

2006 Primary Math World Contest Tryouts Problems

Name: _____ DOB: _____ Age: _____

20 problems (ordered from easiest to the hardest) in 45 mins. No calculator. Only correct answer counts, no partial credit.

- 1) The moon is about 240,000 miles from earth. How much time is required for a round trip if a spaceship travels at 6,000 miles per hour?
- 2) How many integers between 100 and 1000 have the sum of their digits equal to 10?
- 3) Compute the sum of a, b and c given that $\frac{a}{2} = \frac{b}{3} = \frac{c}{5}$ and the product of a, b and c is 1920.
- 4) From these five numbers: **-10, -7, -4, 0, 2, 5**, select three different number values for x, y, and z, in order to make this expression, $x(y - z)$, as large as possible. What would be the largest possible value of $x(y - z)$?
- 5) A clock chimes on the hour once at 1 o'clock, twice at 2 o'clock, three times at 3 o'clock, and so on, up to a maximum of twelve times at 12 o'clock. How many total times does this clock chime between 11:15 AM one day and 7:50 AM the next day?
- 6) A Leap Year has 366 days and the next leap year will be 2008. Rick's 49th birthday on April 1, 2007 will be on a Sunday. Which day of the week will Rick's 50th birthday be on?
- 7) What is the mean (average) of all the multiples of 6 between 1 and 100?
- 8) A small hose fills a swimming pool in 16 hours. A large hose fills the same pool in 12 hours. With the pool empty, the owner turns on the smaller hose at 8:00 AM. He then turns on the larger hose at 10:00 AM. Both hoses are on from 10:00 AM to 2:00 PM. What fraction of the pool is filled at 2:00 PM? Express the answer in common fraction.
- 9) Two six-sided dice are fair in the sense that each face is equally likely to turn up. However, one of the dice has the 4 replaced by 3 and the other die has the 3 replaced by 4. When the dice are rolled, what is the probability that the sum is an odd number?
- 10) $3^N = \frac{1}{3} \times 9^{120}$. What is the value of N?
- 11) My aunt has septuplets (the birth of seven children): three boys and four girls. She has chosen these names: Alex, Aaron, and Arjun for her sons and Kylie, Krista, Katie, and Kathy for her daughters. In how many different ways could she name her septuplets?

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12) MathEdge wanted to hire a good problem solver to work at her math center for just 10 days. When Peter applied, MathEdge offered him, "I will pay you \$1 on Day 1, \$2 on Day 2, \$4 on Day 3, \$8 on Day 4, and so on, doubling your pay each day." Peter laughed and walked out. How much Peter missed or could have earned for the job?

13) How many digits does it take to write the numbers from **1 to 2006** consecutively?

14) When " **$10^{20} - 1999$** " is written as a single whole number, what would be the sum of its digits?

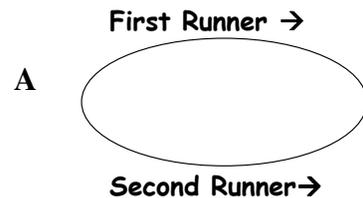
15) On a true-false test of 100 items, every question that is a multiple of 4 is true, and all others are false. If a student marks every item that is a multiple of 3 false and all others true, how many of the 100 items will be correctly answered?

16) Let **$N = 1234567898765432AB$** , where **A** and **B** are digits, possibly equal. Of the many different possible values of **N**, **HOW MANY** are divisible by 18?

17) What is the first time between 4:00 and 5:00 that the hour hand and the minute hand are exactly 10^0 apart?

18) A cube of side 3 inches has a cube of side 1 inch cut from each corner. A cube of side 2 inches is then inserted in each corner. What is the number of square inches in the surface area of the resulting solid?

19) Two joggers start from point A and run on an oval track in opposite directions. The first runner's rate is seven-and-one-third feet per second, while the second runner's rate is eight feet per second. What is the minimum number of laps that the slower runner has to run before both joggers meet back at point A again?



20) Six posts in a row are 10 meters apart. A painter selects a post as a starting point. She paints that post, walks to an unpainted post and paints it. She walks to another unpainted post and paints it. She continues until all six posts are painted, stopping at the last post she paints. Determine the **LEAST EFFICIENT** way for her to paint the posts. That is, from the first post she paints to the last post she paints, what is the **MAXIMUM** distance, in meters, that she could walk?