PIMS Elementary Grades Math Competition   NAME: _____

30 April 2011

Sprint Round - Grade Six Division   SCHOOL: _____

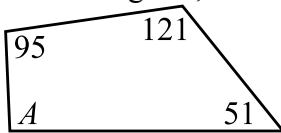1.   What is the value of one-half of one-fifth of 1000?

                                                                                          _____ 1

2.   Three of the angles of a quadrilateral are 51 degrees, 121 degrees,
         and 95 degrees, as shown. What is the value, in degrees, of angle A?

                                                                                          _____(°) 2

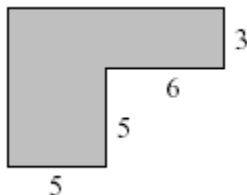3.   If you divide 2011 by 101, what is the remainder?   _____ 3

4.   Round $\frac{5}{7}$ to a decimal correct to 2 decimal places.   _____ 4

5.   Calculate: $\dfrac{(2011+4+30)\times(2011-11)}{1000} =$ _____ 5

6.   You roll two dice. What is the most probable sum that you can get?   _____ 6

7.   Alan, Bob, and Guy have a total of 30 dollars between them.
         Alan has 5 dollars and Bob has four times as much money as Guy.
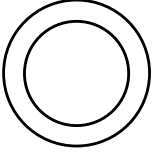   How many dollars does Guy have?   _____($) 7

8.   All angles of the shape below are right angles.
         What is the perimeter of the shape?

                                                                                          _____ 8

9.   A pack of 25 pens costs $8.00. What is the unit cost of a pen in cents?   _____(cents) 9

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10. The area of the smaller circle is 25. You obtain a larger circle by increasing the radius of the smaller circle by 40%. What is the area of the larger circle?

_____ 10

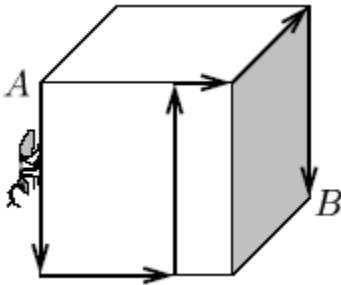11. The number N is 55% of the number M and their sum is 310. What is the positive difference between M and N?

_____ 11

12. N is the largest odd number smaller than 10000 whose digits are all different. What is the digit sum of N?

_____ 12

13. The ant walked from A to B on the surface of the cube along the specified path. The side of the cube is 3 cm. How many cm did the ant walk in total?

_____(cm) 13

14. What is the value of $1^1 + 2^2 + 3^3 + 4^4$?

_____ 14

15. Dan walked for 2 hours at a speed of 75 metres per minute. What was the distance (in km) that he walked?

_____(km) 15

16. How many different 4-digit numbers use each of the digits 1, 2, 3, and 0 exactly once?

_____ 16

17. The length of AC is 16, $AB/CD = 11/18$, and $BC/BD = 5/23$. What is the length of AD?

| A | B | C | D |

_____ 17

18. Ann and Betty independently choose at random a whole number between 1 and 9 (inclusive). What is the probability that their numbers add up to 8 or less? Express your answer as a common fraction.
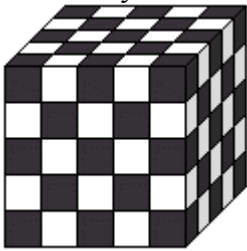
_____ 18

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19. Let $a\#b = a \times b + 2b$. What is the value of $(1\#2)\#3$? _____ 19

20. What is the largest prime smaller than $\sqrt{2011}$? _____ 20

21. Amy competed in three Elmacon competitions (each out of 50). In the first she scored 20, in the second she increased her score by 40% and in the third she increased her score by 50% (over her score in the second competition). What was her score in the third competition? _____ 21
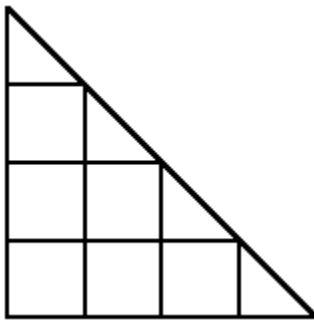
22. The wooden cube below has side 5 and each of its 6 faces is painted with a pattern of white painted squares and black painted squares, as shown. If we cut this cube into 125 identical cubes with side 1 each, how many of these smaller cubes have paint on at least one face?

_____ 22

23. Consider the set $\{a,b,c,d,e\}$. This set has five members. How many subsets of this set have either one, two, three, four, or five members? Note: $\{b,e,d\}$ is the same 3-member subset of $\{a,b,c,d,e\}$ as $\{e,b,d\}$. _____ 23

24. How many rectangles are in the figure below? Note: any square counts as a rectangle.

_____ 24

25. Kay had 600 Canadian dollars. In 2007 she used half of her Canadian dollars to buy Japanese yen at the rate of 128 yen per Canadian dollar, and she used the other half to buy US dollars at the rate of 96 US dollars per 100 Canadian dollars. Two years later she used the Japanese yen and the US dollars to buy Canadian dollars at the rate 1 Canadian dollar for every 96 Japanese yen, and 100 Canadian dollars for every 80 US dollars. How many Canadian dollars did she end up with? _____($) 25

26. Suppose that you have a list of all the primes between 10 and 50. How many of the positive numbers smaller than 50 are multiples of numbers on your list? For example, the numbers 17, 39, and 44 satisfy the condition, while the numbers 15, 32 and 49 do not. _____ 26