AIMO 2026

Sample Paper

(Questions from the AIMO 2025 paper)

Mathematics Association, BITS Pilani

Grade 9 & 10

Instructions

- This paper consists of 18 MCQs and 2 numerical-type questions.
- Marks for each question are shown in brackets beside it.
- $\text{hcf}(a, b)$ denotes the highest common factor of a and b.
- Use of calculators or any electronic gadgets is strictly prohibited.
- Ensure your details are clearly mentioned.

Name: _____ **Roll Number:** _____

Part A

Q1. *[2 marks]* You have Rs. 15 and go to a shop where each chocolate costs Rs. 1. The shopkeeper also offers a deal: you can exchange 3 empty chocolate wrappers for 1 additional chocolate. What is the maximum number of chocolates you can eat?

(A) 19 (B) 20 (C) 21 (D) 22

Q2. *[5 marks]* Suppose a, b, c are positive integers such that

$$a + b + c = 23 \quad \text{and} \quad \text{hcf}(a, b) + \text{hcf}(b, c) + \text{hcf}(c, a) = 9.$$

What is the sum of all possible distinct values of $a^2 + b^2 + c^2$?

(A) 259 (B) 438 (C) 516 (D) 625 (E) 687

Q3. *[2 marks]* Given that $\frac{1}{7} = 0.\overline{142857}$, a repeating decimal with six different digits, let x be the sum of the first three positive integers n for which

$$\frac{1}{n} = 0.\overline{abcdef},$$

where the six repeating digits a, b, c, d, e, f are all distinct. Find x.

(A) 39 (B) 40 (C) 41 (D) 42

Q4. *[3 marks]* The base-ten representation of 19! is $121{,}6T5{,}100{,}40M{,}832{,}H00$, where T, M and H denote digits that are not given. What is $T + M + H$?

(A) 3 (B) 8 (C) 12 (D) 14 (E) 17

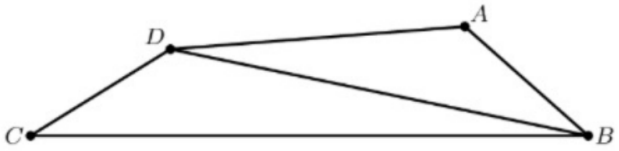
Q5. *[2 marks]* There are 3 ants sitting on the three corners of a triangle. Each ant randomly picks a direction and starts moving along the edges of the triangle. What is the probability that any two ants collide?

(A) 0.33 (B) 0.75 (C) 0.66 (D) 0.25

Q6. *[2 marks]* How many ordered pairs of integers (m, n) satisfy $\sqrt{n^2 - 49} = m$?

(A) 2 (B) 3 (C) 4 (D) infinitely many

Q7. *[3 marks]* In quadrilateral $ABCD$, $AB = 5$, $BC = 17$, $CD = 5$, $DA = 9$, and BD is an integer. What is BD?



(A) 11 (B) 12 (C) 13 (D) 14

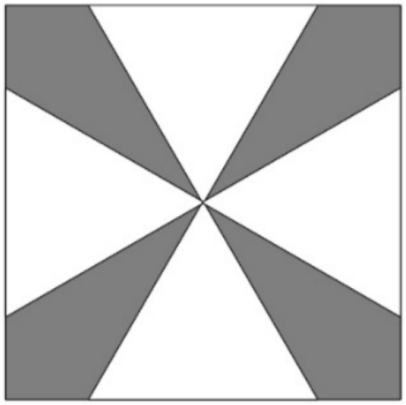
Q8. *[3 marks]* How many two-digit numbers have exactly 4 positive factors? (Here 1 and the number n are also considered factors of n.)
(A) 45 (B) 30 (C) 21 (D) 31

Q9. *[3 marks]* In the following list of numbers, the integer n appears n times in the list for $1 \leq n \leq 200$:

$$1, 2, 2, 3, 3, 3, 4, 4, 4, 4, \ldots, 200, 200, \ldots, 200$$

What is the median of the numbers in this list?
(A) 100.5 (B) 134 (C) 142 (D) 150.5

Q10. *[3 marks]* The figure below shows a square and four equilateral triangles, with each triangle having a side lying on a side of the square, such that each triangle has side length 2 and the third vertices of the triangles meet at the centre of the square. The region inside the square but outside the triangles is shaded. What is the area of the shaded region?



(A) $16 - 4\sqrt{3}$ (B) $12 - 4\sqrt{3}$ (C) $3\sqrt{3}$ (D) $4\sqrt{3}$

Q11. *[2 marks]* On an island, every inhabitant is either someone who tells the truth (a knight) or someone who lies (a knave). Five inhabitants A, B, C, D, E make the following statements:

- A: Exactly two of us are knights.
- B: C is a knave.
- C: D is a knight.
- D: B and E are of opposite types.
- E: A is a knave.

How many knights are there?
(A) 1 (B) 2 (C) 3 (D) 4

Q12. *[2 marks]* What is the least value of n such that $n!$ is a multiple of 2024?
(A) 11 (B) 21 (C) 22 (D) 23

Q13. *[5 marks]* The sum

$$\frac{1}{2!}+\frac{2}{3!}+\frac{3}{4!}+\cdots+\frac{2021}{2022!}$$

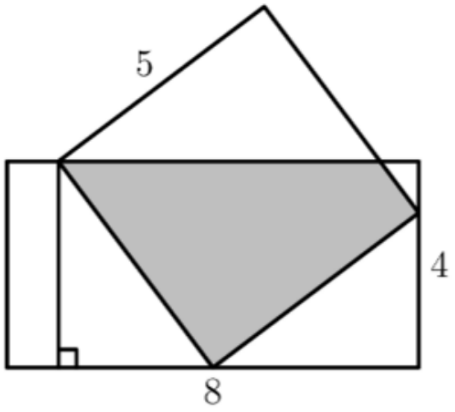
can be expressed as $a-\dfrac{1}{b!}$, where a and b are positive integers. What is $a+b$?

(A) 2020 (B) 2021 (C) 2022 (D) 2023 (E) 2024

Q14. *[3 marks]* Shreeman's algebra notes are 50 pages long and are printed on 25 sheets of paper; the first sheet contains pages 1 and 2, the second sheet contains pages 3 and 4, and so on. One day he leaves his notes on the table before leaving for lunch, and his roommate decides to borrow some pages from the middle of the notes. When Shreeman comes back, he discovers that his roommate has taken a consecutive set of sheets from the notes and that the average (mean) of the page numbers on all remaining sheets is exactly 19. How many sheets were borrowed?

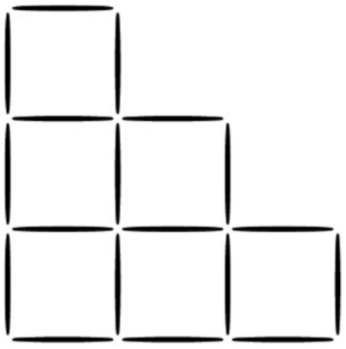
(A) 10 (B) 13 (C) 15 (D) 17 (E) 20

Q15. *[5 marks]* The diagram below shows a rectangle with side lengths 4 and 8 and a square with side length 5. Three vertices of the square lie on three different sides of the rectangle, as shown. What is the area of the region inside both the square and the rectangle?



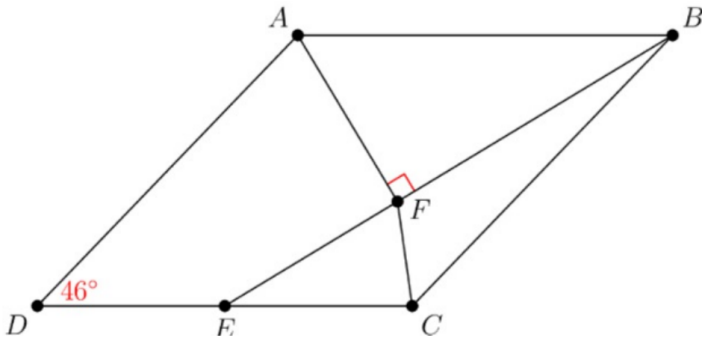
(A) $15\frac{1}{8}$ (B) $15\frac{3}{8}$ (C) $15\frac{1}{2}$ (D) $15\frac{5}{8}$ (E) $15\frac{7}{8}$

Q16. *[3 marks]* Sara makes a staircase out of toothpicks as shown. This is a 3-step staircase and uses 18 toothpicks. How many steps would be in a staircase that used 180 toothpicks?



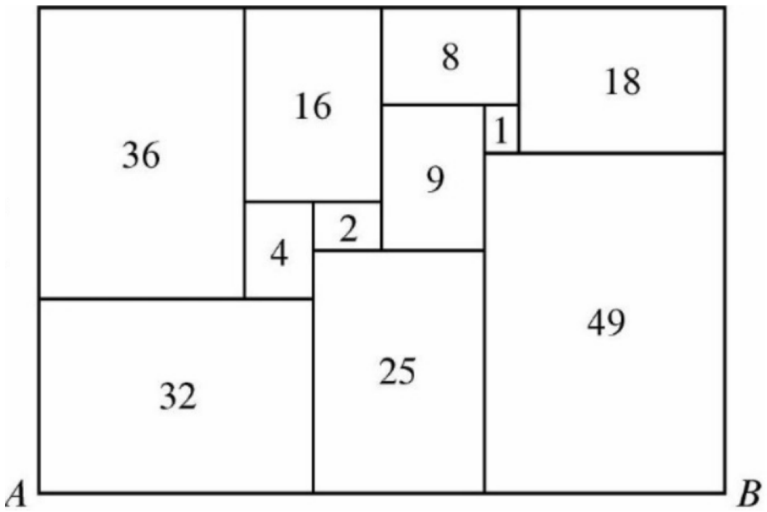
(A) 11 (B) 12 (C) 13 (D) 15

Q17. *[2 marks]* Let $ABCD$ be a rhombus with $\angle ADC = 46°$. Let E be the midpoint of $\overline{CD}$, and let F be the point on $\overline{BE}$ such that $\overline{AF}$ is perpendicular to $\overline{BE}$. What is the degree measure of $\angle BFC$?



(A) 110 (B) 111 (C) 112 (D) 113

Q18. *[5 marks]* All of the rectangles in the figure below, which is drawn to scale, are similar to the enclosing rectangle. Each number represents the area of the rectangle. What is the length AB?



(A) $4 + 4\sqrt{5}$ (B) $10\sqrt{2}$ (C) $5 + 5\sqrt{5}$ (D) $10\sqrt[4]{8}$

Part B

Q19. *[5 marks]* There are two boxes, B_1 and B_2. Initially, B_1 contains 50 red marbles and B_2 contains 50 blue marbles. You are allowed to redistribute the marbles between the two boxes in any way you like, while keeping the total number of red marbles equal to 50 and the total number of blue marbles equal to 50.

After redistribution, one of the boxes is chosen at random, and then a marble is drawn at random from the chosen box. Determine how the marbles should be redistributed in order to maximise the probability of drawing a red marble. If this maximum probability is $\frac{p}{q}$ where $\text{hcf}(p, q) = 1$, then $q - p$ is _____.

Q20. *[2 marks]* Alok has three daughters. His friend Shyam wants to know the ages of his daughters. Alok gives him a first hint.

1. The product of their ages is 72.

Shyam says this is not enough information. Alok gives him a second hint.

2. The sum of their ages is equal to my house number.

Shyam goes out, looks at the house number and says, "I still do not have enough information to determine the ages." Alok admits that Shyam cannot guess and gives him the third hint.

3. The oldest girl likes strawberry ice cream.

Shyam can guess after the third hint. Alok's house number is _____.

ROUGH WORK

Answer Key

Q	Answer		Q	Answer
1	(D) 22		11	(C) 3
2	(B) 438		12	(D) 23
3	(C) 41		13	(D) 2023
4	(C) 12		14	(B) 13
5	(B) 0.75		15	(D) $15\frac{5}{8}$
6	(C) 4		16	(B) 12
7	(C) 13		17	(D) 113
8	(B) 30		18	(D) $10\sqrt[4]{8}$
9	(C) 142		19	25
10	(B) $12 - 4\sqrt{3}$		20	14