Name: ______________________ **Score:** ________/**100** **Grade:** ______

The accuracy round is 45 minutes long. Questions are sorted and weighted by difficulty.

1. ____________ (6pt)
2. ____________ (7pt)
3. ____________ (8pt)
4. ____________ (9pt)
5. ____________ (10pt)
6. ____________ (11pt)
7. ____________ (11pt)
8. ____________ (12pt)
9. ____________ (13pt)
10. ____________ (13pt)
11. ____________ (Tiebreaker)

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1. **[6]** Evaluate $(2+0)^{(2+6)}$.

2. **[7]** Amy is spinning a pencil in each hand. The pencil in her left hand spins at a rate of 4 revolutions per second, while the pencil in her right hand spins at 6 revolutions per second. How many more revolutions does the right-hand pencil make in one minute than the left-hand pencil?

3. **[8]** How many positive integers less than or equal to 2026 have an equal number of odd and even factors?

4. **[9]** Andy has a deck containing 16 cards: 4 red, 4 yellow, 4 green, and 4 blue. Every "turn", he selects 4 random cards from the deck. If they are the same color, he discards them and continues; otherwise, he returns them to the deck and shuffles it. How many expected turns will he take until he discards all cards in the deck?

5. **[10]** The functions $f(x) = \sqrt{x^3 - 7x^2 + 17x - 14}$ and $g(x) = \sqrt{3x - 6}$ are graphed in the real xy-plane. Find the sum of the x coordinates of all the points where the graphs of $f(x)$ and $g(x)$ intersect.

6. **[11]** Rectangle $ABCD$ is inscribed in a circle. Points E, F, G, and H are the midpoints of minor arcs AB, BC, CD, and DA. Given that $AB = 6$ and $BC = 8$, what is the area of the overlap between $ABCD$ and $EFGH$?

   Note: In this problem, the overlap is defined as the intersection of $ABCD$ and $EFGH$, not the union.

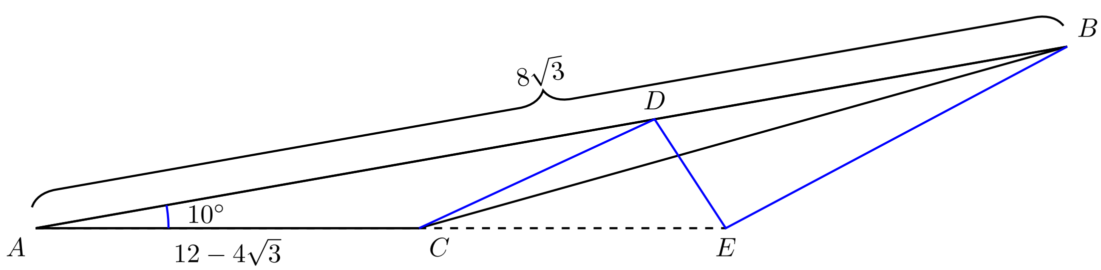
7. **[11]** Begin with a line segment in the coordinate plane whose endpoints are $(0,0)$ and $(5,0)$. Rotate the segment counterclockwise about $(5,0)$ until the other endpoint lies on a lattice point. That lattice point becomes the new pivot, and the segment is again rotated counterclockwise about this pivot until the opposite endpoint reaches another lattice point. This process continues indefinitely.

   Let the initial pivot $(5,0)$ be the first pivot point. The 2026^{th} pivot point is (m,n), where m and n are integers. Compute $|m+n|$.

8. **[12]** Let a and b be factors of $11!$. The probability that a is divisible by b is equal to $\frac{m}{n}$ where m and n are relatively prime positive integers. Find $10m + n$.

9. **[13]** In triangle ABC, $AB = 8\sqrt{3}$, $AC = 12 - 4\sqrt{3}$, and $\angle BAC = 10°$. Suppose point D is on line AB and point E is on line AC. Let m be the minimum possible value of $CD + DE + EB$. Compute m^2.

   Note: D is not necessarily between A and B, and E is not necessarily between A and C. The points D and E in the diagram below are arbitrarily selected.



10. **[13]** Ben and Brandon are playing a game where they repeatedly flip a coin. Ben wins if 1 heads followed by 2024 tails appears. Brandon wins if 2025 heads come in a row. They will flip a coin until someone wins.

    If the probability that Ben wins is $\dfrac{2^a - 1}{b \cdot 2^c - 1}$, find $a + b + c$.

11. **[Tiebreaker]** Find the positive integer closest to the following:

$$\sum_{n=1}^{2026} \left(n^{0.2026}\right)$$

    (This question serves as a **tiebreaker** for the individual rounds.)