

Magic Math Contest**PLEASE DO NOT PUT UNITS IN ANSWER**

1. 0 What is the value of $5(3 \cdot 2) - 3(2 \cdot 5)$?
2. 9 A 1 X 1 square has it's height and width enlarged by a factor of 3. By what factor is the area enlarged by?
3. 9 What is the remainder when $9 \cdot 11$ is divided by 10?
4. 24 How many ways are there to rearrange the word WOLF? Some examples are OLFW or WLFO.
5. 8 Evaluate $(6 + 1 \cdot 8) - 60 \div 10 - 5 * 0$.
6. 3 Find x if $5 + x + x^2 + 2x = 14 + x^2 - x + x$.
7. 6 How many factors does 18 have?
8. 8 The perimeter of a square is the same as the perimeter of a regular hexagon. If the side length of the square is 12, what is the side length of the hexagon?
9. 220 Evaluate $\binom{12}{3}$
10. 96 100 dollar running shoes are put on sale at 20% off for 2 days and then increased in price by 20% after the sale. How much do the running shoes cost after the sale?
11. 5/16 What is the probability that if a coin is flipped 5 times, it lands heads 3 times? Answer as a common fraction in simplest form.
12. 5 Evaluate the remainder when $(2 + 3)(2^2 + 3^2)(2^4 + 3^4)$ is divided by 9.
13. 9 In the game Klomp, you can roll a dice and if you get heads you get 1 points. However, if you get tails, then you can choose either heads or tails and if the next 2 flips are the face you chose, you get 5 points. You then repeat this process until you get at least 10 points. What is the expected number of turns it will take to win?

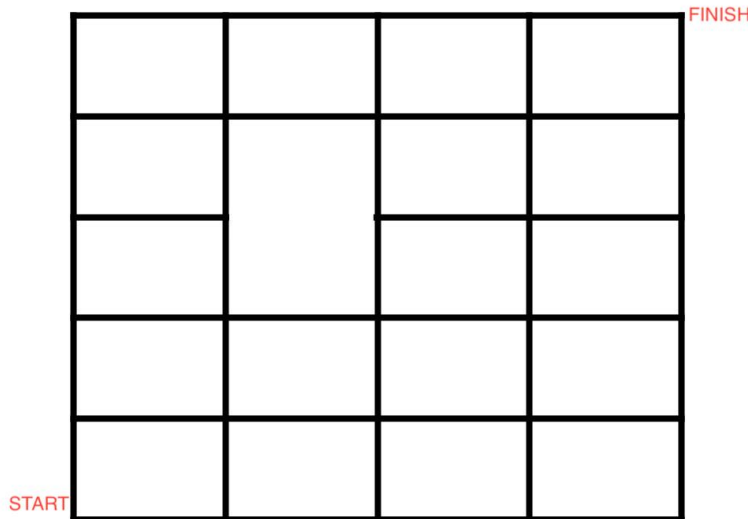
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14. 1750 A train entered a kilometer long tunnel and then completely left it in 2 minutes and 45 seconds. If the train travels at 60 kilometers per hour, how long is the train in meters?

15. 40 A school has French and Spanish as languages for students to learn. A student can take 1 of them, both, or neither of the languages. The number of kids who take Spanish is 3 times the number who take French, and the number of kids who take both classes is 5. If the number of kids who take French or Spanish is 55, How many kids take only Spanish?

16. 6 At a zoo, there are humans, snakes, and elephants. There are a total of 21 heads and 40 legs. If the number of tails is half the number of humans (snakes and humans DON'T have tails), how many snakes are there?

17. 102 How many ways are there to get from start to finish on the figure below if you can only travel up or to the right on the black lines?



18. 120 In a basketball game, four players scored 11 points combined. If each of the players scored at least 1 points, how many different scores could the four players have?

19. 1.5 A cube is colored green on the outside and cut into 64 smaller identical cubes (in a 4 X 4 X 4 cube formation). What is the expected number of green faces one of the smaller cube has if it is picked at random? Answer as a decimal to the nearest tenth.

20. 1 How many values for x satisfy the equation $|6 - |x + 1|| - 10 = x$?

Bonus Questions

21. 4 Bob goes around a track 2 times. The first time, he jogs at 6 miles per hour. For the second time, he is tired and walks at 3 miles per hour. What is his average speed walking around the lap twice?
22. 1 In how many places on the Cartesian plane does the equation $x^2 - 8x + y^2 - 20y + 111 = 4$ intersect with the equation $y = x^2 - 8x + 29$?

Answer Key
Not valid test