

26. A rectangular prism is 5 m long, 4 m wide, and 6 m high. What is the sum of the lengths of its edges?

- A) 15 m    B) 60 m    C) 80 m    D) 120 m

27. What is the ratio of  $1\frac{1}{3}$  to its reciprocal?

- A) 1    B)  $\frac{3}{4}$     C)  $\frac{4}{3}$     D)  $\frac{16}{9}$

28. Pens come in packs of 3, 6, 8, and 12. I bought 12 packs and got a total of 121 pens. If I bought at least one of each size pack, how many packs of 8 pens did I buy?

- A) 1    B) 2    C) 3    D) 4

29.  $3^2 \times 8^2 \times 5^2 = 6^2 \times \underline{\quad} \times 10^2$

- A)  $\frac{1}{2}$     B) 2    C)  $2^2$     D)  $2^3$

30. I wrote the first 100 positive integers in order, and then erased every "1" I had written. How many digits did I erase?

- A) 18    B) 19    C) 20    D) 21

31. What is the difference between the product and the sum of the non-zero digits of  $20^{10}$  when it is written in decimal form?

- A) 1    B) 2    C)  $10^2$     D)  $2 \times 10$

32. In the sequence  $20, \frac{19}{2}, \frac{18}{3}, \frac{17}{4}, \dots$ , each term after the first term is gotten by subtracting 1 from the previous term's numerator and adding 1 to the previous term's denominator. How many terms in this sequence are positive integers?

- A) 1    B) 2    C) 3    D) 4

33. Two congruent rectangular cards partially overlap. The area of overlap is a square with area 4, and the total area of the regions of the faces of the two cards that *do not overlap* is 12. What is the area of one card?

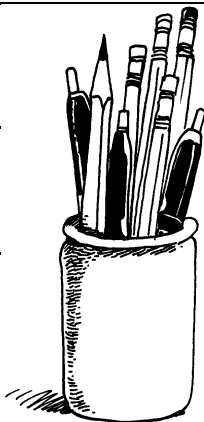
- A) 4    B) 6    C) 8    D) 10

34. If the mean of three positive integers is 5, then the product of all 3 integers is *at most*

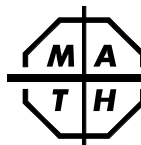
- A) 105    B) 120    C) 125    D) 150

35. What is the sum of the digits of the least 3-digit positive integer whose square is a 6-digit integer?

- A) 5    B) 7    C) 9    D) 11



The end of the contest 7



## 2018-2019 Annual 7th Grade Contest

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

# 7

### 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](http://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 7 or below and only if you don’t also take this year’s Annual 6th or Annual 8th 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: \_\_\_\_\_

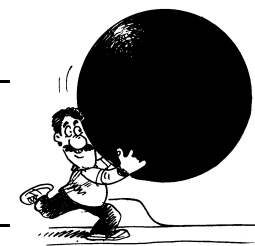
Twenty-one books of past contests, *Grades 4, 5, & 6 (Vols. 1, 2, 3, 4, 5, 6, 7), Grades 7 & 8 (Vols. 1, 2, 3, 4, 5, 6, 7), and High School (Vols. 1, 2, 3, 4, 5, 6, 7)* are available, for \$12.95 per volume, from Math League Press, P.O. Box 17, Tenafly, NJ 07670-0017.

1. $(2 \times 4 \times 8) \div 2 = 4 \times \underline{\quad}$ A) 2                      B) 4                      C) 8                      D) 16	1.
2. Al sleeps daily for 3 times as many hours as he is awake. For how many hours does Al sleep daily? A) 6                      B) 9                      C) 12                      D) 18	2.
3. The number 36 is the product of -6 and A) -6                      B) 6                      C) -30                      D) 42	3.
4. $20 \times 18 = 20 \times 19 + 20 \times \underline{\quad}$ A) -1                      B) 0                      C) 1                      D) 20	4.
5. Angel arrived $\frac{3}{10}$ of an hour early for her noon appointment. At what time did Angel arrive? A) 11:18 a.m.                      B) 11:20 a.m.                      C) 11:40 a.m.                      D) 11:42 a.m.	5.
6. The product of the least and greatest positive odd factors of 2019 is A) 673                      B) 2019                      C) 2020                      D) 6057	6.
7. The average value of the ten whole numbers from 0 through 9 is A) 5.5                      B) 5                      C) 4.5                      D) 4	7.
8. $2019 \times 3 + 2019 \div 3 = 2019 \times (3 + \underline{\quad})$ A) 0                      B) $\frac{1}{3}$ C) 1                      D) 3	8.
9. The product of four 4s equals the sum of $\underline{\quad}$ 4s. A) 4                      B) $3 \times 4$ C) $4^3$ D) $4^4$	9.
10. What is the area of a square if one-third its side-length is 4? A) 12                      B) 16                      C) 48                      D) 144	10.
11. On a Monday my surf club had 20 members. If the number of members doubled each day, on what day did my club first have over 2018 members? A) Sunday                      B) Monday                      C) Tuesday                      D) Friday	11.
12. Rounding a decimal to the nearest whole number yields a number that is at most $\underline{\quad}$ greater than the original decimal. A) 0.05                      B) 0.1                      C) 0.5                      D) 0.9	12.
13. The perimeter of a rectangle with area 2019 and integral side-lengths is greatest when its length and width differ by A) 0                      B) 1                      C) 670                      D) 2018	13.



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14. If half of my pals have at least 1 pet, and $\frac{1}{3}$ of my pals with a pet have more than 1 pet, what fraction of my pals have exactly 1 pet? A) $\frac{1}{6}$ B) $\frac{1}{3}$ C) $\frac{2}{3}$ D) $\frac{5}{6}$	14.
15. The average of 0.5, 1.5, and 2.5 equals the average of 1 and A) 1                      B) 1.5                      C) 2                      D) 2.5	15.
16. $9 \times 90 \times 900 \times 9000 = 9 \times \underline{\quad}$ A) $100^3$ B) $900^3$ C) $9000^3$ D) $9000000^3$	16.
17. What is one less than the product $-18 \times 19$ ? A) -341                      B) -342                      C) -343                      D) -344	17.
18. When I divide the number of digits in the decimal form of $10^{2018}$ by 4, the remainder is A) 3                      B) 2                      C) 1                      D) 0	18.
19. My first name has 60% as many letters as my last name. My first name <i>could</i> be A) Al                      B) Ali                      C) Alex                      D) Alexa	19.
20. What is the <i>least</i> possible sum of two integers whose product is 12? A) -13                      B) -11                      C) 7                      D) 8	20.
21. Of the first 100 positive integers, $\underline{\quad}$ are <i>not</i> multiples of both 2 and 3. A) 16                      B) 32                      C) 64                      D) 84	21.
22. If one-third of the eggs in each carton of 1-dozen eggs are cracked, I must buy $\underline{\quad}$ cartons to get 16-dozen eggs that are <i>not</i> cracked. A) 48                      B) 36                      C) 24                      D) 20	22.
23. Which of the following is nearest in value to 8.25? A) $8\frac{2}{5}$ B) $8\frac{2}{10}$ C) $8\frac{5}{10}$ D) $8\frac{10}{25}$	23.
24. I bowled on 2 days every week, on a different pair of days each week that I bowled. For at most how many weeks did I bowl? A) 14                      B) 21                      C) 28                      D) 35	24.
25. Which of the following has the least value? A) 0.1                      B) 0.01                      C) 0.0011                      D) $(0.01)^2$	25.



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