29. $2^{10} \times 2^{10} =$ A) $2^{20}$ B) $2^{100}$ C) $4^{20}$ D) $4^{100}$ — 29.

30. I got immunized on the one millionth second of this calendar year. That happened on
A) January 11 B) January 12
C) February 1 D) February 2


30.

31. $\sqrt{16^{16}} =$
A) $4^4$ B) $4^8$ C) $16^4$ D) $16^8$ — 31.

32. Each of 2005 fractions has an even numerator and an odd denominator. If the product of all of them is an integer, it must be
A) even B) odd C) prime D) 2005 — 32.

33. If $x$ is a whole number, what is the largest possible perimeter of a triangle with side-lengths 3, 4, and $x$?
A) 11 B) 12 C) 13 D) 14 — 33.

34. When fully expanded, $10\,000^{9999}$ has ? digits.
A) 9999 B) 10 000 C) 39 996 D) 39 997 — 34.

35. In the diagram, the total number of different triangles is
A) 2 B) 3 C) 4 D) 5

 — 35.

36. If the sum of 2000 consecutive integers is 1000, then the sum of the digits of the *greatest* of these 2000 integers is
A) 1 B) 2 C) 9 D) 27 — 36.

37. How many of the 15 positive factors of 400 are divisible by 4?
A) 4 B) 8 C) 9 D) 10 — 37.

38. I phoned my mom to help me answer this, the final question on a quiz show: *How many integers equal their own squares?* Mom said, "?." She was right!
A) zero B) one
C) two D) three


38.

39. At 12:22, a clock's hour hand is ? away from a vertical position.
A) 10° B) 11° C) 21° D) 22° — 39.

40. What is the tens' digit of the product $1 \times 2 \times 3 \times \ldots \times 98 \times 99$?
A) 4 B) 6 C) 8 D) 0 — 40.

*The end of the contest* **8**

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

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MATH

**EIGHTH GRADE MATHEMATICS CONTEST**

*Math League Press, P.O. Box 17, Tenafly, New Jersey 07670-0017*

# Sample 8th Grade Contest

**8**

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

## 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 8 or below and only if you don't also take this year's *Annual 7th 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:*** _____

1. $1110 - 1020 = 110 - \underline{?}$ A) 102 B) 101 C) 90 D) 20 — 1.

2. If my doctor's "**IN**" sign is a square with a perimeter of 4, then its area is
A) 1 B) 4 C) 8 D) 16 — 2.


3. $300 \div 200 = 1 \div \underline{?}$
A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) $\frac{2}{3}$ D) $\frac{3}{2}$ — 3.

4. When written as an improper fraction, five-fourths is
A) $\frac{4}{5}$ B) $1\frac{1}{4}$ C) 1.25 D) $\frac{5}{4}$ — 4.

5. $2005-2005-2004 =$ A) 1 B) -2004 C) -2005 D) -2006 — 5.

6. Exactly 120 seconds after midnight, the correct time is
A) 12:02 P.M. B) 12:02 A.M. C) 2 P.M. D) 2 A.M. — 6.

7. $24 \div 4 \times 2 + 4 =$
A) 1 B) 7 C) 16 D) 36 — 7.

8. The reciprocal of $(\frac{1}{2} \times 4)$ is
A) $2 \times \frac{1}{4}$ B) $\frac{1}{2} \times 4$ C) $\frac{1}{2} \times \frac{1}{4}$ D) $2 \times 4$ — 8.

9. Of the following numbers, which is closest in value to 1?
A) 0.995 B) 0.99 C) 1.01 D) 1.1 — 9.

10. What is the sum of all the one-digit positive prime numbers?
A) 15 B) 16 C) 17 D) 18 — 10.

11. $2 \times \frac{1}{2} \times 4 \times \frac{1}{4} \times 6 \times \frac{1}{6} =$
A) 1 B) 6 C) 12 D) 24 — 11.

12. When I add the measures of *any* 2 angles of triangle *T*, the sum is always 120°. Triangle *T* *must* be
A) scalene B) right C) obtuse D) equiangular — 12.

13. I wear my headphones only on cloudy days. The day after each cloudy day is a sunny day. I wear my headphones at most $\underline{?}$ times in a week.
A) 3 B) 4 C) 5 D) 6 — 13.

14. Of the following, which has the largest value?
A) 7 B) $(-1)^2$ C) $(-2)^2$ D) $(-3)^2$ — 14.

15. $9000\% + 900\% + 90\% + 9\% =$
A) 9999 B) 999.9 C) 99.99 D) 0.9999 — 15.

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16. A dealer paid Bunny Fabergé 50 pennies for each of his decorated eggs, The dealer then sold each egg for 50 quarters. Bunny (the artist) got what percent of the final purchase price?
A) 2% B) 4% C) 25% D) 50% — 16.

17. $\sqrt{\sqrt{\sqrt{256}}} =$
A) 2 B) 4 C) 8 D) 16 — 17.

18. $30\% \times 40\% =$ A) 12% B) 120% C) 1200% D) 12 000% — 18.

19. The number $\underline{?}$ has exactly 4 different whole number factors.
A) 30 B) 24 C) 12 D) 10 — 19.

20. When rounded to the nearest *fifth*, 0.33 becomes
A) 0.2 B) 0.3 C) $\frac{2}{5}$ D) $\frac{3}{5}$ — 20.

21. I lost my coins! This morning, I had 7 coins worth 49¢. How many nickels did I have?
A) 0 B) 1 C) 2 D) 7 — 21.

22. 1.5 m + 60 cm + 0.02 km =
A) 0.221 m B) 2.21 m C) 22.1 m D) 221 m — 22.

23. How many of the positive multiples of 2 are factors of 222?
A) 111 B) 4 C) 3 D) 1 — 23.

24. What is the average of the first 99 positive whole numbers?
A) 49.00 B) 49.50 C) 49.75 D) 50.00 — 24.

25. If a small circle's diameter is a large circle's radius, then the small circle's area is $\underline{?}$ % of the large circle's area.
A) 20 B) 25 C) 40 D) 50 — 25.

26. If 2/3 of a cup of fish food can feed 8 goldfish, then 4 cups of fish food should be able to feed $\underline{?}$ goldfish.
A) 12 B) 24 C) 36 D) 48 — 26.

27. An integer *cannot* be $\underline{?}$ if its square is even.
A) prime B) odd C) even D) zero — 27.

28. If $4x$ = the reciprocal of $\frac{1}{x^3}$, then $x$ could equal
A) $\frac{1}{8}$ B) $\frac{1}{2}$ C) 2 D) 8 — 28.

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