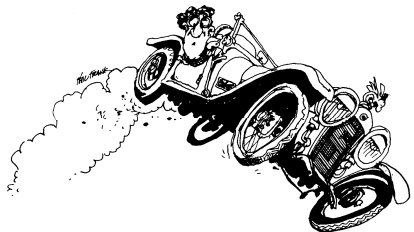
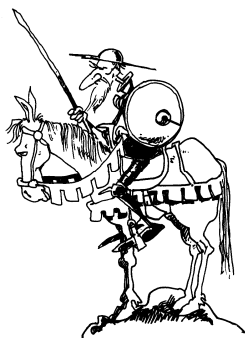
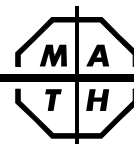


23. If $(x - 2)^2 = 1600$, which of the following could be the value of $x - 4$? A) -42 B) -34 C) 34 D) 36	23.
24. If x is a positive integer, and the product of all integers from 1 to x , inclusive, is a multiple of 260, then the least possible value of x is A) 10 B) 13 C) 26 D) 30	24.
25. Don Q rides 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? A) $4r$ B) $4.5r$ C) $5r$ D) $5.5r$	25.
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 A) 4 B) 6 C) 8 D) 9	26.
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 ? A) $t - 2d$ B) $\frac{t}{2} - d$ C) $t - \frac{d}{2}$ D) $\frac{t-d}{2}$	27.
28. If x is an integer, which of the following must be divisible by 3? A) $x(x-3)(x-6)$ B) $x(x+3)(x-3)$ C) $x(x+7)(x-2)$ D) $x(x+1)(x-1)$	28.
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 A) $\frac{2x+1}{3x-3}$ B) $\frac{3x-3}{2x+1}$ C) $\frac{8+x}{12-3x}$ D) $\frac{12x-3}{8x+1}$	29.
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. A) 2 B) 3 C) 4 D) 5	30.



The end of the contest **A**



Sample Algebra I Contest

A

Spring, 2013

Instructions

- 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: _____

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.

2012-2013 ALGEBRA COURSE 1 CONTEST

Answers

1. If $x = 2013$, then $(x - 2012)^{(x - 2013)} =$ A) 0 B) 1 C) 2 D) 10	1.
2. If $a = 5$, then $4a^3 - 3a^2 + 2a - 1 =$ A) 39 B) 125 C) 434 D) 586	2.
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	3.
4. Which of the following is a factor of $x^2 - 4x - 12$? A) $x + 2$ B) $x - 2$ C) x D) $x - 8$	4.
5. $2^{400} + 2^{400} =$ A) 2^{401} B) 2^{800} C) 4^{400} D) 4^{800}	5.
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) $\frac{2}{3}$	6.
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	7.
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) $-2x^2 - 3x + 4$	8.
9. If $3x - 4$ is odd, then $3x + 10$ must be A) positive B) prime C) odd D) even	9.
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 <u>?</u> times yesterday. A) 200 B) 250 C) 300 D) 400	10.
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 <u>?</u> old. A) 884 years B) 888 years C) 890 years D) 892 years	11.



2012-2013 ALGEBRA COURSE 1 CONTEST

Answers

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) $(4p, 8q)$	12.
13. What is the product of all multiples of 3 between -9 and 12? A) -314928 B) -2916 C) 0 D) 2916	13.
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	14.
15. $\frac{(x^{200})^{400}}{(x^{100})^{200}} =$ A) x^4 B) x^6 C) x^{40000} D) x^{60000}	15.
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	16.
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) $60n^{96}$	17.
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	18.
19. If $x - y = 3$ and $x^2 + y^2 = 485$ then $xy =$ A) 162 B) 238 C) 482 D) 3880	19.
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	20.
21. $ 4x + 4 -x =$ A) 0 B) 8 C) $8 x $ D) $4 4x $	21.
22. $\sqrt{36^{64}} =$ A) 6^8 B) 6^{32} C) 36^8 D) 36^{32}	22.

