Junior Maths Mastery Challenge Sample

Paper E

Section A

Questions 1 to 5 carry 3 marks each.

1. Find the value of the following.

$$1 - 2 + 3 - 4 + 5 - 6 + \ldots + 2023 - 2024 + 2025$$

(A) 1012 (B) 1013 (C) 1014

(D) 1015 (E) None of the above

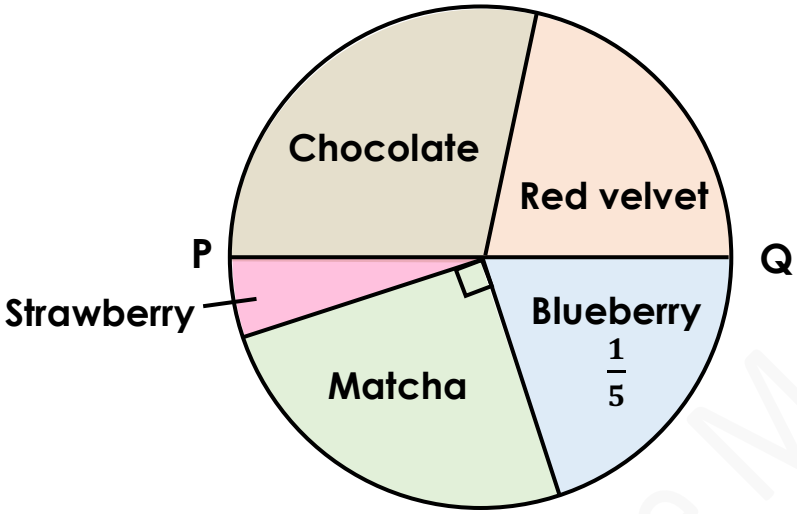
2. Find the value of the following.

$$1.101 + 1.202 + 1.303 + \ldots + 1.707 + 1.808 + 1.909$$

(A) 13.509 (B) 13.545 (C) 13.59

(D) 13.905 (E) 28.595

3. The pie chart shows the number of muffins sold in a day. PQ is a straight line.

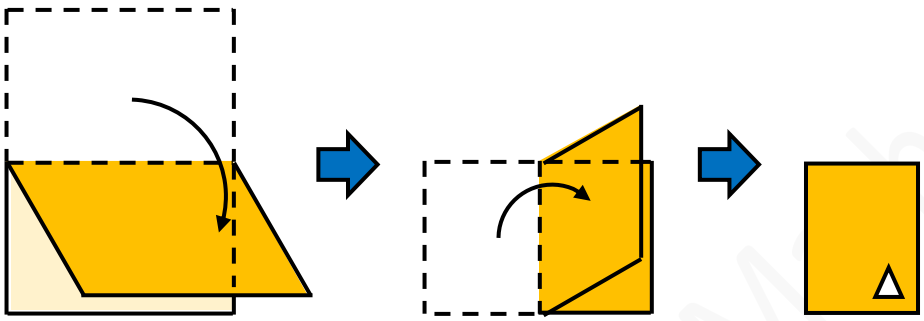


$\frac{1}{3}$ of the muffins sold were chocolate and strawberry muffins. 26 red velvet muffins were sold. How many chocolate muffins were sold?

(A) 13 (B) 17 (C) 35

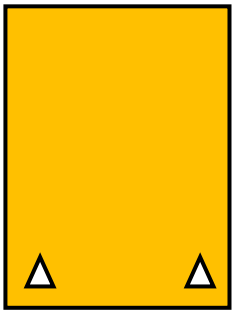
(D) 39 (E) None of the above

4. Alice folded a rectangular piece of paper into half, then folded it into half again, then she cut out a triangle as shown in the diagram below.

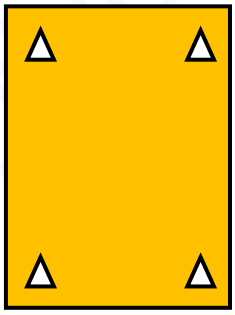


Which of the following shows the paper when unfolded?

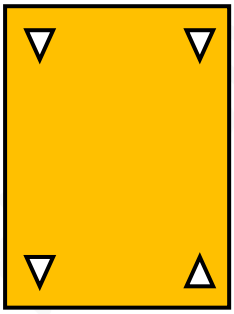
(A)



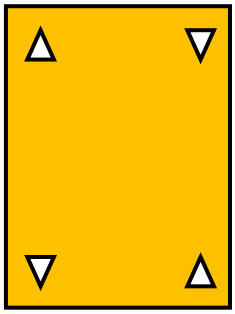
(B)



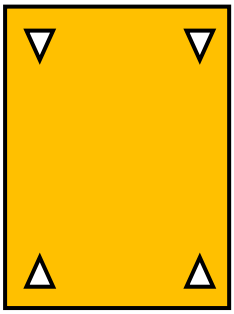
(C)



(D)



(E)



5. Square tiles are used to form some figures. The figures follow the pattern below.

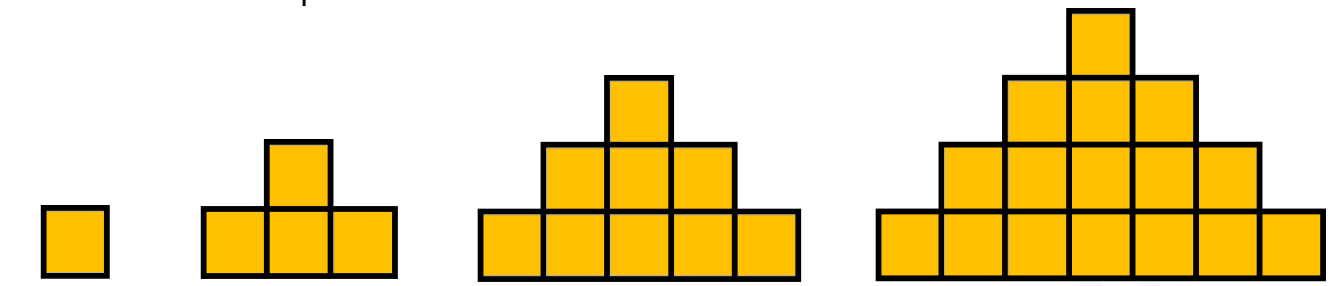


Figure 1 Figure 2 Figure 3 Figure 4

How many square tiles are used to form Figure 99?

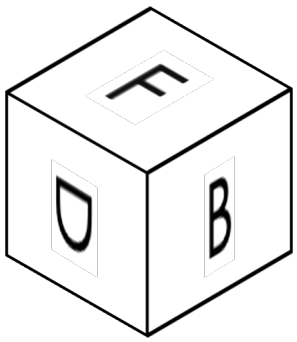
(A) 9604 (B) 9702 (C) 9801

(D) 9900 (E) None of the above

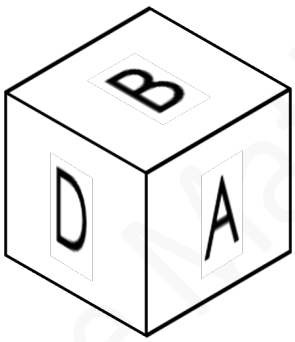
Questions 6 to 10 carry 4 marks each.

6. Four of the five cubes below belong to the same cube. Which of them does not belong to the cube?

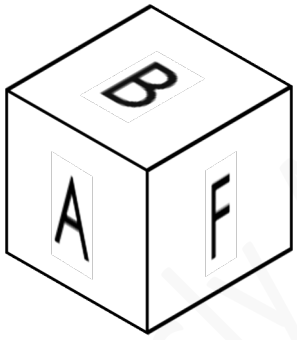
(A)



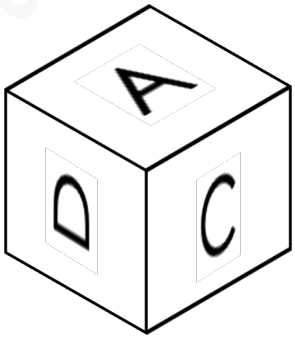
(B)



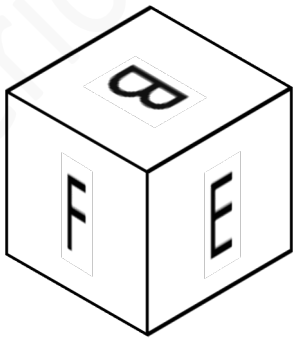
(C)



(D)



(E)

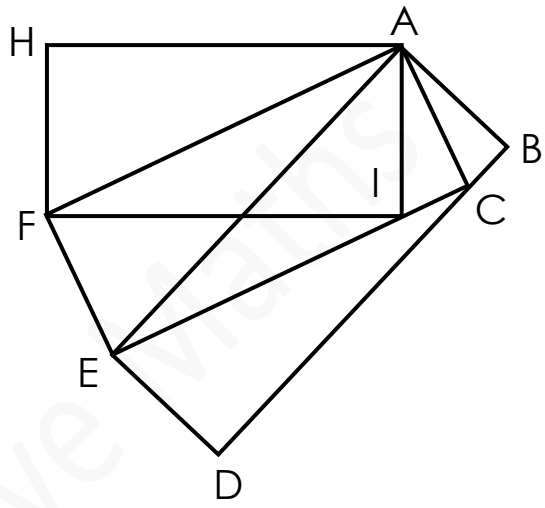


7. Jane bought a bag of rice. On the first day, she used $\frac{1}{5}$ of the rice. The next day, she used 240 grams of rice. On the third day, she used $1\frac{1}{4}$ times the total amount used in the first two days. She had $\frac{1}{4}$ of the bag of rice left. How many grams of rice did the bag contain at first?

(A) 800 g (B) 1600 g (C) 1800 g

(D) 2000 g (E) None of the above

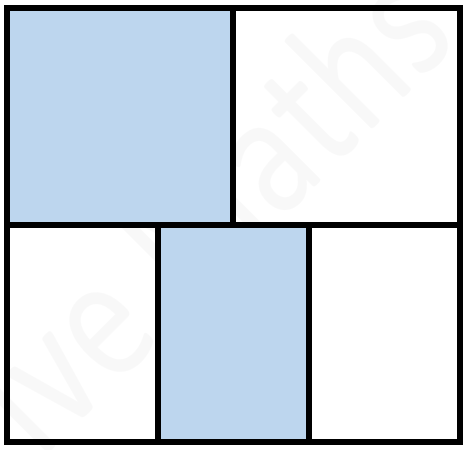
8. The figure is made up of rectangles ABDE, ACEF and AIFH. The length of HA is 30 centimetres and the length of HF is 15 centimetres. What is the area of Rectangle ABDE?



(A) 270 cm^2 (B) 225 cm^2 (C) 180 cm^2

(D) 150 cm^2 (E) None of the above

9. The figure shows a square divided into two equal parts, top and bottom. The top part is divided into 2 equal parts. The bottom part is then divided into 3 equal parts. The perimeter of the shaded part is 180 centimetres. Find the perimeter of the figure.



(A) 198 cm (B) 216 cm (C) 240 cm

(D) 432 cm (E) None of the above

10. Ali, Ben, Cheryl and Don play a game 'Truth-teller and Liar'. The Truth-teller always speaks the truth and the Liar always lies.

    Each of them draws a card and plays the role of either a Truth-teller or a Liar.

    They make the following statements.

    Ali: Exactly one of us is a Liar.
    Ben: Exactly two of us are Liars.
    Cheryl: Exactly three of us are Liars.
    Don: All of us are Liars.

    At least one of them is a Truth-teller. Which of the following statements is **true**?

    (A) Don is the only Liar.
    (B) Ben is the only Liar.
    (C) Ali and Don are the only Liars.
    (D) Ben is the only Truth-teller.
    (E) Cheryl is the only Truth-teller.

Section B

Questions 11 and 12 carry 6 marks each.

11. In the following cryptarithm, each letter represents a different digit from 1 to 9.

$$\begin{array}{cccc} & A & B \\ & C & D \\ & E & F \\ + & & G \\ \hline 1 & 0 & 0 \end{array}$$

A cryptarithm is a mathematical puzzle where the numerical digits are replaced by letters or symbols.

If AB is the largest possible 2-digit number that can be formed, what number does AB represent?

12. Jane writes 20 different whole numbers. The sum of these numbers is an even number.

    If any 8 numbers are picked from the numbers, the product of these 8 numbers is an even number.

    Find the smallest possible sum of the 20 numbers.