

Magic Math Contest

1. _____ 3 friends want to stand in a line to take a picture. In how many ways can they arrange themselves.

2. _____
$$\frac{1 - \frac{1}{3}}{1 - \frac{2}{3}} =$$

3. _____ On a map, 13 cm represents 700m. How many centimeters does 7km represent?

4. _____ If Bobby bikes at 15 miles per hour, how many miles will he bike in 4 minutes?

5. _____ The combined weight of 3 potatoes is 600 grams. When I add another potato to the group, the average weight of the 4 potatoes is 184 grams. What is the weight of the new potato I added to the group?

6. _____ How many numbers between 200 and 900 are multiples of 7?

7. _____ The symbol \oplus is defined by operation $(a \oplus b) = \frac{a}{b} \times (a + b)$. What is the value of $(3 \oplus 4) \times (1 \oplus 7)$

8. _____ The length of a rectangle is increased by 20% percent and the width is decreased by 20% percent. What percent of the old area is the new area?

9. _____ I have a floor that is 10 meters \times 10 meters. How many 50 cm \times 50 cm tiles do I need to use to cover the entire floor?

10. _____ What is the reciprocal of $\frac{3}{12} + \frac{27}{108}$?

11. _____
$$100 \times \left(1 - \frac{1}{2}\right) \left(1 - \frac{1}{3}\right) \left(1 - \frac{1}{4}\right) \cdots \left(1 - \frac{1}{100}\right) =$$

12. _____ I have a number N that is less than 50. When I divide N by 2, it leaves a remainder of 1. When I divide N by 3, it leaves a remainder of 2. When I divide N by 5, it leaves a remainder of 4. What is N?

13. _____ What is the sum of two integers that $\frac{\sqrt{10}}{2}$ lies between?

14. _____ How many times do the hour and minute hands of the clock intersect in a 12 hour time period starting at 11:01 a.m.?

15. _____ Find the sum of the first 20 positive odd numbers.
16. _____ Two sides of a triangle have lengths 3 and 10. What is the smallest possible integer length of the third side so that the triangle has positive area?
17. _____ The sum of 40 consecutive integers is -20. What is the largest of the 40 numbers?
18. _____ How many 3-digit numbers have all digits in increasing order? (example: 123 is increasing order)
19. _____ How many 3 digit numbers contain at least one 7?
20. _____ What is the x-coordinate of the intersection of lines $y = 2x - 5$ and $y = -\frac{1}{2}x + 5$?