# 2011 Primary Math World Contest Tryouts Problems

*20 problems done in 45 mins. No calculator is allowed. Only correct answer counts. Max pts is 50.*
*[Problem 1-5: 1pt each] [ Problem 6-10: 2 pts each] [ Problem 11-15: 3 pts each] [ Problem 16-20: 4 pts each] Please put answers in the answer sheet provided.*
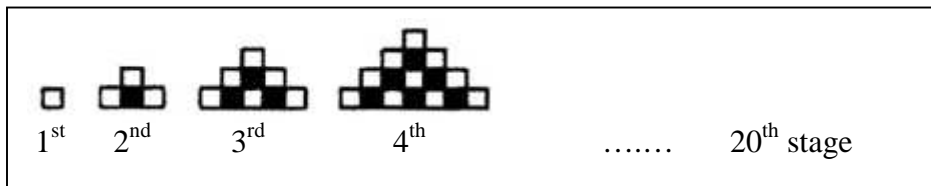**[Problem 1-5: 1point each]**

1) Is **2011** a prime number? Yes or no?

2) Follow the pattern given in the bottom 2 rows to fill the empty spots with numbers until reaching the flag.
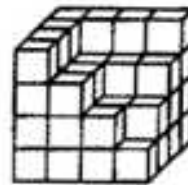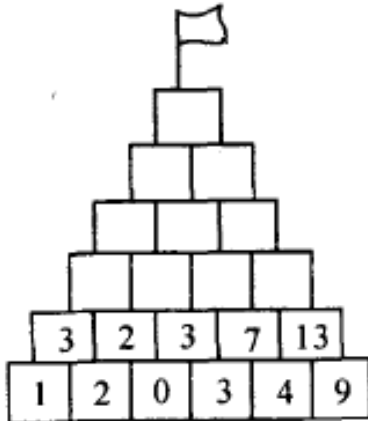




3) How many unit cubes were used to construct this figure?

4) From the diagram below, how many white $\square$s would there be in the $20^{th}$ stage?



5) Notice that $\dfrac{1}{2}+\dfrac{2}{4}=1$, find the number N so that $\dfrac{7}{8}+\dfrac{8}{N}=1$

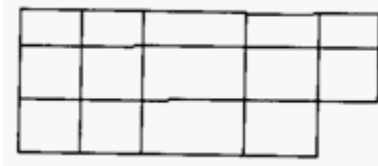# 2011 Primary Math World Contest Tryouts Problems

**[Problem 6-10: 2 pts each]**

6) Four different coins with four different amounts (i.e., 1, 2, 4, 8) are shown below. How many different amounts can be made using any 1, 2, 3, or 4 of these four coins?



7) 66.66 x 666.7 + 9999 x 2.222 = ?

8) How many rectangles can you find from this diagram?



9) A number of chairs were arranged in a circle. Going clockwise, we labeled each chair with a different number in sequence starting with 1, then 2, then 3, then 4, … Given that one chair was labeled #14 in the first round and #41 in the 2$^{nd}$ round for the same chair, how many chairs were there in the circle?

10) What is the smallest possible sum of the dates for all Wednesdays in a 31-day month?

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**[Problem 11-15: 3 pts each]**

11) The lion always lies on Mondays, Tuesdays, and Wednesdays, but always tells the truth on the other days. The unicorn always lies on Thursdays, Fridays, and Saturdays, but always tells the truth on the other days. If they both announce to you, "I told lies yesterday," what day is it?

12) A shaded curved path with 1 unit width is shown in the following diagram. The white gap is also 1 unit in width. What would be the area of the shaded path?
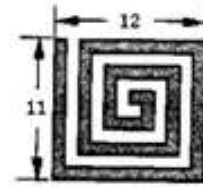


13) Using digits 1, 2, 3, 4 to form 4-digit numbers with all 4 digits being different, how many of such numbers are divisible by 11?

14) Suppose that the temperature on five consecutive days is an integer. If the 5-day average temperature is 2 and the product of the five temperatures is 500, what are the five temperatures?

15) How many triangles are there in this diagram?
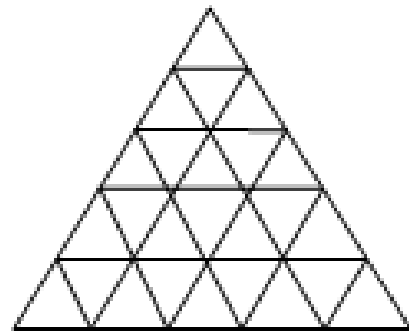
# 2011 Primary Math World Contest Tryouts Problems

**[Problem 16-20: 4 pts each]**

16) Evaluate: $1 - \dfrac{2}{1\times(1+2)} - \dfrac{3}{(1+2)\times(1+2+3)} - \dfrac{4}{(1+2+3)\times(1+2+3+4)} - ... - \dfrac{10}{(1+2+...+9)\times(1+2+...+10)} = ?$

17) A fair coin is tossed 8 times. What is the probability that it comes up heads at least 4 times?

18) In the diagram ABC is an equilateral triangle with side length 2 units, arc BC is centered at point A, and the line segment CD is tangent to the arc BC at C and is the radius of arc BD. What is the area of the shaded region, in square units?
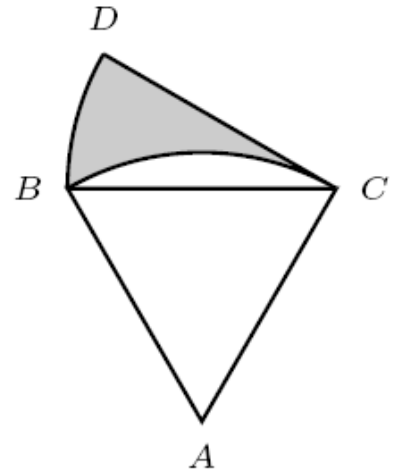
19) What is the unit digit of $7^{7^{7^{7^{7}}}}$ ?

20) How many ways are there to color the hexagonal regions of the diagram below with the three colors red, green, and blue so that no two adjacent regions are colored the same?