数学花园
探秘
MATHEMATICS GARDEN

2026 Spring Cup
Mathematical Olympiad

Date: 28 Feb 2026

Time Given: 1 hour 30 minutes

Level: Primary 6

Name: _____

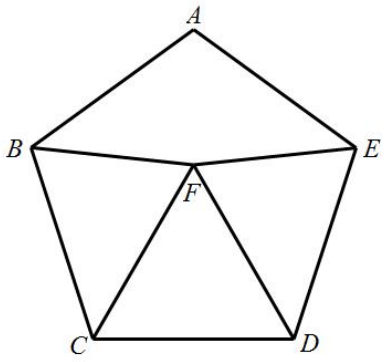
Instructions to Candidates

1. Do not open the booklet until you are told to do so.
2. Answer ALL 20 questions.
3. Write your answers in the answer sheet provided.
4. No steps are needed to justify your answers.
5. Questions 1-7 are worth 4 marks each.
6. Questions 8-14 are worth 6 marks each.
7. Questions 15-19 are worth 8 marks each.
8. Question 20 is worth 10 marks.
9. No marks will be deducted for wrong answers.
10. No marks will be given for unanswered questions.
11. No calculators or mathematical instruments are allowed.

Questions 1 to 7 are worth 4 marks each.

1. Find the value of $(2026 + 202.6 + 20.26 + 2.026) \div 1.01 \div 1.1$.

2. As shown, the pentagon $ABCDE$ is a regular pentagon and the triangle CDF is an equilateral triangle. Find $\angle BFE$ (less than 180 degrees)?

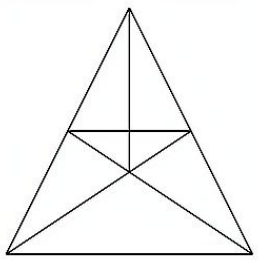


3. If there are four Mondays and four Thursdays in January of a given leap year, what day is June 1?

4. What is the average of all possible 3-digit numbers formed by the digits 1, 9, and 8 without repeated digit?

5. A car travels from point A to point B at 100 km/h, then returns along the same route at 60 km/h. Find the car's average speed for the whole trip.

6. Find the number of triangles of the figure.

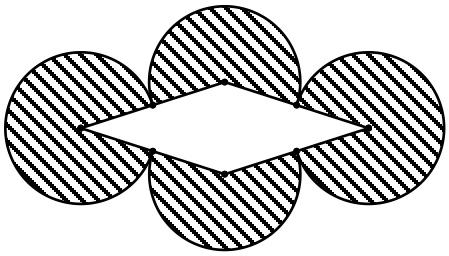


7. Fill in the blanks in the multiplication formulae to complete. What is the sum of the two 3-digit number that are multiplied together?

$$
\begin{array}{rcccc}
 & \square & \square & 2 \\
\times & & \square & 0 & \square \\
\hline
 & \square & \square & \square & \square \\
\square & 6 & \square \\
\hline
\square & \square & 2 & \square & \square & \square
\end{array}
$$

Questions 8 to 14 are worth 6 marks each.

8. As shown in the figure, the side length of the rhombus is 20, draw 4 circle with a radius of 10 and the 4 vertices as the center, find the sum of the area of the shaded part. (Take $\pi = 3.14$)

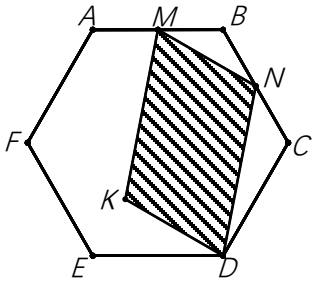


9. For an any number *x,* $\lceil x \rceil$ denoted as the smallest whole number no less than *x*, for example $\lceil 7.23 \rceil = 8$, $\lceil 9 \rceil = 9$. Find the value of $\left\lceil \frac{1}{41} \right\rceil + \left\lceil \frac{2}{41} \right\rceil + \ldots + \left\lceil \frac{2025}{41} \right\rceil$.

10. Use the 2026 numbers 2, 3, 4,..., 2026,2027 as numerators and denominators to construct 1013 fractions. The minimum value of the largest fraction among these 1013 fractions is $\frac{b}{a}$. Find the value of $a+b$.

11. A student is conducting a controlled experiment to investigate the relationship between auxin concentration and plant growth. He plans to prepare 2026 grams of 10%,20%,30%,40%, and 50% auxin solutions using 60% auxin and distilled water. Find the total amount of distilled water required for preparation(in gram).

12. As shown in the figure, in the regular hexagon *ABCDEF*, *M* and *N* are the midpoints of sides *AB* and *BC*, respectively. If the area of the parallelogram *MNDK* is 125, what is the area of the regular hexagon *ABCDEF*?



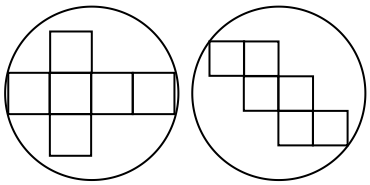
13. Ivan and Peter start from points A and B respectively, with Ivan walking at 60 meters per minute and Peter at 36 meters per minute. If they set off at the same time, they meet at point C. If Ivan had started 10 minutes later, they would have met at point D. Given that the distances from the midpoint of AB to C and D are equal, what is the distance between points A and B?

14. Emma and Frank are playing an arithmetic game. Emma first selects a whole number less than 2026 and writes it on the blackboard. Frank then takes turns with Emma, following this sequence: Frank erases the number and writes the sum of the 2025 times of it and 3; Emma erases the number and writes the sum of the 2027 times of it and 4. The game ends when either player's result becomes a multiple of 2026. How many different ways could Emma have chosen the number initially to keep the game going?

.

Questions 15 to 19 are worth 8 marks each.

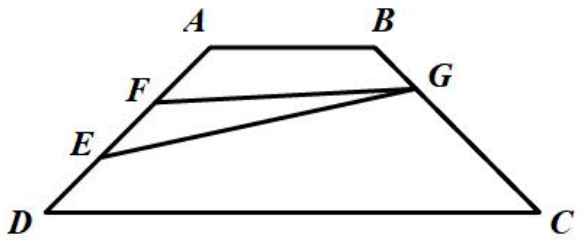
15. As shown in the figure, two identical circular paper sheets are cut into a net unfolding of a maximum cube as illustrated. If the side length of the smaller square on the left is 10, what is the area of the smaller square on the right?



16. Given that the positive integer M is a common multiple of 12,18 and 24, and in its prime factorization, each prime factor has an odd power. If the sum of all factors of M is 32760, what is the value of M?

17. A box contains marbles numbered from 1 to 7. Eight marbles are drawn with replacement, and only the numbers are recorded. How many different combinations of numbers are possible if the order does not matter? (12345677 and 77654321 is the same)

18. As shown in the figure, in the isosceles trapezium $ABCD$, the top base AB is 4 cm, the bottom base CD is 12 cm, and the angle between the leg AD and the base DC is 45°. If $AF = FE = ED$ and $BC = 4BG$, what is the area of triangle EFG?



19. The king has forgotten the password to his treasure vault. The password consists of 8 letters from 'Kangaroo' and any 2 adjacent digits are distinct. What is the number of possible passwords?

Question 20 is worth 10 marks.

20. In your opinion, from question 1 to 19, your favourite question is question _____ and the most difficult question is question _____.
(As long as your answer is within 1 to 19, you get full marks, otherwise you get zero.)