AIMO 2026

Annual International Mathematics Olympiad

Mathematics Association, BITS Pilani

Class 7: Question Paper

Held online on 25 October 2026 · Duration: 1 hour

Instructions

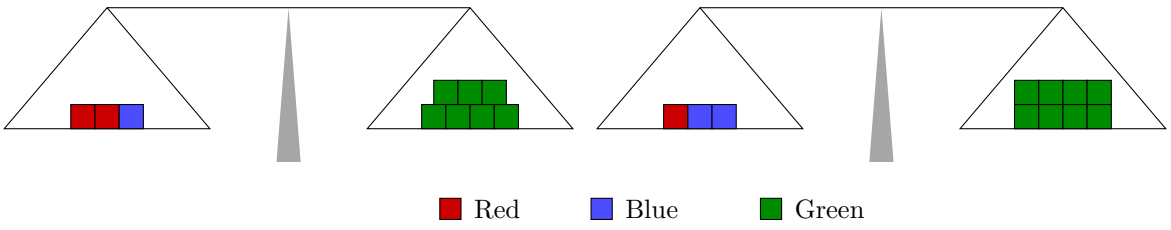
- This paper consists of 15 multiple-choice questions. Each question has exactly one correct option.
- Questions are arranged roughly in increasing order of difficulty.
- Figures are only sketches and may not be drawn to scale, unless a question says otherwise.
- Use of calculators or any electronic gadgets is strictly prohibited.

Q1. Here n is a whole number greater than 2. Find the value of

$$\left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right)\left(1-\frac{1}{5}\right)\cdots\left(1-\frac{1}{n}\right).$$

(A) $\frac{2}{n}$ (B) $\frac{4}{n}$ (C) $\frac{5}{n}$ (D) $\frac{6}{n}$

Q2. On a double-pan balance scale, 2 Red blocks and 1 Blue block balance 7 Green blocks, and 1 Red block and 2 Blue blocks balance 8 Green blocks. All blocks of the same colour weigh the same. How many Green blocks are needed to balance 1 Red block and 1 Blue block together?

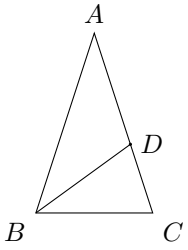


(A) 4 (B) 5 (C) 6 (D) 7

Q3. A can complete a job in 12 days, while B can complete the same job in 18 days. They work together for 4 days, after which A leaves. How many additional days will B need, working alone, to finish the remaining work?

(A) 6 days (B) 7 days (C) 8 days (D) 9 days

Q4. In triangle ABC, $AB = AC$. A point D lies on side AC such that $AD = BD = BC$. What is the measure of $\angle A$ (that is, $\angle BAC$)?



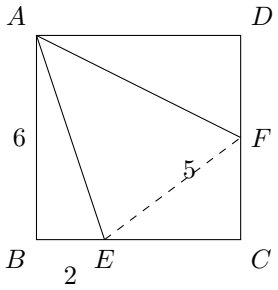
(A) 30° (B) 36° (C) 40° (D) 45°

Q5. $ABCD$ is a square with side 6. Point E lies on side BC and point F lies on side CD, such that

$$BE = 2 \quad \text{and} \quad EF = 5.$$

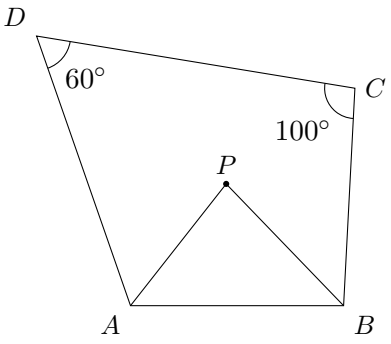
What is the area of $\triangle AEF$?

(A) 12 (B) 15 (C) 16 (D) 18



Q6. In the figure, $ABCD$ is a four-sided shape (a quadrilateral). The bisectors of $\angle A$ and $\angle B$ (lines that cut each of these angles into two equal halves) meet at point P. If $\angle C = 100°$ and $\angle D = 60°$, then the measure of $\angle APB$ is:

(A) 45° (B) 70°
(C) 80° (D) 90°



Q7. How many perfect cubes lie between $2^8 + 1$ and $2^{18} + 1$, inclusive? (A perfect cube is a number like $8 = 2^3$ or $27 = 3^3$, the cube of a whole number. "Inclusive" means the two end numbers are counted too if they are perfect cubes.)

(A) 4 (B) 9 (C) 10 (D) 57 (E) 58

Q8. A faulty clock with hands and a 12-hour dial (it does not show AM or PM) loses exactly 10 minutes for every hour of real time. At midnight on Monday it shows the correct time, 12:00. After one hour of real time has passed it shows 12:50. Assuming the clock keeps losing time at the same rate, what is the earliest real time after Monday midnight at which the clock will again show the correct time?

(A) Tuesday at 12:00 AM (B) Wednesday at 12:00 AM
(C) Thursday at 12:00 AM (D) Friday at 12:00 AM

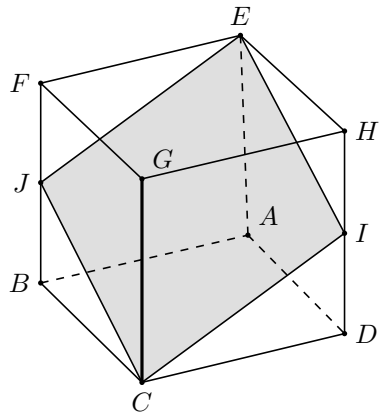
Q9. Each of a, b and c is chosen from the numbers 6, 12 and 20 (the numbers may be repeated). How many ordered triplets (a, b, c) satisfy the equation

$$\mathrm{HCF}\big(\mathrm{LCM}(a,b),\ \mathrm{LCM}(b,c)\big) = \mathrm{HCF}(a,b,c)\ ?$$

(HCF is the highest common factor, the largest number that divides all the given numbers. LCM is the least common multiple, the smallest number that all the given numbers divide. "Ordered" means $(6, 12, 6)$ and $(12, 6, 6)$ count as different triplets.)

(A) 4 (B) 5 (C) 9 (D) 27

Q10. In the cube $ABCDEFGH$ with opposite vertices C and E, J and I are the midpoints of edges $\overline{FB}$ and $\overline{HD}$, respectively. The shaded four-sided region $EJCI$ cuts through the cube (it is called a cross-section). Let R be the ratio of the area of this cross-section $EJCI$ to the area of one face of the cube. What is R^2?



(A) $\frac{5}{4}$ (B) $\frac{4}{3}$ (C) $\frac{3}{2}$ (D) $\frac{25}{16}$ (E) $\frac{9}{4}$

Q11. Comprehension: Numbers in Base b

Ordinary numbers use base 10. In base b (where $b \geq 2$), a number uses only the digits $0, 1, \ldots, b-1$. Each place is worth b times the place to its right. A small number written below and to the right of a number tells us its base, so 213_5 is in base 5. A number with no small number is in base 10.

Whole numbers: the places are worth $1, b, b^2, b^3, \ldots$ (from right to left).

$$213_5 = 2 \cdot 5^2 + 1 \cdot 5 + 3 = 58.$$

Digits after the point: the places are worth $\frac{1}{b}, \frac{1}{b^2}, \ldots$

$$0.12_4 = \frac{1}{4} + \frac{2}{16} = \frac{3}{8}.$$

Shifting: multiplying by b moves the point one place to the right, just as multiplying by 10 does in base 10. For example, $b \times 0.213_b = 2.13_b$.

Repeating expansions: a bar over some digits means they repeat forever, so $0.2\overline{1}_3 = 0.2111\ldots_3$.

Shifting a repeating number: if $y = 0.\overline{1}_3$, then $3y = 1.\overline{1}_3 = 1 + y$, so $2y = 1$ and $y = \frac{1}{2}$.

Question: In a certain base b, the number 121_b is equal to 64 (written in base 10). Let $x = 0.1\overline{3}_b$, meaning $0.1333\ldots_b$ in base b. Write x as a fraction in lowest terms, with the numerator and denominator in base 10. What is x?

(A) $\frac{2}{15}$ (B) $\frac{10}{49}$ (C) $\frac{5}{24}$ (D) $\frac{3}{14}$ (E) $\frac{1}{2}$

Q12. Five different positive whole numbers have a mean (average) of 14 and a median of 12. (The median is the middle number when the five numbers are written in increasing order.) What is the greatest possible value of the largest of the five numbers?

(A) 40 (B) 41 (C) 42 (D) 43

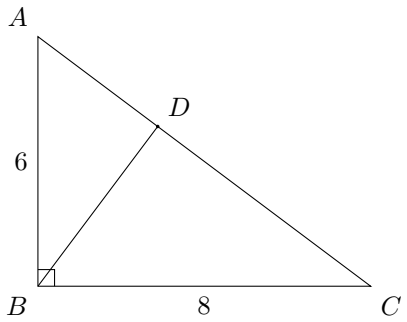
Q13. A shopkeeper marks an article 25% above its cost price (the price the shopkeeper paid for it). He allows a discount of 10% on the marked price and, for a bulk order, takes a further Rs. 36 off the reduced price. He still makes a profit of 8% of the cost price. What is the cost price of the article?

(A) Rs. 750 (B) Rs. 800 (C) Rs. 840 (D) Rs. 900

Q14. Two kind kings, A and B, donate coins to their kingdom's charity house. Each king gives 1 coin on Day 1 and then doubles the donation every day, so the daily donations are $1, 2, 4, 8, \ldots$ coins. King A donates in this way for 60 days, and King B for 40 days. The two kingdoms have different currencies: 1 coin of Kingdom A is worth 1.5 coins of Kingdom B. Counting everything each king gave over all his days, who donated more money?

(A) King A (B) King B
(C) Both donated the same amount (D) It cannot be determined

Q15. In right-angled triangle ABC, $\angle B = 90°$, $AB = 6$ cm and $BC = 8$ cm. A point D lies on AC such that $BD \perp AC$ (that is, BD meets AC at a right angle). What is the area of $\triangle ABD$?



(A) 8.64 cm^2 (B) 9.6 cm^2 (C) 10.8 cm^2 (D) 12 cm^2