Round 1

Team: _____ Score: ____

1. A witch brews a potion using ingredients *A*, *B*, and *C* in the ratio of 3:5:7. If the total potion volume is 75 liters, how much of ingredient *A* was used?

2. A wizard's spellbook has a page shaped like a trapezoid with bases of 10 cm and 14 cm, and a height of 8 cm. What is the area of the page?

3. Gandalf has 12 marbles. He doubles that amount and adds 8. If he did that process 3 more times, how many marbles would he have?

Round 2

Team: _____ Score: ____

4. Jack and Annie find 10 books lined up in their treehouse. Jack blindfolds himself and randomly turns over five different books. What is the probability that all five turned books are in a line?

5. King Arthur and Merlin's ages have a difference divisible by 5. When Arthur was 1, their ages had a difference divisible by 17. Find the smallest possible difference of their ages.

6. Let $A = 1, B = 2, C = 3, \ldots, Z = 26$. Then, a string can be converted into a number by adding all of the letters up. For example, the string CAT has $C = 3, A = 1$, and $T = 20$, so $3 + 1 + 20 = 24$. What is $CINDERS + FELLA - CINDERELLA$?

Round 3

Team: _____ Score: ____

7. The amount of sugar plums that 2025 fairies in a village have is 1,2,3,... 2024 and x, the final fairy. The average amount of sugar plums they have is 1013. What is the value of x ?

8. When Snow White's evil stepmother looked into the mirror, all she saw was a math problem. It read: the sum of 2024 squared and 2015 squared is… ? Find the answer to allow the evil stepmother to use her mirror again.

9. A human turns into a werewolf at 8:50PM. What is the measure of the angle the hour hand and minute hand make at this time?

Round 4

Team: _____ Score: ____

10. Wonderland uses base 11 and Alice wants to convert 8627 base 10 apples so others can understand. What is 8627 in base 11?

11. Gargamel wants to count Smurfs and mushrooms to create a gold generating potion. He has his cat Azrael count the Smurfs and mushrooms, and the animal passes the information that there were a total of 3928 ingredients available and 3 times the amount of smurfs plus 8 was the amount of mushrooms. How many mushrooms did the cat count?

12. When Humpty Dumpty fell off the wall, he broke into $m + n$ pieces (where m and n are both positive integers). $m + n$ satisfy the equation $\frac{m}{7} = \frac{12}{n}$. What is the least possible value of $m + n$?

Round 5

Team: _____ Score: ____

13. Eragon and his dragon have a flight path $x = 2t + 4,\ y = t^2$, where x is their horizontal distance, y their vertical distance, and t their time. At the time $t = 4$, find the total distance they have traveled.

14. Frodo from the Lord of the Rings has two dice. One dice is a fair 12-sided die, and the other a fair 6-sided die. If he rolls them, find the probability their sum is

15. Mickey's sock drawer contains only 4 red socks, 2 green socks, 6 blue socks, and 20 white socks. Due to the distribution of the socks, they have different likelihoods to be picked. Mickey has a 25% chance of pulling a red sock, a 30% chance of pulling a green sock, and a 20% chance of pulling a blue sock. What is the chance that out of 5 pairs of socks Mickey chooses to lay out on his dresser, each contains one blue sock and one red sock?

Round 6

Team: _____ Score: ____

16. The fountain of youth generates rejuvenation water at a rate of 10 gallons per hour after you activate it. Immediately after activation, $\frac{1}{2}$ of the water disappears and will continue doing so every two hours due to karmic rules. If the fountain starts with 120 gallons, how many gallons of water remain after 6 hours?

17. Violet exponentially grew heavier and larger after eating bubblegum candy from Willy Wonka's factory. Her growth is represented by the equation $w(t) = t^2 - 5t$ where t is time and w is the weight she gained in pounds. For the bubblegum to work, her body first needs to deflate and lose weight before gaining the bubble-like figure. Find the sum of the time it takes Violet to return to her normal weight and the time she gains 24 pounds.

18. Sauron's evil map has 12 possible locations for a hidden ring. Gimli and Legolas search for the treasure. Gimli chooses 3 locations to dig and covers the locations again because he wants Legolas to suffer a little. Legolas arrives and chooses 4 locations to dig. What is the probability that *at least* one of them finds the treasure, assuming it is hidden in one random location?

Round 7

Team: _____ Score: ____

19. Golmek the Unclean flies in a spiral, starting at a height of 5 meters and increasing its height by 2^n meters on the n-th loop of the spiral. After completing 10 loops, how far has the dragon risen in total?

20. Sofia the First wants to increase a Mathlete's knowledge. She questions them, "What is the smallest number greater than 7 that has a remainder of 7 when divided by 3, 4, 8, and 9?"

21. The three little pigs finally caught the big bad wolf and suspended him dead center in a cube cage with side length 1. The triangle formed by one pair of diagonal vertices of one face of the cube and the wolf has an area that can be expressed in the form $\frac{\sqrt{m}}{n}$. What is $m + n$?

Round 8

Team: _____ Score: ____

22. A 1x1x1 cube shaped magic box in Spiderman: No Way Home contains more cubes inside of it. The vertices of the first cube inside of it touch the center of all 6 faces. The second cube inside of the magic box touches the center of the 6 faces of the first cube inside the magic box. What is the volume of the innermost cube as a fraction?

23. Gilgamesh is building a protective wall around his city with 1152 massive stone blocks. Each block is a cube with a side length of 1 meter. The wall is designed as a rectangular prism, where the length is twice the width, and the height is 4 meters. What is the sum of the length, width, and height?

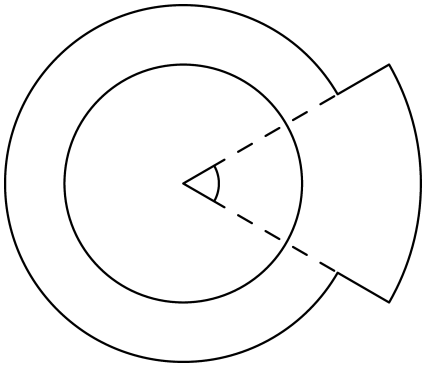
24. A Greater Daemon guards a treasure that Sanguinius seeks. The daemon has 6 enchanted runes inscribed on its armor. Each rune emits a specific number of pulses per minute: the first rune pulses once per minute, the second pulses twice per minute, and so on, with the n-th rune pulsing n times per minute. Sanguinius observes the armor for 12 minutes. How many total pulses does the daemon's armor emit in 12 minutes?

Round 9

Team: _____ Score: ____

25. Albus groups 123424689 wheels of cheese into groups of 1234. After he groups them using a spell, a few wheels of cheese are left over. How many wheels does he have left?

26. The Ring has an inner radius 2 and an outer radius 3. As shown, a sector of measure 60 degrees is extruded from the outer radius by 1. What is the area of The Ring?



27. Alice loves the word "WONDER", as all the letters are unique, and it starts with W and ends with R. How many six-letter combinations have these properties?