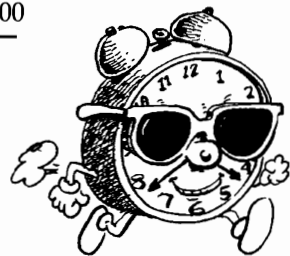
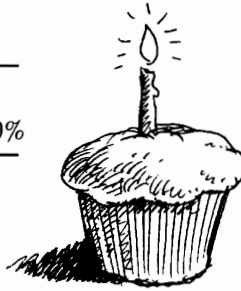


29. The first 12 contestants won an average of \$80. The next 20 won an average of \$70. The 32 contestants won an average of
A) \$73.75 B) \$74.75 C) \$75.00 D) \$75.75
30. $4^3 \times 4^3 =$ A) 16^9 B) 16^6 C) 4^9 D) 4^6
31. At most ? circles of radius 1 with non-overlapping interiors can fit inside a square with side-length 4.
A) 1 B) 4 C) 5 D) 16
32. $0.1\% = 1\% - ?$
A) 0.009% B) 0.09% C) 0.9% D) 10%
33. Today is my birthday. My age today, in months, is 72 times my age 5 years ago, in years. My age today, in years, is
A) 6 B) 7 C) 8 D) 12
34. $\sqrt{81 \times 81 \times 81 \times 81} =$
A) 3 B) 9 C) 27 D) 81
35. Of 2005 integers whose product is even, at most ? can be odd.
A) 2005 B) 2004 C) 1 D) 0
36. The number ? equals one-fourth of its own reciprocal.
A) $\frac{1}{2}$ B) $\frac{1}{4}$ C) 2 D) 4
37. How many of the numbers 11, 21, 31, 41, 51, 61, 71, 81, 91 are prime?
A) 4 B) 5 C) 6 D) 7
38. $(301+302+303+\dots+325) - (1+2+3+\dots+25) =$
A) 25 B) 2500 C) 5000 D) 7500
39. Of the following, which is the first time after 4:30 that the minute and hour hands of my circular alarm clock *no longer* form an acute angle?
A) 4:36 B) 4:37 C) 4:38 D) 4:39
40. Consecutive letters of the alphabet, starting with A, are given increasing consecutive integer values. If $H+K+L+N = 2005$, then the average of all 26 of the consecutive integers is
A) 491 B) 498 C) 503.5 D) 505.5



The end of the contest 7

Visit our Web site at <http://www.mathleague.com>

Steven R. Conrad, Daniel Flegler, and Jeannine Kolbush, contest authors



Sample 7th Grade Contest

Tuesday, February 22 (alternate date: February 15), 2005

7

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 40 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 30 points (75% correct). Students with half that, 15 points, *should be commended!*
- **Format, Point Value, & Eligibility** This is a multiple-choice contest. Every answer is an A, B, C, or D. You must write each answer in the *Answers* column to the right of each question. We suggest (but do not require) that you use a pencil. A correct answer is worth 1 point. Unanswered questions get no credit. You **may** use a calculator. You’re eligible for this contest only if you’re in grade 7 or below and only if you don’t also take this year’s *Annual 8th Grade* or *Annual 6th Grade Contest*.

Please Print (To the student: You must complete all items below)

Last Name _____ First Name _____

School _____ Teacher _____ Grade Level _____

Time at Start of Contest _____ Today’s Date _____

Do Not Write In The Space Below

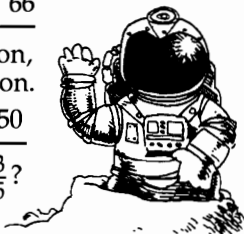
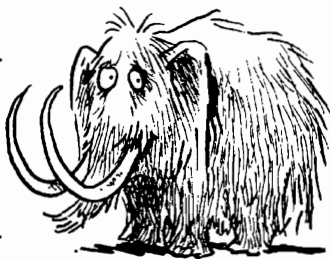
To the Teacher:

Please enter the score at the right before you return this paper to the student. *Papers with scores of 30 or higher must be held until June 1.*

Student’s Score: _____

Fifteen books of past contests, *Grades 4, 5, & 6 (Vols. 1, 2, 3, 4, 5)*, *Grades 7 & 8 (Vols. 1, 2, 3, 4, 5)*, and *High School (Vols. 1, 2, 3, 4, 5)*, are available, for \$12.95 per volume (\$15.95 Canadian), from Math League Press, P.O. Box 17, Tenafly, N.J. 07670-0017.

1. If 84 players split themselves into teams, how many more teams can they form by splitting into teams of 4 instead of teams of 6? A) 5 B) 6 C) 7 D) 14	1.
2. $0 \times 1 + 1 \times 10 + 0 \times 0 + 1 =$ A) 0 B) 1 C) 3 D) 11	2.
3. The three angles of a triangle can measure 20° , 40° , and A) 60° B) 80° C) 90° D) 120°	3.
4. To the nearest tenth, $3456 \times 0.001 =$ A) 0.3 B) 3.4 C) 3.5 D) 34.6	4.
5. If my bad hair day began 720 minutes before 7:20 P.M., then my bad hair day began at A) 1:20 A.M. B) 7:20 A.M. C) 12:00 P.M. D) 7:08 P.M.	5.
6. $500 + 500 + 500 + 500 + 500 = 10 \times ?$ A) 25 B) 50 C) 250 D) 2000	6.
7. Of the whole numbers 10, 11, . . . , 98, 99, how many are greater than the sum of their digits? A) 88 B) 89 C) 90 D) 99	7.
8. $1^3 + 2^4 =$ A) $1^4 + 3^2$ B) $1^3 + 4^2$ C) $1^2 + 4^3$ D) $1^1 + 3^4$	8.
9. 7 is prime, so May 7th is a <i>prime</i> day. In all, May has ? prime days. A) 10 B) 11 C) 12 D) 13	9.
10. $\frac{2}{3} \times \frac{4}{5} \times \frac{6}{7} \times \frac{7}{6} \times \frac{5}{4} \times \frac{3}{2} =$ A) 1 B) 3 C) 6 D) 12	10.
11. 500 nickels = ? quarters A) 100 B) 250 C) 500 D) 2500	11.
12. If a square's side-lengths are integers, its perimeter could be A) 33 B) 44 C) 55 D) 66	12.
13. If 3 of every 150 astronauts walk on the moon, then ?% of all astronauts walk on the moon. A) 2 B) 3 C) 5 D) 50	13.
14. Of the following, which <i>doesn't</i> reduce to $\frac{3}{5}$? A) $\frac{9}{15}$ B) $\frac{21}{35}$ C) $\frac{24}{40}$ D) $\frac{33}{50}$	14.
15. $\sqrt{100} = \sqrt{36} + \sqrt{?}$ A) 2 B) 4 C) 16 D) 64	15.



16. ? can be made from 2 squares that share a common side. A) An octagon B) A hexagon C) A rectangle D) A triangle	16.
17. By how much does the sum $19 + 28 + 37 + 46 + 55 + 64 + 73 + 82 + 91$ exceed the sum $18 + 27 + 36 + 45 + 54 + 63 + 72 + 81 + 90$? A) 9 B) 10 C) 90 D) 100	17.
18. Uncle Bookworm eats two books a week; Aunt Bookworm eats one book every two months. In a year, Uncle eats ? more books than Aunt. A) 20 B) 40 C) 80 D) 98	18.
19. What is the largest odd factor of 81? A) 3 B) 9 C) 27 D) 81	19.
20. $(\frac{2}{3})^3 =$ A) 2 B) $\frac{6}{9}$ C) $\frac{8}{3}$ D) $\frac{8}{27}$	20.
21. <i>At most</i> how many students can sit in a row of 25 chairs, if seated students must be separated by at least one empty chair? A) 11 B) 12 C) 13 D) 24	21.
22. The smallest multiple of 10 that's greater than 9×9 is A) $9 \times 9 + 10$ B) 9.1×9.1 C) 9×10 D) 10×10	22.
23. The difference between $\frac{5}{6}$ and its reciprocal is A) $\frac{1}{5}$ B) $\frac{1}{6}$ C) $\frac{1}{30}$ D) $\frac{11}{30}$	23.
24. On my scooter, the rear wheel's diameter is 6 cm more than the front wheel's. The rear wheel's circumference is ? cm more than the front wheel's. A) 3π B) 6π C) 9π D) 36π	24.
25. A regular polygon is always A) square B) equilateral C) scalene D) isosceles	25.
26. If I divide my age by 5, the remainder is 3. Your age is twice mine. If I divide your age by 5, the remainder will be A) 1 B) 2 C) 3 D) 4	26.
27. In a rectangle with perimeter 30 cm and area 56 cm^2 , the longer side's length is ? cm more than that of the shorter side. A) 1 B) 5 C) 20 D) 26	27.
28. If the sum of two whole numbers is 24 more than their difference, then one of the numbers <i>must</i> be A) 0 B) 6 C) 12 D) 48	28.

