



have leg-lengths \sqrt{a} and \sqrt{b} and a and b are integers and $a > b > 0$.

23.

002 D) 2003

stant
ikes
km.

24.



$\frac{h^2}{k}$

% of x is equal to

25.

D) $\frac{x^2}{100}$

c for which $2003^{x^2+2x-35} = 1$ is

26.

C) -35 D) 35

egers (a,c) satisfy $a^3+125 = c^3$?

27.

C) 2 D) 3

a, b, c are the lengths of the sides of a triangle with $a=5, b=5$, then $c =$

28.

B) $3900 \div \sqrt{7825}$
D) 156

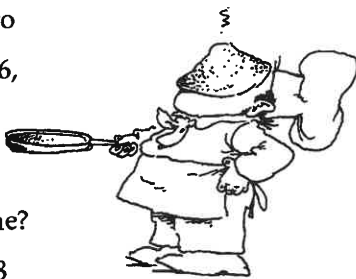
iv to
= 6,

29.

e

me?

38



$49^{2b} =$

30.

C) $2^8 \times 5^4$ D) $2^4 \times 5^8$

The end of the contest **A**

<http://www.mathleague.com>

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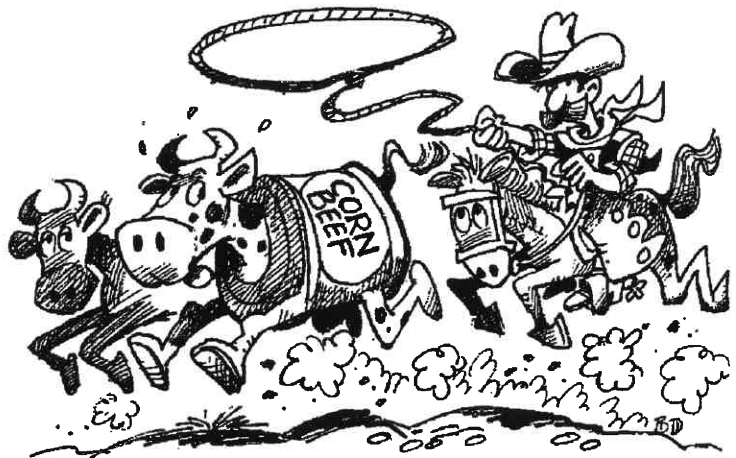
2002-2003 Annual Algebra Course 1 Contest

Spring, 2003

Instructions

A

- **Time** 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, not a test*—and there is no “passing” or “failing” score. Few students score as high as 24 points (80% correct). Students with half that, 12 points, *deserve commendation!*
- **Format and Point Value** This is a multiple-choice contest. Each answer is an A, B, C, or D. Write each answer in the *Answer Column* to the right of each question. A correct answer is worth 1 point. Unanswered questions get no credit. You **may** use a calculator.



1.	If $x = 10$, then $2x^3 + 0x^2 + 0x + 3 =$ A) 23 B) 203 C) 230 D) 2003
2.	Each of the following is a factor of $x^2 + 3x - 4$ except A) $x + 4$ B) $x - 1$ C) $x - 4$ D) 1
3.	If $(n)(2003) = 2003 + 2003 + 2003 + 2003$, then $n =$ A) 5 B) 2001 C) 2002 D) 2003
4.	The least value of x for which $\frac{x}{2}$ is an integer is A) -2 B) 2 C) -1 D) 1
5.	My party hat, when unfolded, is a square. When the area of this square is divided by its perimeter, the quotient is 4. How long is a side of this square? A) 4 B) 8 C) 16 D) 64
6.	$(x+1) - (x-1) + (2+x) - (2-x) =$ A) $2x$ B) $2x+2$ C) 2 D) 6
7.	The number of even integers between 1 and 2003 is the same as the number of odd integers between 4 and A) 2000 B) 2002 C) 2004 D) 2006
8.	If $\frac{x}{2001} + \frac{x}{2002} + \frac{x}{2003} = 1$, then $x =$ A) 6002 B) 6004 C) 6006 D) 6008
9.	What is the area of a triangle whose vertices have coordinates $(1,1)$, $(1,1)$, and $(1,1)$? A) 50 B) 60.5 C) 100 D) 121
10.	If the letters $s, t, o,$ and p each represent a different positive odd integer, what is the least possible value of $\sqrt{s+t+o+p}$? A) 2 B) 4 C) 8 D) 16
11.	If y is positive, then the square root of the square root of the square root of $\frac{1}{2}$ is y . A) y^3 B) y^6 C) y^8 D) y^{16}
12.	The least possible sum of a positive n A) 1 B) 1.5 C) 2
13.	$(x^2 + y^2)^2 = x^4 + \frac{1}{2} + y^4$ A) xy B) $2xy$ C) 2
14.	There is no positive value of $x < 1$ for which A) $\frac{1}{x}$ B) $\frac{x}{2}$ C) $\frac{\pi}{2}$
15.	$5^{2003} \div (-5)^{2002} =$ A) 1 B) 5 C) 25
16.	The square of the sum of 3 consecutive integers is A) 2 B) 4 C) 8
17.	Which of the following points is not on the line $y = 2x - 1$? A) $(-1,0)$ B) $(0,x)$ C) $(1,1)$
18.	For a canned food drive, I rounded up canned corned beef and canned tomato soup. The number of cans of corned beef was 25% of the number of cans of soup. The number of cans of soup was $\frac{2}{3}$ of the total number of these cans. A) 20 B) 25 C) 75 D) 80
19.	$(x-1)^3(x+1)^2 =$ A) $(x-1)(x^2-1)^2$ B) $(x+1)(x^2-1)^2$ C) $(x+1)(x^2-1)^2$ D) $(x-1)(x^2-1)^2$
20.	If $(x+y - 17)^2 = 0$ and $(x-y - 13)^2 = 0$, then A) 2 B) 13 C) 16 D) 17
21.	If $(x-2)(x+3) = (x-a)(x+b)$ for all real x , then A) $(-2,-3)$ B) $(2,-3)$ C) $(-2,3)$ D) $(2,3)$
22.	$\frac{\frac{1}{x} + \frac{1}{y}}{\frac{1}{x+y}} =$ A) 1 B) $\frac{1}{xy}$ C) $\frac{x+y}{xy}$