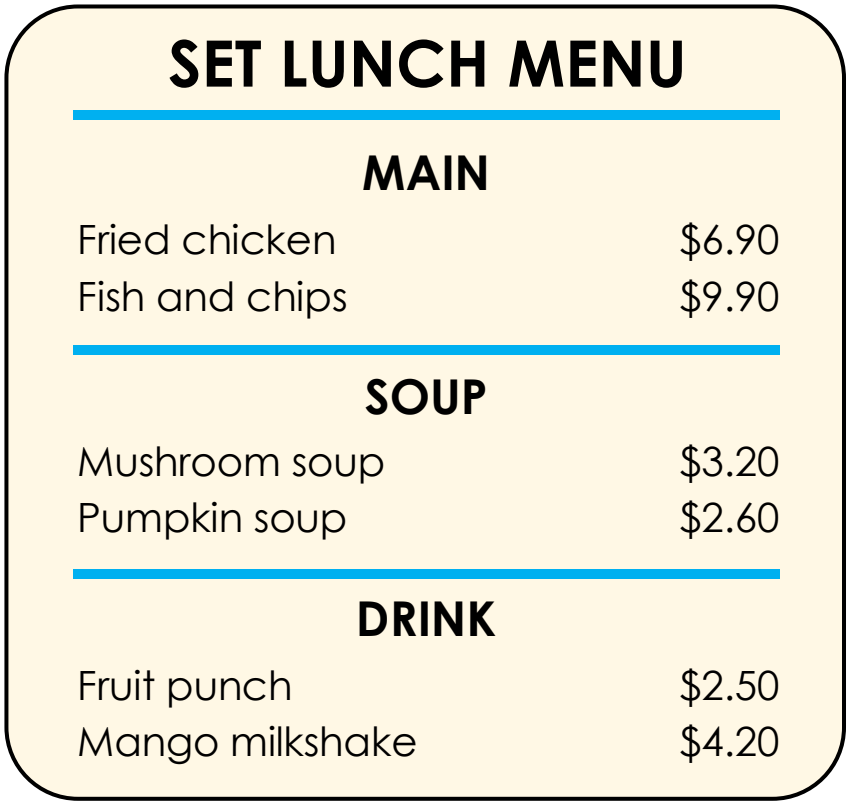


12 more pupils choose blue than green. How many pupils are there altogether?

(A) 132 (B) 142 (C) 152

(D) 162 (E) 172

7. The diagram below shows a menu from a café.



Lily has $15. She wants to order a set lunch which includes 1 main dish, 1 soup and 1 drink. How many different ways can she order the set lunch?

(A) 4 (B) 5 (C) 6

(D) 7 (E) 8

8. In the puzzle below, each letter represents a different digit.

$$\begin{array}{cccc} & A & B & C \\ + & A & B & C \\ \hline D & E & B & A \end{array}$$

Find the greatest possible number ABC represents.

(A) 603 (B) 698 (C) 803

(D) 804 (E) None of the above

9. What is the first number from the left in the 10th row of the following pattern?

Row 1				1			
Row 2			2	3	4		
Row 3		5	6	7	8	9	
Row 4	10	11	12	13	14	15	16
				⋮			

(A) 84 (B) 86 (C) 88

(D) 90 (E) None of the above

10. Joe adds up consecutive numbers from 1 onwards, 1 + 2 + 3 + 4 + 5 + …. He writes the sum on a piece of paper as he adds the numbers mentally. When he reaches the sum 260, he realises that he has forgotten to add one number. What is the number?

(A) 16 (B) 18 (C) 20

(D) 22 (E) 24

Section B

Questions 11 and 12 carry 6 marks each.

11. A leap year has 366 days, in which there are 29 days in February. In a certain leap year, there are 5 Fridays in the month of February. On which day of the week is the last day of that year?

12. A teacher gave each of her 36 pupils a role, Truth-teller or Liar.

    The pupils had 15 minutes to walk around and shake hands with any other pupil only once. A pupil could choose not to shake hands with anyone. When two pupils shook hands, they would reveal their role only to each other.

    After 15 minutes, the teacher asked the pupils, 'How many Truth-tellers did you shake hands with?'

    A Truth-teller had to give the correct answer and a Liar had to give an incorrect answer. Each pupil gave a different answer, 0, 1, 2, 3, …, 33, 34 and 35.

    How many pupils were Liar(s)?