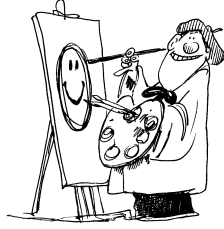26. Jacques, who paints only smiley faces, signs and numbers each of his paintings. If he started with Smiley #1 and has painted through Smiley #111, how many times has he used the digit 1 in his numbering?

    A) 12   B) 22   C) 24   D) 36

    26.

27. How many whole numbers have squares that are between 2 and 200?

    A) 12   B) 13   C) 24   D) 26

    27.

28. A baker cuts circular cookies out of a flat rectangle of cookie dough. If the rectangle is 2 m by 1 m, and the cookies have radius 10 cm, at most how many cookies can the baker cut from the sheet of dough?

    A) 50   B) 63   C) 64   D) 200

    28.

29. 0.02% of 20% of _?_ = 200% of 2000

    A) 1000   B) 100 000   C) 1 000 000   D) 100 000 000

    29.

30. A miner combines 1200 kg of ore that is on average 3% gold with 2400 kg of ore that is on average 6% gold. If the 100 kg containing the most gold of the 3600 kg is 40% gold, the remaining ore will be _?_ gold.

    A) 2%   B) 3%   C) 4%   D) 5%

    30.

31. Including face diagonals, the total number of diagonals of a cube is

    A) 12   B) 14   C) 16   D) 24

    31.

32. How many odd 3-digit integers greater than 500 are composed of 3 different non-zero digits?

    A) 154   B) 175   C) 185   D) 200

    32.

33. If I square all whole-number factors of 36 and multiply the resulting numbers, the product will be equal to

    A) 36^2 B) 36^4 C) 36^8 D) 36^9

    33.

34. When the four members of the Beaverton family carry a log, each has a 0.02 probability of tripping, and each probability is independent of the others. What is the probability that they will carry the log without any of them tripping?
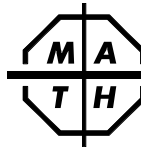
    A) $1 - (0.02)^4$ B) $(0.98)^4$ C) $(0.02)^4$ D) $1 - (0.98)^4$

    34.

35. What is the largest prime factor of the product of all even numbers from 2 through 200?

    A) 47   B) 97   C) 199   D) 2019

    35.

The end of the contest ✍ 🔔 8

Visit our Web site at http://www.mathleague.com
Steven R. Conrad, Daniel Flegler, and *Adam Raichel,* contest authors

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M A T H

EIGHTH GRADE MATHEMATICS CONTEST

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

Sample 8th Grade Contest

Tuesday, February 19 (alternate date: February 26), 2019

8

Instructions

■ **Time** Do *not* open this booklet until told by your teacher to begin. You might be *unable* to finish all 35 questions in the 30 minutes allowed.

■ **Scores** Remember that *this is a contest, not a test*—there is no "passing" or "failing" score. Few students score 28 points (80% correct). Students with half that, 14 points, *should be commended!* High-scoring students may be invited to our "Math Camp" in July.

■ **Results Posted Online** High-scoring contest results, both overall and regional, will be posted at *www.mathleague.com* no later than April 15.

■ **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. You're eligible for this contest only if you are in grade 8 or below and only if you don't also take this year's Annual 6th or Annual 7th 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**: _____

Answers

1. $(4 \times 6 \times 8 \times 10) \div (6 \times 8 \times 10) =$

    A) 3   B) 4   C) 12   D) $3 \times 6 \times 8 \times 10$

    1.

2. $(2 \div 3)$ rounded to the nearest hundredth is

    A) 0.33   B) 0.66   C) 0.67   D) 0.70

    2.

3. Baby Amy is one day older than Baby Barry. The product of their ages measured in days could be

    A) 33   B) 132   C) 245   D) 246

    3.

4. (The largest even divisor of 200) ÷ (the largest odd divisor of 200) =

    A) 4   B) 8   C) 20   D) 200

    4.

5. An equilateral triangle with integer side-lengths has a perimeter that is numerically equal to the area of a square. Which of the following could be the length of a side of the square?

    A) 12   B) 10   C) 8   D) 4

    5.

6. I have only nickels, dimes, and quarters to pay for my dinner, which costs $12.60. The smallest number of coins I can use to pay is

    A) 51   B) 52   C) 54   D) 55

    6.

7. The smallest prime factor of 2019 is

    A) 1   B) 3   C) 19   D) 673

    7.

8. The product of four consecutive integers must be divisible by each of the following except

    A) 4   B) 6   C) 10   D) 12

    8.

9. There are _?_ hours in 4 weeks.

    A) 48   B) 96   C) 336   D) 672

    9.

10. If I divide my favorite number by its reciprocal, the quotient is 10 times as large as my favorite number. My favorite number is

    A) $\frac{1}{10}$ B) $\frac{1}{5}$ C) $\frac{1}{2}$ D) 10

    10.

11. The height of the smoke from my barbecue is 100 000 cm, which is the same as _?_ km.

    A) 1   B) 10   C) 100   D) 1000

    11.

12. If the degree measures of the angles of a triangle are in a 4:5:6 ratio, what is the difference between the measures of the largest and the smallest angles?

    A) 12°   B) 24°   C) 30°   D) 36°

    12.

Answers

13. The population of a town started at 1000, then went up 10%, then down 20%, then back up 10%. The population of the town ended at

    A) 968   B) 972   C) 1000   D) 1024

    13.

14. In my orchard, there are 60 more apples than oranges, and 5 times as many apples as oranges. How many apples are there?

    A) 50   B) 75   C) 100   D) 125

    14.

15. A polygon in which every pair of angles is supplementary must be a

    A) triangle   B) square   C) rectangle   D) hexagon

    15.

16. Which of the following is smallest in value?

    A) 2^{600} B) 3^{500} C) 4^{400} D) 5^{300}

    16.

17. $(2^{100} \times 4^{50}) \div 2 =$

    A) 2^{75} B) 2^{100} C) 2^{149} D) 2^{199}

    17.

18. What is the remainder when 3^{333} is divided by 10?

    A) 1   B) 3   C) 7   D) 9

    18.

19. On a series of tests, Gus got 100 once, 90 twice, and 80 five times. What was his average score for all of the tests?

    A) 80   B) 85   C) 90   D) 92

    19.

20. The product of the **thousands** and **tenths** digits of 1234.5678 is

    A) 5   B) 10   C) 35   D) 40

    20.

21. The probability of heads then tails then heads on 3 tosses of a coin is

    A) 0.125   B) 0.25   C) 0.375   D) 0.5

    21.

22. On January 1 last year, Rui got a jar of jellybeans. On each day he ate the same number of jellybeans. He counted 560 on January 31 before eating any and he counted 380 on March 17 before eating any. There were _?_ jellybeans in the jar when Rui got it.

    A) 600   B) 650   C) 680   D) 740

    22.

23. Jake used 120 boxes of tissues in 3 days! There are 144 tissues per box. That's _?_ tissues per minute!

    A) 2   B) 3   C) 4   D) 5

    23.

24. The number 5184 has _?_ positive odd divisors.

    A) 1   B) 2   C) 4   D) 5

    24.

25. The sum of 5 consecutive even integers could be

    A) 120   B) 125   C) 164   D) 212

    25.