



Junior Maths Mastery Challenge Sample

Paper D

Section A

Questions 1 to 5 carry 3 marks each.

1. A number is written below. Its digits follow a pattern.

25719257192571925719...

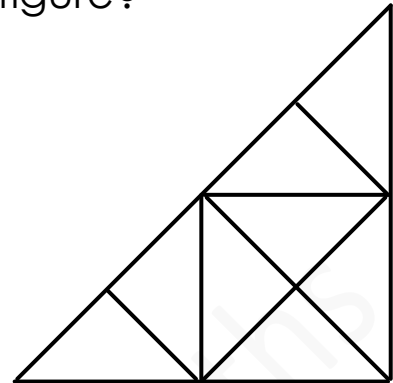
Find the sum of its first 52 digits.

- (A) 242 (B) 247 (C) 254
(D) 255 (E) 264

2. 12, 47, 79 are examples of 2-digit numbers with digits in ascending order. How many such 2-digit numbers are there?

- (A) 32 (B) 34 (C) 36
(D) 45 (E) 55

3. How many triangles are there in the figure?



(A) 15

(B) 16

(C) 17

(D) 18

(E) None of the above



4. Boxes A, B, C, D and E contain 370 marbles altogether.
Boxes A and B contain 160 marbles altogether.
Boxes B and C contain 148 marbles altogether.
Boxes C and D contain 140 marbles altogether.
Boxes D and E contain 128 marbles altogether.
How many marbles do boxes B and D contain altogether?

(A) 124

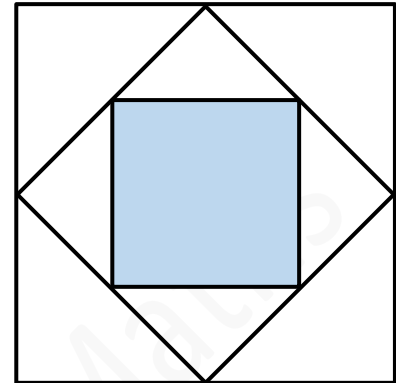
(B) 136

(C) 152

(D) 176

(E) None of the above

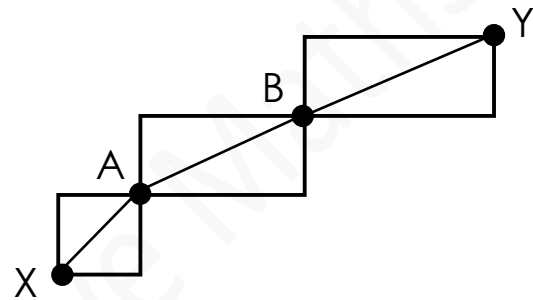
5. The figure is made up of three squares. The area of the shaded square is 25 cm^2 . Find the area of the figure.



- (A) 75 cm^2 (B) 100 cm^2 (C) 125 cm^2
(D) 150 cm^2 (E) None of the above

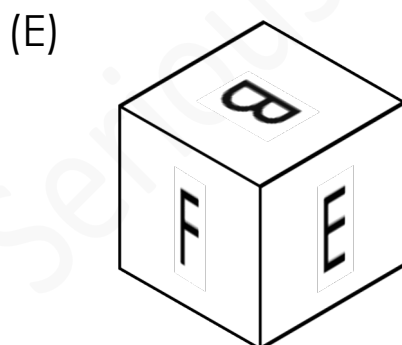
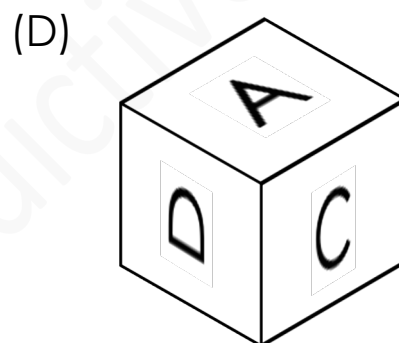
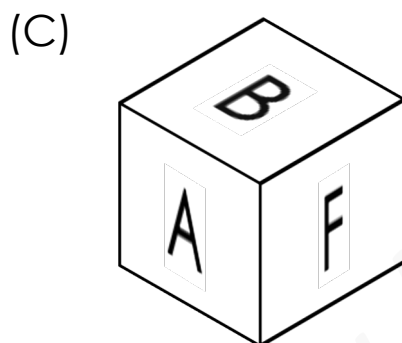
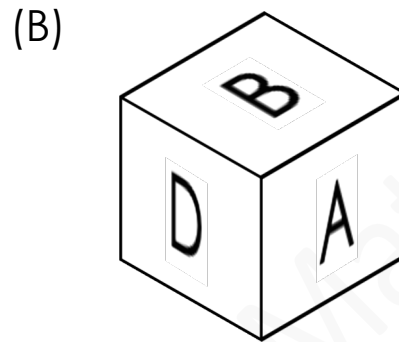
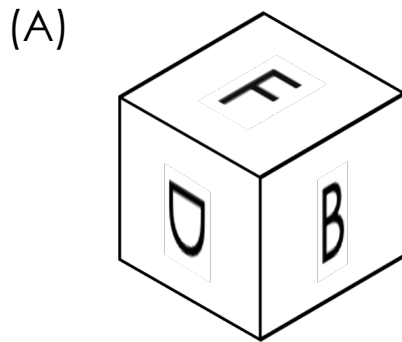
Questions 6 to 10 carry 4 marks each.

6. The lines on the diagram show the paths from Point X to Point Y. Lisa wants to walk from Point X to Point Y. How many ways can she walk from Point X to Point Y, passing through points A and B?
 (During each journey, she is not allowed to walk to a point more than once.)



- (A) 9 (B) 12 (C) 15
 (D) 27 (E) None of the above

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





8. What is the ones digit in the following product?

$$\underbrace{2 \times 2 \times 2 \times \dots \times 2 \times 2 \times 2}_{30 \text{ digits } 2}$$

- (A) 2 (B) 4 (C) 6
(D) 8 (E) None of the above

9. Joe and Paul are playing a game using 100 beads. Each of them takes turn to remove 1 to 5 beads. The player who removes the last bead loses the game.

Joe started the game. He removed a certain number of beads and claimed that he would definitely win the game now. How many beads did he remove?

- (A) 1 (B) 2 (C) 3
(D) 4 (E) 5



10. Alice, Betty, Cheryl, Daisy and Ella competed in a race. Each of them made two statements as shown below.

Alice: Daisy finished 2nd. Ella finished 3rd.

Betty: Alice finished 5th. Cheryl finished 1st.

Cheryl: Daisy finished 4th. Ella finished 2nd.

Daisy: Betty finished 1st. Cheryl finished 3rd.

Ella: Alice finished 2nd. Betty finished 1st.

Each girl was right about only 1 statement she has made. Who finished 2nd in the race?

(A) Alice

(B) Betty

(C) Cheryl

(D) Daisy

(E) Ella



Section B

Questions 11 and 12 carry 6 marks each.

11. In the cyptarithm below, each letter represents a different digit.

$$\begin{array}{r} \\ - \\ \hline \end{array}$$

What 4-digit number does ABCD represent?



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12. Ali has between 70 and 100 cookies. He divides all the cookies equally into 3 jars and he has 1 cookie remaining. He then divides all the cookies in one of the jars into 3 equal packets. 1 cookie remains in the jar. He then divides all the cookies in one of the packets onto 3 equal plates. 1 cookie remains in the packet. How many cookies does he have?