# AIMO 2026

Annual International Mathematics Olympiad

Mathematics Association, BITS Pilani

## Class 8: 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.
- Use of calculators or any electronic gadgets is strictly prohibited.

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**Q1.** If $a + b = 10$, $ab = 21$ and $a > b$, find $a^3 + b^5$.

(A) 586 (B) 17,050 (C) 370 (D) 16,830

**Q2.** Two fair dice are rolled together. What is the probability that the sum of the numbers is a prime number?

(A) $\frac{13}{36}$ (B) $\frac{5}{12}$ (C) $\frac{7}{18}$ (D) $\frac{4}{9}$

**Q3.** A cat sits on a table and a tortoise sits on the floor. The top of the cat is 170 cm above the top of the tortoise. They swap places, and now the top of the tortoise is 130 cm above the top of the cat. How tall is the table?

(A) 140 cm (B) 150 cm (C) 160 cm (D) 300 cm

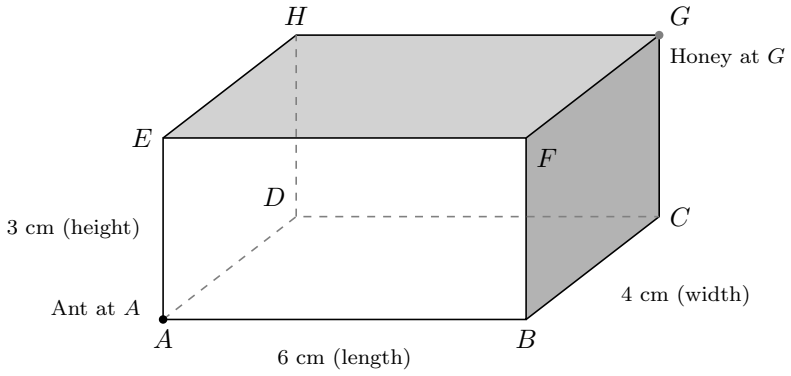
**Q4.** A river runs along the $x$-axis. A cow at $(1, 3)$ walks to the river to drink and then walks to its barn at $(7, 5)$. What is the shortest possible total distance?

(A) 12 (B) 11 (C) 10 (D) 14

**Q5.** Years are written in Roman numerals. For example, 1994 = MCMXCIV, which uses 7 symbols. What is the **maximum number of symbols** needed to write any year from 1000 to 2999?

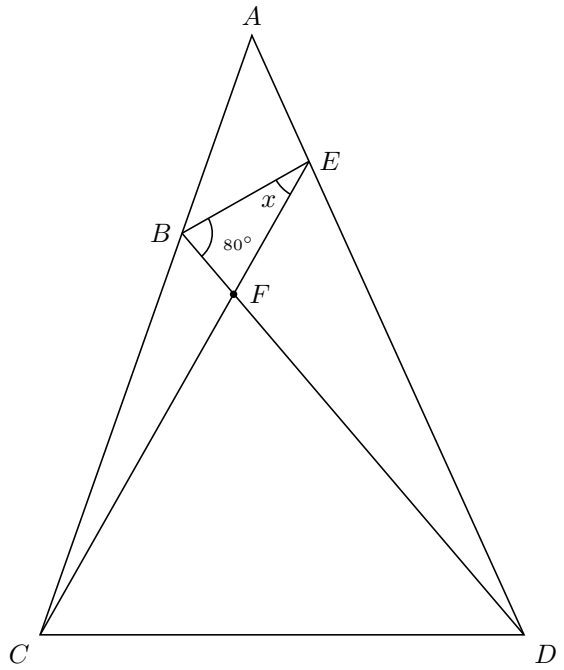
(A) 12 (B) 13 (C) 14 (D) 15

**Q6.** A closed rectangular box $ABCDEFGH$ is 6 cm long, 4 cm wide and 3 cm high, as shown. An ant sits at corner $A$, and a drop of honey sits at corner $G$, the corner farthest from $A$. The ant can crawl only on the outside surface of the box; it cannot pass through the box. What is the length of the shortest path the ant can take to reach the honey?




(A) $\sqrt{61}$ cm (B) $\sqrt{97}$ cm (C) 13 cm (D) $\sqrt{85}$ cm

**Q7.** In the figure, $B$ lies on side $AC$ and $E$ lies on side $AD$ of triangle $ACD$, and $F$ is the point where $CE$ and $BD$ cross. It is given that $\angle ACD$ is $4^\circ$ more than $\angle CDE$, and $\angle CDE$ is $22^\circ$ more than $\angle DAC$. Also, the sum of $\angle BCE$ and $\angle BDE$ is $26^\circ$ and $\angle EBF = 80^\circ$. Find the value of $x$, the angle $\angle BEF$ marked in the figure.




(A) $40^\circ$ (B) $30^\circ$ (C) $60^\circ$ (D) $75^\circ$

**Q8.** Let $t$ be a positive real number and let

$$E = 4t + \frac{25}{t}.$$

What is the minimum value of $E$? (Hint: the square of a real number is never negative.)

(A) 20 (B) 29 (C) 10 (D) 25

**Q9.** Two banks offer fixed two-year deposits, with interest compounded annually.

- **Bank X** pays $r\%$ interest in each year.
- **Bank Y** pays $(r+4)\%$ in the first year and $(r-4)\%$ in the second year, where $r > 4$.

Kabir deposits the **same amount of money** in each bank. After two years, the amount in Bank X is Rs. 320 greater than the amount in Bank Y. What was Kabir's initial deposit in **each bank**?

(A) Rs. 8,000
(B) Rs. 80,000
(C) Rs. 2,00,000
(D) It cannot be determined without knowing $r$.

**Q10.** 200 kg of fresh mushrooms are 99% water by weight. They are left to dry until they are 96% water. What do they weigh now?

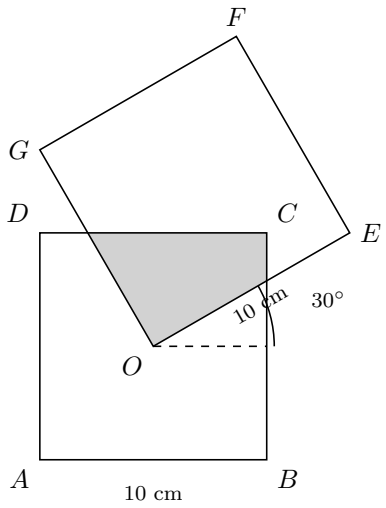
(A) 50 kg (B) 192 kg (C) 150 kg (D) 100 kg

**Q11.** Evaluate the following expression **without multiplying out the four factors**:

$$\sqrt{1003 \cdot 1006 \cdot 1009 \cdot 1012 + 81} \; - \; 1007^2$$

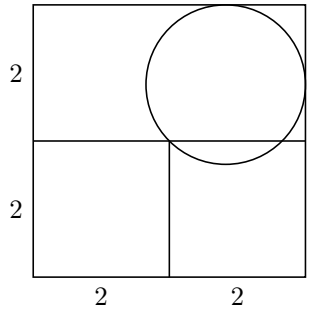
(A) 1005 (B) 987 (C) 1014 (D) 996

**Q12.** Square $ABCD$ has side length 10 cm, and $O$ is its centre. A second square $OEFG$, also of side length 10 cm, has one vertex at $O$. It is rotated so that side $OE$ makes an angle of 30° with the horizontal, as shown. What is the area of the region common to both squares (shaded)?




(A) $\frac{25}{\sqrt{3}}$ cm$^2$ (B) 25 cm$^2$ (C) $25\sqrt{3}$ cm$^2$ (D) 50 cm$^2$

**Q13.** Find the radius of the circle. The large square has side 4; the circle touches the top and right sides of the large square and passes through the corner shared by the inner lines (see figure).



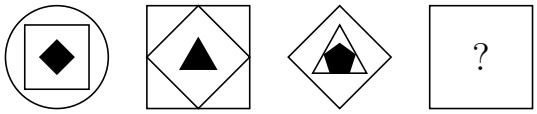

(A) $\dfrac{2\sqrt{2}}{\sqrt{2}+1}$ (B) $\dfrac{2\sqrt{2}}{\sqrt{2}-1}$ (C) $\dfrac{\sqrt{2}+1}{2\sqrt{2}}$ (D) $\dfrac{\sqrt{2}-1}{2\sqrt{2}}$

**Q14.** In a certain code language, MATH is written as 196444181, and GEOM is written as 6436256196. How will ALGE be written in the same code language?

(A) 11444925 (B) 41696436 (C) 41446425 (D) 11693664

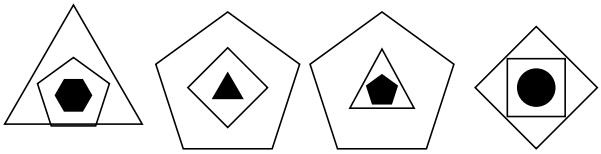
**Q15.** Study the sequence of problem figures below. Identify the option figure that completes the sequence.

**Problem figures**




(1) (2) (3) (4)

**Option figures**



(A) (B) (C) (D)