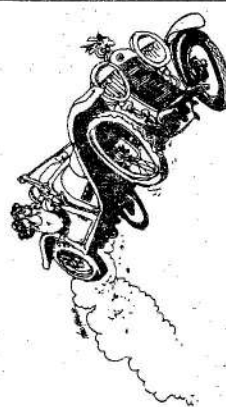
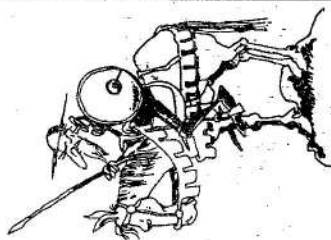




	Answers
23. If $(x-2)^2 = 1600$, which of the following could be the value of $x-4$?	23.
A) -42 B) -34 C) 34 D) 36	
24. If x is a positive integer, and the product of all integers from 1 to x , inclusive, is a multiple of 260, then the least possible value of x is	24.
A) 10 B) 13 C) 26 D) 30	
25. Don Q rides at 3r kph for the first 60 km of a trip, and then rides at 6r kph for the next 60 km. What is his average speed for the entire trip?	25.
A) 4r B) 4.5r C) 5r D) 5.5r	
26. If I reverse the digits of a two-digit positive integer and subtract the resulting integer from the original integer, the difference is 36. The difference between the two digits is	26.
A) 4 B) 6 C) 8 D) 9	
27. My sister has s dollars, and I have d dollars more than she has. If together we have a total of t dollars, which of the following is equivalent to s ?	27.
A) $t-2d$ B) $\frac{t-d}{2}$ C) $t-\frac{d}{2}$ D) $\frac{t-d}{2}$	
28. If x is an integer, which of the following must be divisible by 3?	28.
A) $x(x-3)(x-6)$ B) $x(x+3)(x-3)$ C) $x(x+7)(x-2)$ D) $x(x+1)(x-1)$	
29. If $x \neq 0$ or 1, and each x in the expression $\frac{2x+1}{3x-3}$ is replaced by $\frac{4}{x}$, then the resulting expression is equivalent to	29.
A) $\frac{2x+1}{3x-3}$ B) $\frac{3x-3}{2x+1}$ C) $\frac{8+x}{12-3x}$ D) $\frac{12x-3}{8x+1}$	
30. The number of passengers in my car is the same as the number of integers less than 8 that satisfy $\frac{(x+3)(x+4)}{x-5} \geq 0$. My car has ? passengers.	30.
A) 2 B) 3 C) 4 D) 5	



The end of the contest. **MA**

2012-2013 Annual Algebra Course 1 Contest

Spring, 2013

Instructions

A

- Time** Do *not* open this booklet until you are told by your teacher to begin. You will have only 30 minutes working time for this contest. You might be *unable* to finish all 30 questions in the time allowed.
- Scores** Please remember that *this is a contest, and not a test*—there is no “passing” or “failing” score. Few students score as high as 24 points (80% correct). Students with half that, 12 points, *should be commended!*
- Format and Point Value** This is a multiple-choice contest. Each answer will be one of the capital letters A, B, C, or D. Write each answer in the *Answer Column* to the right of each question. We suggest (but do not require) that you use a pencil. Each question you answer correctly is worth 1 point. Unanswered questions receive no credit. You **may** use a calculator *unless* your school does *not* allow you to use one.

Please Print

Last Name _____ First Name _____

School _____ Teacher _____ Grade Level _____

Do Not Write In The Space Below

To the Teacher:

Please enter the student's score at the right before you return this paper to the student.

Student's Score: _____

The school's top scorer will receive the book *Math Contests – High School* (Vol. 4). Other high scorers will receive Certificates of Merit. In any one school year, no student may win both a book and a certificate. The book and certificates were in the original contest package.

If needed, duplicate book awards may be ordered as described below.

Eighteen books of past contests, *Grades 4, 5, & 6* (Vols. 1, 2, 3, 4, 5, 6), *Grades 7 & 8* (Vols. 1, 2, 3, 4, 5, 6), and *High School* (Vols. 1, 2, 3, 4, 5, 6), are available, for \$12.95 per volume, from Math League Press, P.O. Box 17, Tenafly, NJ 07670-0017.

1. If $x = 2013$, then $(x - 2012)(x - 2013) =$
 A) 0 B) 1 C) 2 D) 10
2. If $a = 5$, then $4a^3 - 3a^2 + 2a - 1 =$
 A) 39 B) 125 C) 434 D) 586
3. Fred and Ginger danced for $\frac{2013}{x}$ hours last year. If they danced for a whole number of hours, then x cannot be
 A) 3 B) 11 C) 13 D) 61
4. Which of the following is a factor of $x^2 - 4x - 12$?
 A) $x + 2$ B) $x - 2$ C) x D) $x - 8$
5. $2^{400} + 2^{400} =$
 A) 2^{401} B) 2^{800} C) 4^{400} D) 4^{800}
6. If $\frac{p}{q} = \frac{2}{3}$, then $\frac{-p}{-q} =$
 A) $-\frac{2}{3}$ B) $-\frac{2}{3}$ C) $\frac{2}{-3}$ D) $\frac{2}{3}$
7. The number of 5 kg weights and 10 kg weights I have is $4w$ and $2w$, respectively. If my weights all together weigh 200 kg, then $w =$
 A) 4 B) 5 C) 10 D) 20
8. $(3x^3 - 4x^2) + (2x^2 - 3x) - (3x^3 - 4) =$
 A) $2x^2 - 3x - 4$ B) $2x^2 - 3x + 4$ C) $-2x^2 - 3x - 4$ D) $-2x^2 - 3x + 4$
9. If $3x - 4$ is odd, then $3x + 10$ must be
 A) positive B) prime C) odd D) even
10. Telly the dog grabs the phone when it rings. Yesterday it rang at 4 PM or later 80% of the time it rang, and it rang 50 times before 4 PM. The phone rang ? times yesterday.
 A) 200 B) 250 C) 300 D) 400
11. The ages of 5 sequoia trees in a forest are consecutive even integers. If the total of the trees' ages is 4440 years, the oldest tree is ? old.
 A) 884 years B) 888 years C) 890 years D) 892 years

12. A straight line that passes through the points (p, q) and $(2p, 3q)$ must also pass through the point
 A) $(3p, 4q)$ B) $(3p, 5q)$ C) $(4p, 6q)$ D) $(4p, 8q)$
13. What is the product of all multiples of 3 between -9 and 12?
 A) -314928 B) -2916 C) 0 D) 2916
14. Of children born at the maternity ward yesterday, the ratio of boys to girls was $3x:4y$, which is also 5:6. The ratio $x:y$ is
 A) 10:9 B) 24:15 C) 15:24 D) 4:5
15. $\frac{(x^{200})^{400}}{(x^{100})^{200}} =$
16. If the average of x , y , and z is 16 and the average of x and y is 12, then $z =$
 A) 4 B) 14 C) 20 D) 24
17. If n is a prime > 5 , the least common multiple of $6n^8$ and $10n^{12}$ is
 A) $2n^8$ B) $30n^{12}$ C) $30n^{24}$ D) $60n^{96}$
18. A square is inscribed in a circle. If the perimeter of the square region is 64, what is the area of the circle?
 A) 16π B) 32π C) 64π D) 128π
19. If $x - y = 3$ and $x^2 + y^2 = 485$ then $xy =$
 A) 162 B) 238 C) 482 D) 3880
20. Gilda the guide has a lucky number that is the sum of all the roots of $(x-1)(x+2)(x-3) \times \dots \times (x-19)(x+20)(x-21) = 0$. Gilda's lucky number is
 A) 10 B) 11 C) 21 D) 31
21. $|4x| + 4|-x| =$
 A) 0 B) 8 C) $8|x|$ D) $4|4x|$
22. $\sqrt{36^{64}} =$
 A) 6^8 B) 6^{32} C) 36^8 D) 36^{32}