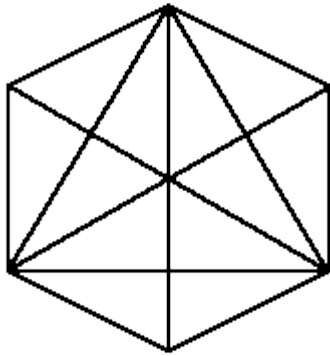Alabama School of Fine Arts
Invitational Mathematics Tournament

January 6, 2007

Sixth Grade Exam

1) Abigail Addison ate an apple a minute for 13 minutes. After that Abigail ate 8 apples at a consistent rate over the course of 12 minutes for 15 minutes. How many apples did Abigail eat?
   a) 21   b) 23   c) 25   d) 27   e) NOTA

2) Bobby Bedford bought 26145 books. 2876 of those books are about Betty Ford. Approximately what percent of the books bought are about Betty Ford?
   a) 10%   b) 11%   c) 12%   d) 13%   e) NOTA

3) Cedric's two-sided coin was flipped 10 times. What is the probability that the coin landed on heads 3 or more times?
   a) 101/1024   b) $101/2^{10}$ c) 923/1024   d) $1010/2^{10}$ e) NOTA

4) If Donnie Darko runs 90 mph for 12 minutes, how many miles does Donnie Darko run?
   a) 9.0   b) 10.8   c) 12.0   d) 18.0   e) NOTA

5) A cube has a side length of 12 inches. What is its surface area.
   a) 72 in^2 b) 72 in^3 c) 864 in^2 d) 864 in^3 e) NOTA

6) Superman flies 20 miles westward out of Smallville to stop Lex Luthor from destroying California. Then he flies 50 miles north to date Lois Lane at the hippest club in Metropolis. After that he flies around the world twice before ending up 80 miles east of Metropolis. How far is he now from Smallville (in miles)?
   a) $10\sqrt{61}$ b) $10\sqrt{93}$ c) $50\sqrt{5}$ d) 110   e) NOTA

7) Solve for x: $(12x + 25)5 = 5 + 10 * 10$
   a) –5/12   b) -1/3   c) 1/3   d) 5/12   e) NOTA

8) What digit is in the hundredth's place of 12,345.67809?
   a) 3   b) 4   c) 7   d) 8   e) NOTA

9) Find the number of triangles in this figure:

   a) 12 b) 24 c) 37 d) 45 e) NOTA

10) What is the sum of all prime numbers less than 30?
   a) 210   b) 225   c) 129   d) 130   e) NOTA

11) A bag has 6 red marbles, 13 white marbles, and 17 blue marbles. If 2 marbles
    are pulled out at the same time, what is the probability that both will be red?
    a) 1/35   b) 1/36   c) 1/42   d) 5/216   e) NOTA

12) What is the volume of a sphere with a radius of 1 inch?
    a) $3\pi/4$ in^3 b) $3\pi/4$ in^2 c) $4\pi/3$ in^3 d) $4\pi/3$ in^2 e) NOTA

13) Mary has 7 numbers. Her mean is 4, her median is 3, and her mode is 2. Which
    of the following is a possible set of numbers?
    a) –1, 0, 1, 2, 4, 4, 11
    b) 1, 2, 2, 3, 4, 7, 9
    c) 1, 2, 3, 4, 5, 6, 7
    d) –42, 3, 3, 4, 10, 16, 20
    e) NOTA

14) (12/ 15) 25 – (12/19)(19/2 + 19/2) =
    a) -14 b) -8   c) 8   d) 14 e) NOTA

15) ASFA has 369 students. Billy needs to poll at least 12% of them (regarding the
    awesomeness of cheese for a math assignment). What is the least number of
    students he should poll?
    a) 36 b) 39 c) 42 d) 45 e) NOTA

16) Trent sells peaches for $2.50 a peach, $30.25 for a basket of 13 peaches, and
    $50.75 for a bag of 23 peaches. What is the minimum cost Andrej can pay Trent
    for 123 peaches?
    a) $271.25   b) $272.25   c) $273.75   d) $284   e) NOTA

17) 59/ 97 most closely equals
    a) 0.59   b) 0.60   c) 0.61   d) 0.62   e) 1.64

18) Mark was born on Mac's 5th birthday. Mac is now half Mary's age, and Mark is 30 years old. How old is Mary (in years)?
a) 35 b) 50 c) 65 d) 70 e) NOTA

19) How many 10 in. x 10 in. x 10 in. blocks does it take to fill up a 100 in. x 100 in. x 100 in. box?
a) 10   b) 100   c) 1000   d) 10000   e) NOTA

20) x + y + z = 30
x – z = 6
y = 2
z =
a) 11   b) 17   c) -8   d) 8   e) NOTA

21) 1.216 =
a) 61/ 50   b) 152/ 125   c) 303/ 250   d) 153/ 125   e) NOTA

22) Sally was sitting down to do her math homework. She had 77 problems to do. 36 problems were on the first page of her homework, 16 problems were on the second page, and 25 problems were on her third page.

If her dog, Rufus, comes over when she is gone and starts eating her homework because the pen she used is scented, and he eats ¾ of the first page, 1/8 of the second page, and 2/5 of the third page of homework. How many problems will Sally have to turn into her teacher the next day?

a) 26   b) 33   c) 38   d) 39   e) NOTA

23) Hudson woke up one morning and found that he had one pimple on his nose. If he wakes up each morning and finds that the number of pimples on his nose doubles from the day before, how many pimples will he have on his nose on the ninth day?
a) 18   b) 81   c) 128   d) 256   e) NOTA

24) In the following set of numbers what is the mean: 5, 5, 7, 13, 19, 28.5, 125.5
a) 5   b) 19   c) 29   d) 42   e) NOTA

25) 7777/6666 most approximately equals
a) 0.85   b) 0.86   c) 1.14   d) 1.15   e) 1.16

Tiebreakers

TB1:   f(x) = (12x – 3)4. Find x when f(x) = 6900

   a) 0   b) 24   c) 132   d) 144   e) infinity

TB2: 2^{20} =

a) 40   b) 400 c) 1024   d) 524288   e) 1048576

TB:3 Which of the following is closest to the exact value of π?
a) 3.141592654
b) 3.141592658
c) 3.141592662
d) 3.141592666
e) 3.141592670