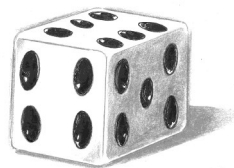


23. A die is rolled 3 times. The 1st number rolled is the hundreds digit of a 3-digit number, the 2nd one rolled is the tens digit, and the 3rd one rolled is the ones digit. How many different 3-digit numbers formed this way have at least two identical digits?



23.

A) 96 B) 120 C) 166 D) 216

24. A number greater than 2019 is the sum of at least ? 2-digit numbers.

A) 20 B) 21 C) 200 D) 201

25. A teacher divides her students into groups so there are at most 2 more boys than girls in each group. If there are 7 more boys than girls, what is the lowest number of groups the teacher can create?

A) 3 B) 4 C) 6 D) 7

26. Of the following numbers, which has an odd number of even factors?

A) 4 B) 80 C) 100 D) 128

27. In the hurdle competition, Kaz finished 12 places ahead of last place and 4 places behind the top half of all competitors. How many competitors placed ahead of Kaz?

A) 18 B) 19 C) 20 D) 21



27.

28. What is the average of all factors of the product $2 \times 3 \times 5$?

A) 6 B) 7 C) 8 D) 9

28.

29. I counted by ones, in increasing order, starting with a number greater than 1. If the average of the first 99 numbers I counted was 100, what is the sum of the digits of my first number?

A) 5 B) 6 C) 7 D) 8

29.

30. If my favorite positive number multiplied by itself has the same value as the sum when this favorite number is written 24 times and the numbers are added together, what is half the value of that sum?

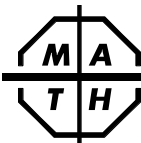
A) 48 B) 144 C) 240 D) 288

30.

The end of the contest 5

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



Sample 5th Grade Contest

Spring, 2019

Instructions

5

- **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 30 questions in the time 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 24 points (80% correct). Students with half that, 12 points, *should be commended!*
- **Format and Point Value** This is a multiple-choice contest. Each answer will be one of the *capital letters* A, B, C, or D. Write each answer in the *Answer Column* to the right of each question. We suggest (but do not require) that you use a pencil. Each question you answer correctly is worth 1 point. Unanswered questions receive no credit. You **may** use a calculator *unless* your school does *not* allow you to use one.

Please Print

Last Name _____ First Name _____

School _____ Teacher _____ Grade Level _____

Do Not Write In The Space Below*To the Teacher:*

Please enter the student's score at the right before you return this paper to the student.

Student's Score: _____

The school's top scorer will receive the book *Math Contests—Grades 4,5,6 (Vol. 4)*. Other high scorers will receive Certificates of Merit. In any one school year, no student may win both a book and a certificate. The book and certificates were in the original contest package.

If needed, duplicate book awards may be ordered as described below.

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

1. $700 + 80 + 9 = \underline{\quad} + 89$ A) 7 B) 70 C) 700 D) 780	1.
2. I counted 1800 sheep and cows. If I counted 5 sheep for every cow I counted, I counted $\underline{\quad}$ more sheep than cows. A) 400 B) 600 C) 1200 D) 1500	2.
3. The product of 2018 and 2019 has $\underline{\quad}$ more digits than their sum has. A) 3 B) 4 C) 5 D) 7	3.
4. $250 \times 100 = (2 \times 50) \times (\underline{\quad} \times 10)$ A) 10 B) 20 C) 25 D) 50	4.
5. Adding 20 to my age now doubles it. How old was I two years ago? A) 8 B) 18 C) 22 D) 38	5.
6. $2019 - (19 \times 6) = (2019 - 19) - (19 \times \underline{\quad})$ A) 0 B) 5 C) 6 D) 7	6.
7. A weed grew 1 cm every 6 days. It grew $\underline{\quad}$ cm in $1 \times 2 \times 3 \times 4 \times 5$ days. A) 20 B) 40 C) 60 D) 120	7.
8. $10 \times 10 \times 10 = 100 \times 100 \times 100 \div \underline{\quad}$ A) 10 B) $10 \times 10 \times 10$ C) $90 \times 90 \times 90$ D) $100 \times 100 \times 100$	8.
9. The side-lengths of a triangle are even numbers. Its perimeter is <i>not</i> A) 9 B) 16 C) 36 D) 64	9.
10. I wrote down every whole number less than 25 that is also 1 less than a prime. How many of these numbers are multiples of 4? A) 0 B) 1 C) 2 D) 3	10.
11. My balloon rose 10 m every minute. How high did it rise in 8760 seconds? A) 146 m B) 365 m C) 1046 m D) 1460 m	11.
12. If May has 5 Mondays, the first day of May could <i>not</i> be a A) Sunday B) Monday C) Tuesday D) Saturday	12.



13. Twice my hat size is 3 times my shoe size. If my hat size is 18 more than my shoe size, then the sum of my hat size and shoe size together is A) 36 B) 54 C) 90 D) 108	13.
14. What is the least 3-digit odd sum of two prime numbers? A) 101 B) 103 C) 105 D) 107	14.
15. I ran each of the first two km of a 3-km race twice as fast as I ran the third km. If I ran the entire race in 36 minutes, how long did it take me to run the third km? A) 12 minutes B) 18 minutes C) 24 minutes D) 27 minutes	15.
16. My favorite number is 2019. What is the sum of the smallest factor and the greatest factor of my favorite number? A) 674 B) 676 C) 2020 D) 2022	16.
17. Each day, including weekend days, I play video games for half as much time as I spend doing homework that day. If I spent a total of 3 hours and 2 minutes playing video games last week, how much time on average did I spend doing homework each day last week? A) 16 minutes B) 26 minutes C) 36 minutes D) 52 minutes	17.
18. What is the greatest possible product of the ones digits of 4 numbers? A) 9 B) 105 C) 945 D) 6561	18.
19. My average game score after 3 games was 5 points lower than it had been after 2 games. My third game score was $\underline{\quad}$ points lower than the average of my first two game scores. A) 5 B) 10 C) 15 D) 25	19.
20. Elle shelled twice as many nuts each day as she had the day before. If Elle shelled 360 nuts in 4 days, how many more nuts did she shell on day 4 than on day 1? A) 90 B) 168 C) 192 D) 270	20.
21. Which quotient has the greatest remainder? A) $10 \div 9$ B) $100 \div 99$ C) $1000 \div 99$ D) $10000 \div 99$	21.
22. A certain number has exactly 3 different factors. If the second greatest factor is 7, what is the sum of the digits of the number? A) 5 B) 7 C) 12 D) 13	22.

