2012 Math Field Day **Computational Math** **Name**_____

School_____

No calculators are allowed. Make sure the answers are placed on the space provided.

1._____ Find the least common multiple of 42, 36, and 98.

2._____ Express 0.55… as the quotient of two integers in lowest terms.

3._____ In a survey of 100 high school seniors, 71 were taking a math class, 56 were taking a science class, 37 were taking a foreign language class, 38 were taking both math and science, 21 were taking foreign language and science, 17 were taking foreign language and math, and 7 were taking all three courses. How many seniors weren't taking any of these three types of courses?

4._____ Express as a single fraction in lowest terms $\frac{2^{-2}-3^{-2}}{2^{-2}-3^{-1}}$.

5._____ Simplify $\sqrt{98}-3\sqrt{50}+\sqrt[3]{54}$.

6._____ Find the sum of the first 32 terms of the arithmetic sequence 5, 12, 19, 26, …

7._____ The speed of a body falling freely from rest in a vacuum varies directly with the length of time that it falls. If, after 7 seconds, a body was falling at 49.7 m/s, how fast was it falling 3 seconds later?

8._____ If it takes one second to write one digit, exactly how many minutes will it take to write down all the numbers from 100-1000 inclusive?

9._____ Calculate $45_{six} + 33_{six}$. Express the answer in base six notation.

10._____ An ordinary box measures 15 cm x 8 cm x 6 cm. Find its volume in cubic meters.

11._____ Evaluate and express the answer in scientific notation $\frac{\left(3\times10^{-2}\right)\left(8\times10^{-6}\right)}{\left(2\times10^{4}\right)\left(3\times10^{-10}\right)}$.

12._____ Find the value of $(-1)^{1753}$.

13._____ How many degrees does the Earth turn through in six hours?

14._____ The difference between the square of the smallest of three consecutive integers and thirty times the largest is seventeen more than thirteen times the middle integer. Find all three integers.

15._____ Using a 12-hour clock evaluate 3 + 9 + 15 – 2(5).

16._____ True or False: 14, 50, 46 is a Pythagorean triple.

17._____ A rubber ball dropped from a height of 30 cm rebounds on each bounce to a height 1/3 of its height on the previous bounce. How far will it travel before coming to rest?

18._____ Which members of the set {2, 3, 4, 5, 6, 7, 8, 9, 10} divide exactly into 4272?

19._____ A bouquet of 34 white and red flowers contains 150 petals altogether. If the white flowers each have 5 petals and the red flowers each have 4 petals, how many of each color of flower are there?

20._____ Find the greatest common divisor of 940 and 380.

21._____ Write the decimal numeral that corresponds to the following Roman numeral MMCDLXXXIX.

22._____ The degree measures of an angle and its supplement are consecutive odd integers. Find the measure of the smallest angle.

23._____ Find a counterexample for the following statement. Every whole number greater than four and less than twenty is the sum of two or more consecutive whole numbers.