Answers

30. _?_ is *not* the sum of the squares of 3 integers.
A) 14 B) 21 C) 28 D) 35 — 30.

31. If 9 months ago was January 1, then 90 months from now it will be
A) March B) April C) May D) June — 31.

32. The sum of all positive integral factors of 32 is
A) 5 B) 30 C) 32 D) 63 — 32.

33. Jim has 12 socks: 4 red, 4 black, and 4 blue. Choosing in the dark, he wants at least one matching pair of socks that are *not* red. If he does not know what color socks he is choosing, then he must choose at least _?_ socks to be sure he has a matching pair.
A) 2 B) 3 C) 6 D) 7 — 33.

34. A number between 0 and 1 is multiplied by a number between 1 and 2. Which of the following could *not* be the product?
A) 0.25 B) 1 C) 1.75 D) 2.25 — 34.

35. If A ◊ B means (A + B) × (B − A), then 1 ◊ (2 ◊ 3) =
A) 35 B) 24 C) 2 D) 0 — 35.

36. _?_ could be the sum of 6 consecutive odd integers.
A) 108 B) 111 C) 333 D) 345 — 36.

37. I count the petals on my 20 flowers. The first 8 average 24 petals each. The next 12 average 34 petals each. What is the average number of petals on all 20 flowers?
A) 28 B) 29 C) 30 D) 31 — 37.

38. If 28 is a factor of the square of an integer, then another factor of the same square must be
A) 784 B) 49 C) 20 D) 12 — 38.

39. On July 1, Harry sold $7 worth of lemonade. On July 2, he sold $10 worth. Each day after that he sold $3 more than he sold the day before. When did he first sell $100 worth in a single day?
A) July 30 B) July 31 C) August 1 D) August 2 — 39.

40. My number is the square of an integer, the cube of an integer, and greater than 1. The least possible total number of positive divisors of my number is
A) 7 B) 6 C) 5 D) 4 — 40.

The end of the contest 8

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MATH

EIGHTH GRADE MATHEMATICS CONTEST

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

2009-2010 Annual 8th Grade Contest

Tuesday, February 16 or 23, 2010

8

Instructions

- **Time** Do *not* open this booklet until you are told by your teacher to begin. You might be *unable* to finish all 40 questions in the 30 minutes 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 30 points (75% correct). Students with half that, 15 points, *should be commended!*
- **Format, Point Value, & Eligibility** Every answer is an A, B, C, or D. Write answers in the *Answers* column. A correct answer is worth 1 point. Unanswered questions get no credit. You **may** use a calculator.

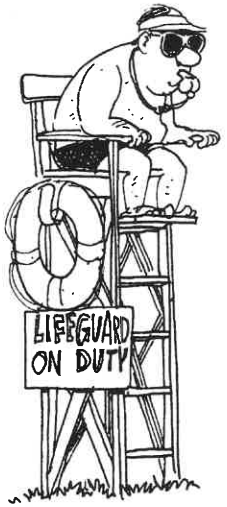
1. 2010 is *not* divisible by
   A) 2 B) 3 C) 5 D) 7

2. 28% is equal to
   A) 2.8 B) $\frac{7}{25}$ C) 2800 D) $\frac{0.28}{100}$

3. $\frac{4}{5} - \frac{3}{20} =$
   A) $\frac{1}{15}$ B) $\frac{2}{15}$ C) $\frac{13}{20}$ D) $\frac{12}{65}$

4. Al worked at the pool for 20% of the days in June. Al worked at the pool for _?_ days.
   A) 3 B) 6 C) 9 D) 12

5. In a triangle with an acute angle, an obtuse angle, and a 60° angle, the obtuse angle could be
   A) 30° B) 90° C) 110° D) 120°



6. 0.8 =
   A) $\frac{4}{5}$ B) $\frac{5}{4}$ C) $\frac{1}{8}$ D) $\frac{8}{100}$

7. If the time 6000 seconds ago was 10:00 AM, then what time is it now?
   A) 11:00 AM B) 11:40 AM C) 4:00 PM D) 10:00 PM

8. $2 - 13 - (-7) =$
   A) -18 B) -11 C) -8 D) -4

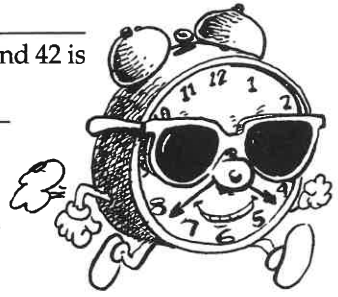
9. The number that is 5 less than the square root of 144 is 5 more than
   A) $\sqrt{4}$ B) $\sqrt{25}$ C) $\sqrt{49}$ D) $\sqrt{134}$

10. The product of a 3-digit integer and a 4-digit integer can have _?_ digits in all.
    A) 12 B) 8 C) 6 D) 5

11. The hour and minute hands of a circular clock form a 60° angle at
    A) 2:00 B) 3:30 C) 6:00 D) 9:45

12. The total number of primes between 24 and 42 is
    A) 3 B) 4 C) 5 D) 6

13. $\frac{30 \times 25 \times 20 \times 15}{6 \times 5 \times 4 \times 3} =$
    A) 5^4 B) 5^3 C) 5^2 D) 5^1



14. 30% of 40 is equal to 40% of
    A) 200 B) 120 C) 60 D) 30

15. An equilateral triangle and a square have the same perimeter. If the length of a side of the triangle is 8, what is the area of the square?
    A) 16 B) 24 C) 36 D) 64

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16. $\frac{1}{2} \div \frac{3}{8} =$
    A) $\frac{3}{16}$ B) $\frac{2}{5}$ C) $\frac{5}{8}$ D) $\frac{4}{3}$

17. $3^4 + 3^4 + 3^4 =$
    A) 3^5 B) 9^4 C) 3^{12} D) 9^{12}

18. Eli's goal was to lift 3.5 kg during his workout, but he was able to lift only 3 kg. What fraction of his goal weight did Eli lift?
    A) $\frac{1}{7}$ B) $\frac{2}{3}$ C) $\frac{3}{4}$ D) $\frac{6}{7}$

19. Of the following, which is the largest?
    A) 0.02 B) $\frac{1}{20}$ C) 4% D) $\frac{3}{100}$

20. The perimeter of square A is twice the perimeter of square B. The area of square A divided by the area of square B is
    A) $\frac{1}{2}$ B) 2 C) 4 D) 8

21. 13.25:1 = _?_:8
    A) 53 B) 106 C) 122 D) 150

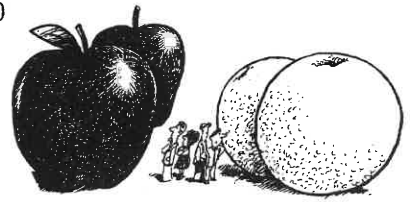
22. Of the following, which has the smallest reciprocal?
    A) $\frac{2}{5}$ B) $\frac{3}{7}$ C) $\frac{4}{3}$ D) $\frac{9}{4}$

23. At a certain school, there are 2 teachers for every 15 students. How many teachers are there if there are 165 students?
    A) 11 B) 13 C) 17 D) 22

24. The cost of 3 apples and 4 oranges is $4. If 2 oranges cost half as much as 1 apple, then the cost of 2 apples is
    A) $1.00 B) $1.50 C) $2.00 D) $2.50

25. $10^{2010} - 1$ is divisible by
    A) 10 B) 11 C) 12 D) 15

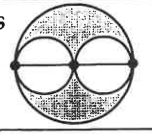
26. 250% of _?_ is 30.
    A) 12 B) 45 C) 70 D) 75



27. $2.01 \times 10^{2009} = 2010 \times$ _?_
    A) 10^{2006} B) 10^{2007} C) 10^{2012} D) 10^{2013}

28. How many prime numbers are divisible by 2?
    A) zero B) one C) three D) ten

29. As shown, two small circles pass through opposite endpoints of a diameter of a large circle and touch once at its center. If the large circle's area is 16π, then the shaded region's area is
    A) 4π B) 5π C) 6π D) 8π



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