26. Such a prism has 4 edges of each size. The sum of the 3 dimensions is 15 m, so the sum of all the lengths is 60 m.

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

    26. B

27. The ratio of $\frac{4}{3}$ to $\frac{3}{4}$ is $\frac{16}{9}$.

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

    27. D

28. I bought an odd number of pens, so I bought an odd number of packs of 3. If I bought 1 pack of 3, I could have bought 2 packs of 8, 1 pack of 6, and 8 packs of 12. No other number of packs of 3 yields 12 packs.

    A) 1   B) 2   C) 3   D) 4

    28. B

29. $3^2 \times (2 \times 2 \times 2)^2 \times 5^2 = (3 \times 2)^2 \times 2^2 \times (5 \times 2)^2$.

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

    29. C

30. There is one "1" from 1 to 9, 11 "1"s from 10 to 19, one "1" in each of the next 8 groups of 10 integers, and one "1" in 100.

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

    30. D

31. When expanded, $20^{10} = 10\,240\,000\,000\,000$. The difference between the product and the sum of the non-zero digits is $8 - 7 = 1$.

    A) 1   B) 2   C) 10^2 D) 2×10

    31. A

32. In the sequence 20, $\frac{19}{2}$, $\frac{18}{3}$, $\frac{17}{4}$, ... , 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. The only integers in this sequence are 20, 18/3, and 14/7.

    A) 1   B) 2   C) 3   D) 4

    32. C

33. The area of each rectangle is half of the area of the non-overlapping region plus the area of the square. Therefore, the area of each rectangle is 12/2 + 4 = 10.
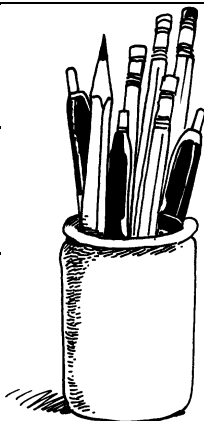
    A) 4   B) 6   C) 8   D) 10

    33. D

34. If the mean of three positive integers is 5, their sum is 15. The integers could be 5, 5, and 5.
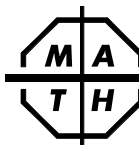
    A) 105   B) 120   C) 125   D) 150

    34. C

35. Since the square root of 100 000 is between 316 and 317, 317 is the smallest such 3-digit integer.

    A) 5   B) 7   C) 9   D) 11

    35. D

The end of the contest ✍ ▌**7**

Visit our Web site at http://www.mathleague.com
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M A T H

SEVENTH GRADE MATHEMATICS CONTEST

Information & Solutions

7

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

Directions for Grading

■ **Security and Solutions** *Do not look at these solutions until after the contest*. Detailed solutions appear in each question box, and letter answers are in the *Answers* columns on the right. You may copy this solution key and give a copy to every student who took this contest.

■ **Urgent Questions?** For appeals or answers to urgent questions, write to comments@mathleague.com or call 1-201-568-6328.

■ **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 28 points (80% correct). Students with half that, 14 points, should be commended.

■ **Awards & Results** The original contest package contained 5 *Certificates of Merit*—1 each for the 3 highest scoring students on the contest, plus extras for ties. **Do you need more Certificates of Merit?** If so, include your name, school, and school mailing address in a letter to: ***Math Certificates, P.O. Box 17, Tenafly, NJ 07670-0017***, and *include a self-addressed, stamped envelope (**three 1st Class stamps req'd.**) large enough to hold certificates.* Only scores submitted to our Internet Score Report Center by Fri., March 9, 2018 can be used in our *Summary of Contest Results newsletter,* which will be posted online no later than Fri., April 12, 2019.

■ **Return of Student Papers** *Originals* of contest papers with scores of 30 or more *must* be held until June 1. *Copies* of these papers, and originals of all other papers, should be returned to students after grading. Students scoring 30 points or more must confirm an *understanding* of the contest rules by signing the *Selected Math League Rules* (on the colored sheet of information and rules that accompanied the contests). Keep this signed sheet with the original contests until June 1. Please do not mail these to the League unless we ask you to do so.

#	Problem	Answer
1.	$(2 \times 4 \times 8) \div 2 = 1 \times 4 \times 8 = 4 \times 8$. A) 2 B) 4 C) 8 D) 16	1. C
2.	Al sleeps daily for 3/4 of the day. Therefore, Al sleeps for 18 hours. A) 6 B) 9 C) 12 D) 18	2. D
3.	$36 = 6 \times 6 = (-6) \times (-6)$. A) -6 B) 6 C) -30 D) 42	3. A
4.	$20 \times (19 - 1) = 20 \times 19 + 20 \times (-1)$. A) -1 B) 0 C) 1 D) 20	4. A
5.	Since $\frac{3}{10}$ of 60 minutes is 18 minutes, Angel arrived 18 minutes before 12 p.m.; that's 11:42 a.m. A) 11:18 a.m. B) 11:20 a.m. C) 11:40 a.m. D) 11:42 a.m.	5. D
6.	The product of 1 and 2019 is 2019. A) 673 B) 2019 C) 2020 D) 6057	6. B
7.	The sum of the first ten whole numbers is 45. Their average is 4.5. A) 5.5 B) 5 C) 4.5 D) 4	7. C
8.	$2019 \times 3 + 2019 \times 1/3 = 2019 \times (3 + 1/3)$. A) 0 B) $\frac{1}{3}$ C) 1 D) 3	8. B
9.	The product of four 4s = 256 = 4 × 64; this is the sum of 64 4s. A) 4 B) 3 × 4 C) 4^3 D) 4^4	9. C
10.	If 1/3 the side-length is 4, the side-length is 12 and the area is 144. A) 12 B) 16 C) 48 D) 144	10. D
11.	Doubling 20 six times, my surf club had 2560 members 7 days later. Seven days after a Monday is also a Monday. A) Sunday B) Monday C) Tuesday D) Friday	11. B
12.	A number such as 4.5 is rounded to 5, an increase of 0.5. This is the greatest possible increase when a number is rounded to the nearest integer. A) 0.05 B) 0.1 C) 0.5 D) 0.9	12. C
13.	The perimeter is greatest when the length is 2019 and the width is 1. The difference between dimensions is at most 2018. A) 0 B) 1 C) 670 D) 2018	13. D
14.	Using 6 pals, 3 pals have at least 1 pet, and $\frac{1}{3}$ of them, or 1 pal, has more than 1 pet. The fraction of my pals with exactly 1 pet is 2/6. A) $\frac{1}{6}$ B) $\frac{1}{3}$ C) $\frac{2}{3}$ D) $\frac{5}{6}$	14. B
15.	The average of 0.5, 1.5, and 2.5 is 1.5; the average of 1 and 2 is also 1.5. A) 1 B) 1.5 C) 2 D) 2.5	15. C
16.	$9 \times (9 \times 10) \times (9 \times 100) \times (9 \times 1000) = 9 \times (9^3 \times 1\,000\,000) = 9 \times 900^3$. A) 100^3 B) 900^3 C) 9000^3 D) $9\,000\,000^3$	16. B
17.	The number one less than –342 is –343. A) -341 B) -342 C) -343 D) -344	17. C
18.	The number of digits in the decimal form of 10^{2018} is 2019; 2019 ÷ 4 is 504R3. A) 3 B) 2 C) 1 D) 0	18. A
19.	The number of letters in the first name "Ali" is 60% of the number of letters in a 5-letter last name. A) Al B) Ali C) Alex D) Alexa	19. B
20.	$12 = \pm1 \times \pm12 = \pm2 \times \pm6 = \pm3 \times \pm4$; the least sum is –1 + (–12) = –13. A) -13 B) -11 C) 7 D) 8	20. A
21.	Since 100 ÷ 6 = 16R4, 16 are multiples of both 2 and 3, and 84 are not. A) 16 B) 32 C) 64 D) 84	21. D
22.	Since each carton contains 8 eggs that are not cracked, 3 cartons contain 2 dozen eggs that are not cracked. I need 24 cartons in all. A) 48 B) 36 C) 24 D) 20	22. C
23.	In order, the choices are 8.40, 8.20, 8.50 and 8.40: 8.20 is nearest. A) $8\frac{2}{5}$ B) $8\frac{2}{10}$ C) $8\frac{5}{10}$ D) $8\frac{10}{25}$	23. B
24.	Each day can be paired with 6 other days for a total of 42 pairs. However, each pair has been counted twice, so there are 21 pairs. A) 14 B) 21 C) 28 D) 35	24. B
25.	Write with 4 digits to the right of the decimal. A) 0.1 B) 0.01 C) 0.0011 D) $(0.01)^2$	25. D

2   3