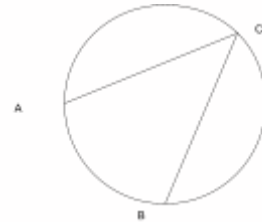


Team Round

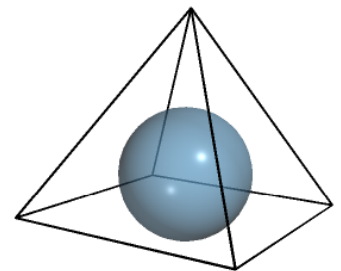
30 minutes | 15 problems

1. In Stardew Valley, a player can marry one of six bachelors and six bachelorettes. Given that the player has a $\frac{1}{13}$ chance of being a male and a $\frac{12}{13}$ chance of being female, and the player randomly marries one of the twelve options, what is the probability that a player has a straight marriage (i.e., male and female marriage)?
2. You are playing a dumb math game, and it wants you to rewrite the recurring decimal 0.97139713... as a fraction in simplest form. What is the fraction?
3. In Google Solitaire, you have 52 cards (excluding jokers) and 4 suites (diamonds, clubs, spades, and hearts). You drew a 5 of spades, a jack of clubs, and 3 of hearts. What is the chance you draw another card in the suit of clubs in your next draw?
4. Whilst playing slither.io, your snake entraps another snake in a perfect circle. If the inner snake manages to touch your snake simultaneously at points A, B, and C, with angle C being 30 degrees, what is the angle of arc AB? (Note: figure is not drawn to scale.) Bonus $\frac{1}{2}$ point: If your snake has a length of 12π , what is the length of arc AB in terms of π ?



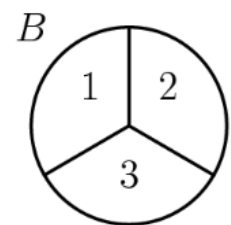
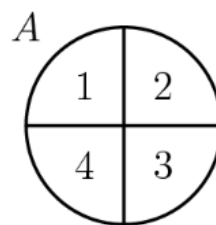
5. You have 132,486 gold in Clash of Clans. After attacking 5 bases, you now have 1,171,051 gold. Given it costs 1,000 gold to attack each base, what is the average amount of gold you got from the attacks?
6. In Papa's Freezeria, you decide to screw a customer over and make the most diabolical smoothie. You have three 150 mL pitchers. The first one contains $\frac{1}{3}$ lemon extract and $\frac{4}{7}$ milk. The next pitcher contains $\frac{1}{2}$ lemon extract and $\frac{1}{2}$ blended avocado. The third pitcher contains only $\frac{3}{5}$ lemon extract. Each pitcher is filled to the brim with water, then all three are dumped into a larger pitcher. What fraction of the larger pitcher is lemon extract? Bonus $\frac{3}{4}$ point: if your customer has a lemon extract allergy and their allergic reaction is triggered by ingesting at least 210 mL of lemon extract, will they have an allergic reaction?
7. After accumulating carrots to trade with the villager, the villager asks you to solve a math problem to prove that you are worthy of being traded with. "The smallest whole number larger than 2 leaves a remainder of 2 when divided by each of the numbers 3, 4, 5, 7, and 9. What is this number?" How should you answer?

8. You're playing with 14 other people in an Among Us lobby. Suddenly, your math coach decides to turn this into a learning moment. "If 1 player scanned their card, fixed the wiring, and cleaned the O_2 filter, 2 people submitted their card and fixed the wiring, 6 people fixed the wiring and cleaned the O_2 filter, 3 people scanned their card and cleaned the O_2 filter, 10 people fixed the wiring, and 5 people scanned their card, how many people in the lobby ONLY cleaned the O_2 filter?" How should you respond?
9. After taming a couple of cats in Minecraft, you notice that some like to sit on your chests (1 cat per 1 chest). Other ones would rather wander around your house. If $\frac{1}{3}$ of your cats are currently sitting on $\frac{4}{5}$ of the total number of chests, while the rest of the cats wander and there are 2 chests with no cats perched on them, how many total cats do you have?
10. A diamond cube in Minecraft has a side length of 4 blocks. A 2-block by 2-inch block hole is cut into the center of each face so that each hole goes all the way through the cube and the edges of each cut are parallel with the edges of the cube. What is the volume of the remaining solid (in cubic blocks)?
11. All three vertices of triangle ABC lie on the parabola $y = 3x^2$, with A at the origin and BC parallel to the x-axis. The area of the triangle is 24. What is the length of BC?

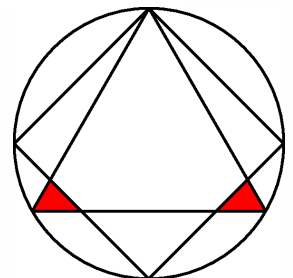


12. In Blender, you create a square pyramid with a side length 2 and height $\sqrt{3}$. You inscribe a sphere in the pyramid. Its volume can be described as $\frac{a\sqrt{b}}{c}\pi$, where a and c share no common factors and b is not divisible by the square of any prime. Find $c - a - b$.

13. At a digital casino, you come across two spinners. If you add up two spins on spinner A and multiply that by the sum of 3 spins on spinner B, what is the probability that the result is odd? (diagram shown)



14. Minecraft Alex is designing a banner pattern by weaving a circle with a radius of 1. She inscribes a square and a triangle inside, ensuring they share a common vertex. Determine the area of the portion of the triangle that lies outside the square. (diagram shown)



15. Sidepot is designing a casino game with the following rules to determine if a player wins: The game generates n random numbers, each uniformly distributed between 0 and 1. If the sum of these n numbers exceeds 1, the player loses. The casino wants the player's chance of winning to be less than 0.1%. What is the smallest value of n that ensures this?