



## Junior Maths Mastery Challenge Sample

### Paper B

#### Section A

Questions 1 to 5 carry 3 marks each.

1. Find the value of the following.

$$1 + 2 + 3 + \dots + 7 + 8 + 9 + 8 + 7 + \dots + 3 + 2 + 1$$

- (A) 72                      (B) 81                      (C) 99  
(D) 109                    (E) None of the above

2. Each shape below represents a different number.

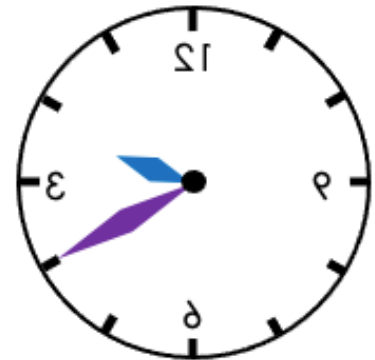
$$\triangle \times \square = 15$$

$$\square \times \bigcirc = 35$$

What is the value of  $\triangle \times \bigcirc$ ?

- (A) 10                      (B) 14                      (C) 20  
(D) 21                      (E) None of the above

3. Lina started doing her homework at 11:30 am. After she finished her homework, she saw the reflection of her wall clock through a mirror as shown in the diagram. How many minutes did she spend doing her homework?

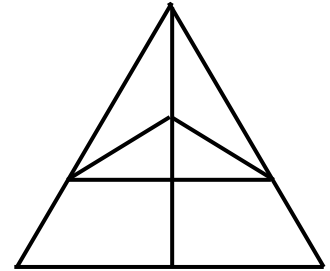


Afternoon

- (A) 150 min      (B) 160 min      (C) 170 min  
(D) 250 min      (E) None of the above



4. How many triangles are there in the figure?



(A) 11

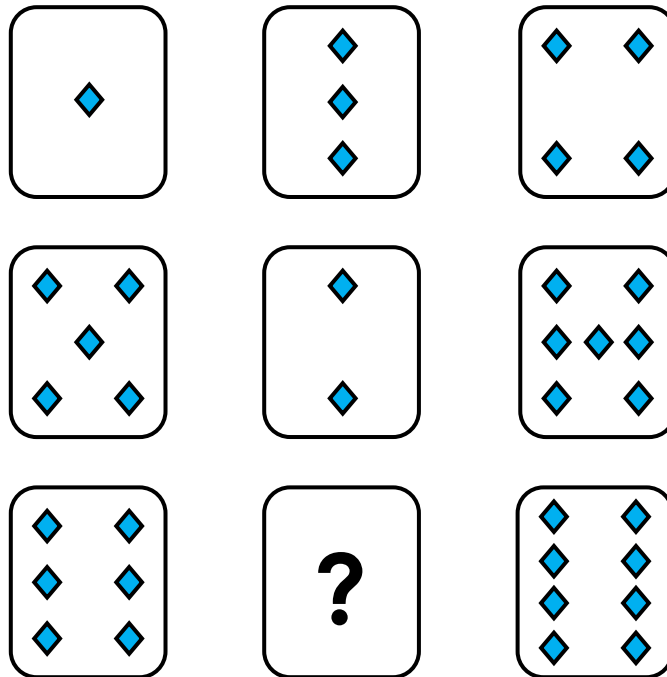
(B) 12

(C) 13

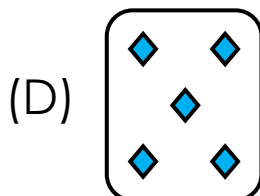
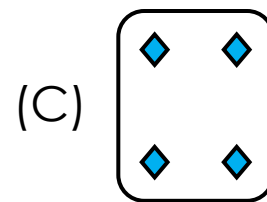
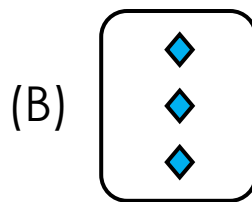
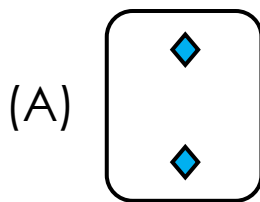
(D) 14

(E) 15

5. Study the pattern below.



What is the missing figure?



(E) None of the above



---

Questions 6 to 10 carry 4 marks each.

6. A bus left the terminal with some passengers.

At the 1st bus stop, 16 passengers alighted and 5 passengers boarded.

At the 2nd bus stop, 7 passengers alighted and 12 passengers boarded.

There were 46 passengers onboard the bus when it left the 2nd bus stop. How many passengers were onboard the bus when it left the terminal?

(A) 40

(B) 42

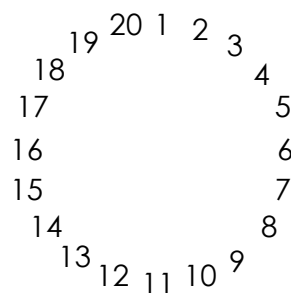
(C) 44

(D) 46

(E) None of the above



7. 20 children were sitting in a circle. They were given numbers 1 to 20 in order. Starting from number 1, every 3rd child was asked to leave the circle until 3 children remained. What was one of the numbers given to the 3 children?

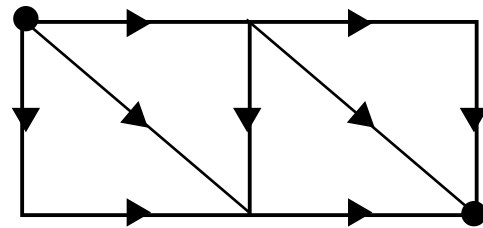


- (A) 1                      (B) 2                      (C) 17  
(D) 19                     (E) None of the above
8. There are 5 red balls, 4 blue balls and 3 orange balls in a bag. Without looking into the bag, Ben removed 3 balls. How many possible different combinations of the colours are there?

- (A) 10                      (B) 12                      (C) 14  
(D) 16                      (E) 18

9. The lines in the diagram below show the paths from Zoe's house to Leon's house. The arrowheads show the directions allowed along each path. How many different ways can Zoe walk from her house to Leon's house?

Zoe's house



Leon's house

- (A) 6                      (B) 7                      (C) 8  
 (D) 9                      (E) None of the above



10. Jane bought a blue, red, yellow and orange T-shirt. Ken, Lisa, Mandy and Tom took a T-shirt of their favourite colour.

- Ken dislikes yellow and red.
- Lisa dislikes red and orange.
- Mandy's favourite colour is orange.
- Tom's favourite colour is the colour both Ken and Lisa dislike.

Which of the following statements is **false**?

- (A) Ken took the blue T-shirt.
- (B) Lisa did not take the blue T-shirt.
- (C) Lisa did not take the yellow T-shirt.
- (D) Mandy took the orange T-shirt.
- (E) Tom took the red T-shirt.





## Section B

Questions 11 and 12 carry 6 marks each.

11. Each letter represents a different digit.

$$\begin{array}{r} \phantom{+} A \phantom{00} B \phantom{0} C \\ \phantom{+} \phantom{00} B \phantom{0} C \\ + \phantom{000} \phantom{0} C \\ \hline D \phantom{00} E \phantom{0} F \end{array}$$

Find the greatest possible 3-digit number ABC can represent.



12. Helen has 5 blue hair clips, 3 yellow hair clips and 6 pink hair clips in a box. Without looking into the box, she removes 1 hair clip at a time. What is the minimum number of hair clips she must take out to be sure there are 3 hair clips of different colours?