Junior Maths Mastery Challenge 2025

Paper D

Student Name: _____

Student No.: _____

DO NOT OPEN THIS BOOKLET UNTIL INSTRUCTED.

Read the instructions on the **answer sheet** and fill in your **name**, **school** and **other information**.

Record your answers in your **answer sheet**.

You have **1 hour 30 minutes** to answer all 25 questions.

Junior Maths Mastery Challenge (2025)

100

Paper D

Section A (70 marks)

Questions 1 to 10 carry 3 marks each.

1. How many 4-digit numbers can be formed using the digits 1, 2, 5 and 7 without repetition, such that each number has 5 as its factor?

(A) 3 (B) 6 (C) 8

(D) 12 (E) 24

2. The numbers below follow a pattern.

3, 4, 7, 11, 18, 29, 47, ...

What is the next number?

(A) 63 (B) 67 (C) 70

(D) 76 (E) 78

3. If you multiply all the even numbers between 1 and 100, what is the last digit of the product?

(A) 0 (B) 2 (C) 4

(D) 6 (E) 8

4. A prime number is a whole number with only two factors, 1 and itself. For example, 2, 3 and 5 are prime numbers.

How many prime numbers are there from 20 to 40?

(A) 2 (B) 4 (C) 6

(D) 8 (E) 10

5. Mrs Green has 5 children. Each child is born exactly 3 years apart. The sum of the ages of the three youngest children is 15 years. Find the sum of the ages of the three oldest children.

(A) 21 years (B) 25 years (C) 33 years

(D) 36 years (E) 42 years

6. Poles are put up along a path. Two consecutive poles are put up 15 metres away from each other. There are 36 poles altogether. There is one pole on each end of the path. How long is the path?

(A) 490 m (B) 504 m (C) 510 m

(D) 525 m (E) 540 m

7. A whole number N is divided by 8. Then, 8 is subtracted from the quotient. The result is multiplied by 8.
Then, 8 is added to the product. The final value is 32.
Which of the following is a possible value of Number N?

(A) 72 (B) 80 (C) 85

(D) 95 (E) 96

8. If Ali gives each child 5 biscuits, he will have 4 biscuits left. If he gives each child 7 biscuits instead, he will be short of 16 biscuits. How many children are there?

(A) 6 (B) 7 (C) 8

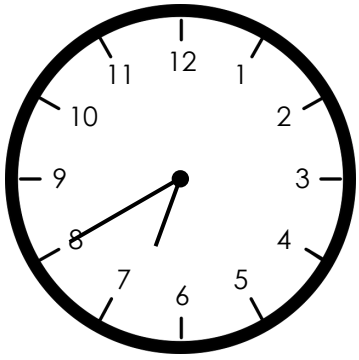
(D) 9 (E) 10

9. What digit does Y represent so that the 4-digit number 23YY is divisible by 14?

(A) 0 (B) 2 (C) 4

(D) 6 (E) 8

10. The clock shows 6:40 pm. How many degrees does the minute hand need to turn for the time to show 7 pm?

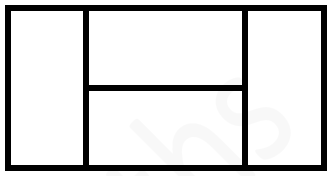


(A) 30° (B) 40° (C) 60°

(D) 100° (E) 120°

Questions 11 to 20 carry 4 marks each.

11. The figure is made up of 4 identical rectangles. The area of the figure is 72 cm^2. Find the perimeter of the figure.



(A) 36 cm (B) 40 cm (C) 44 cm

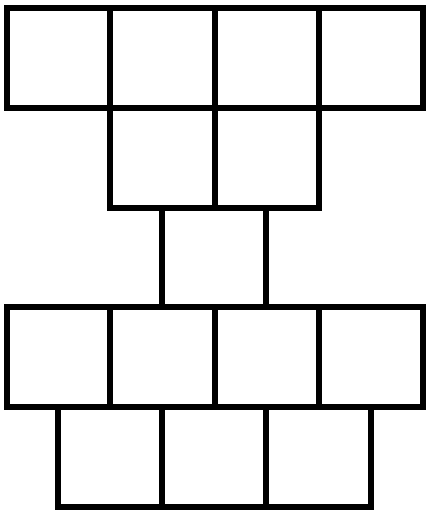
(D) 48 cm (E) None of the above

12. Tom is at the bottom of a 37-metre cliff. With each attempt, he climbs up 5 metres but slides back 2 metres while resting before the next attempt. What is the least number of attempts he needs to make to reach the top of the cliff?

(A) 11 (B) 12 (C) 13

(D) 14 (E) None of the above

13. The figure below is made up of 3-cm squares.

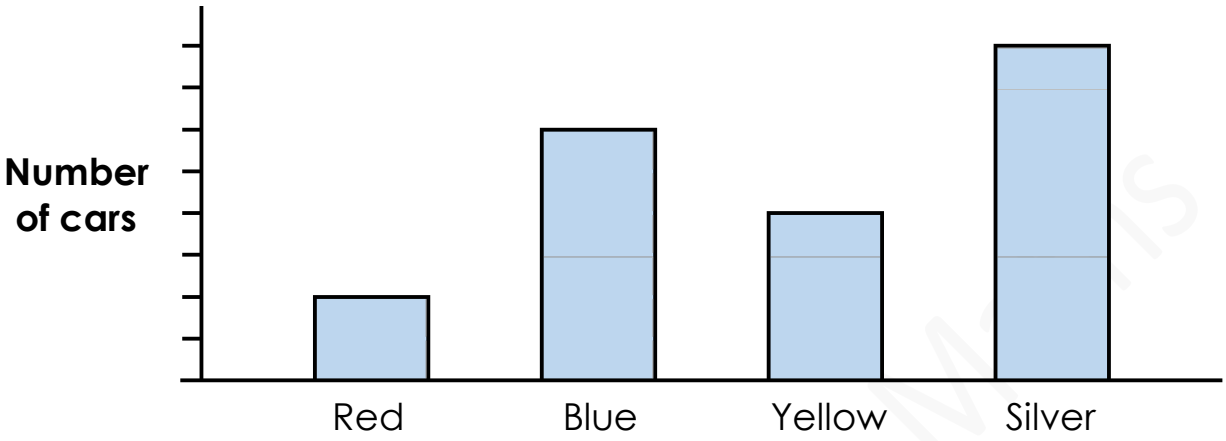


What is the perimeter of the figure?

(A) 54 cm (B) 66 cm (C) 72 cm

(D) 84 cm (E) None of the above

14. The bar graph shows the number of cars of each colour in a car park.



There are 160 cars in the car park. How many of the cars are silver?

(A) 64 (B) 96 (C) 128

(D) 140 (E) None of the above

15. In a box, $\frac{3}{8}$ of the beads are blue and the rest are green. 12 red beads are then added into the box. In the end, $\frac{1}{4}$ of the beads in the box are blue. How many blue beads are there?

(A) 3 (B) 6 (C) 9
(D) 12 (E) None of the above

16. Which one fraction should be removed so that the sum of the remaining four fractions is closest to 1?

$\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{4}$ $\frac{1}{5}$ $\frac{1}{6}$

(A) $\frac{1}{2}$ (B) $\frac{1}{3}$ (C) $\frac{1}{4}$
(D) $\frac{1}{5}$ (E) $\frac{1}{6}$

17. The table below shows the number of pupils in a class who scored 'A' for a quiz.

	Score 'A'	**Did not score 'A'**
Number of boys	15	?
Number of girls	?	2

$\frac{1}{2}$ of the boys did not score 'A'.

Joe did not score 'A'. If he had scored 'A', $\frac{2}{3}$ of the pupils who scored 'A' would be boys.

What fraction of all the pupils were girls who scored 'A'?

(A) $\frac{1}{4}$ (B) $\frac{1}{5}$ (C) $\frac{1}{8}$

(D) $\frac{1}{10}$ (E) $\frac{4}{5}$

18. Alice saw the reflection of her clock through the mirror as shown below.

Mirror reflection of the clock

She then watched a movie that lasted for 1 h 56 min. What time did the movie end?

(A) 22:01 (B) 22:11 (C) 22:21

(D) 23:01 (E) None of the above

19. The different letters in the multiplication below represent different digits.

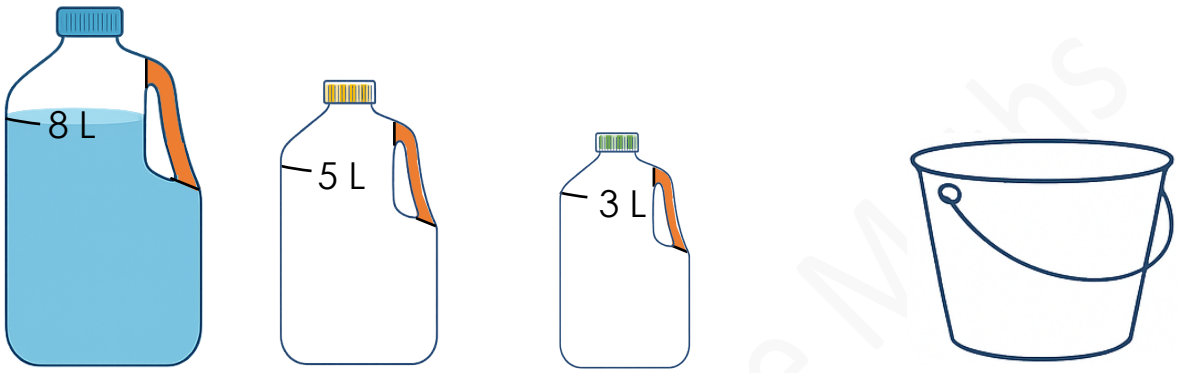
$$\begin{array}{cccccc} & P & Q & Q & R \\ \times & & & & 3 \\ \hline Q & S & T & U & 5 \end{array}$$

What is the greatest possible sum of P + Q + Q + R?

(A) 14 (B) 15 (C) 16

(D) 17 (E) 18

20. Tom has three bottles and an empty pail:
    - Bottle A contains 8 litres of water at the start.
    - Bottle B can measure 5 litres and is empty.
    - Bottle C can measure 3 litres and is empty.



Bottle A Bottle B Bottle C Pail

Tom may pour water from one bottle to another. Each time he transfers water, it is considered as 1 move. His goal is to pour exactly 4 litres of water into the pail in the last move. What is the least number of moves needed to have 4 litres of water in the pail?

(A) 5 (B) 6 (C) 7

(D) 8 (E) None of the above

Section B (30 marks)

Questions 21 to 25 carry 6 marks each.

21. Ash thought of a number. The number when divided by 5 gives a remainder of 3. When the same number is divided by 3, it gives a remainder of 2. What is the remainder when Ash's number is divided by 15?

22. A levelled pan balance has identical blue blocks on the left pan and identical red blocks on the right pan.

    If 1 blue block is moved to the right pan and 2 red blocks are moved to the left pan, a 20-g mass has to be added to the left pan to level the balance.

    If 2 blue blocks are moved to the right pan and 1 red block is moved to the left pan, a 280-g mass has to be added to the left pan to level the balance.

    Find the total mass of 1 blue block and 1 red block in grams.

23. Ken and Leon both take a quiz. Ken answers $\frac{1}{4}$ of the questions incorrectly. Leon answers 9 questions incorrectly. $\frac{1}{6}$ of the questions are answered incorrectly by both of them. What is the greatest possible number of questions answered correctly by both of them?

24. Abi rearranges the seven pieces of a 16-cm tangram set shown in Figure 1 to form a letter 'A' with a square hole in the middle as shown in Figure 2.

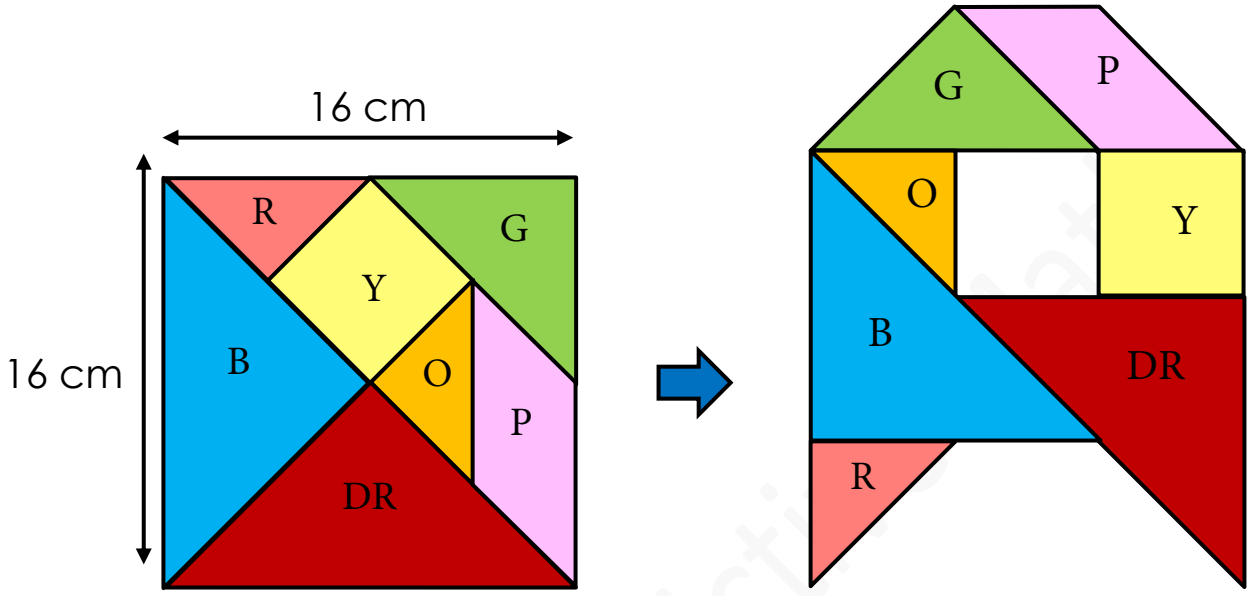
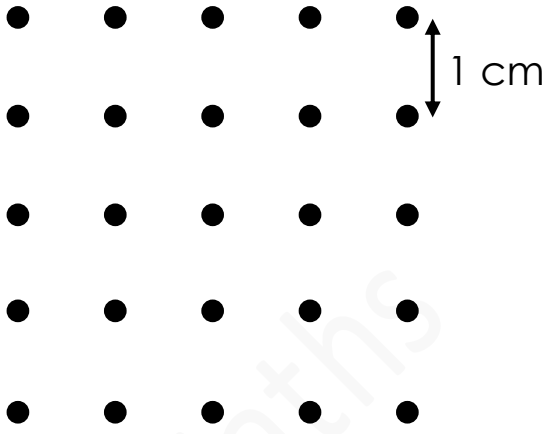


Figure 1 Figure 2

What is the area of the square hole in cm^2?

25. Leon is asked to draw two squares of the same size on the dot grid on the right.



Each vertex of a square lies on a dot.

The squares may overlap but they do not share the same dot on any of their vertices.

What is the maximum area of each square he can draw? Express your answer in cm^2.

END OF PAPER

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