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2025-2026 Math League Preliminary Round

(Grade 5)

(Unofficial version, for reference only)

1. I wrote the word "contest" 777 times. The 777th letter I wrote is

   A) c B) n C) s D) t

2. Of the first 10^3 positive integers, how many are divisible by both 2 and 5?

   A) 3 B) 10 C) 25 D) 100

3. A triangle **cannot** have sides of lengths 5, 12, and

   A) 12 B) 13 C) 16 D) 18

4. If the product of three different positive integers is 27, what must be their sum?

   A) 9 B) 12 C) 13 D) 31

5. How many 5-digit positive integers include all the digits 1, 3, 5, 7, 9?

   A) 24 B) 120 C) 15 120 D) 50 000

6. I have horses, goats, and sheep in my barn. If I have 2 more horses than goats and 3 fewer sheep than horses, which of the following could be the total number of animals in my barn?

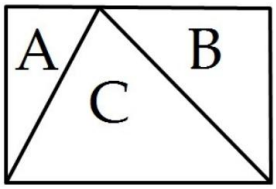
   A) 65 B) 66 C) 67 D) 68



7. The ratio of 6th graders to 7th graders at my school is 2:5, and the ratio of 7th graders to 8th graders at my school is 3:4. Which of the following could be the total number of 6th, 7th, and 8th graders at my school?

   A) 42 B) 164 C) 420 D) 2026

8. In the rectangle shown, if the sum of the areas of triangles A and B is 36, what is the area of triangle C?



A) 18 B) 24 C) 36 D) 48

9. I have taken 5 tests this year. If the average of my two lowest scores is 72, and the average of my three highest scores (each an integer greater than 72) is 80, what is the highest possible score I could have gotten on a single test?

A) 92 B) 94 C) 96 D) 100

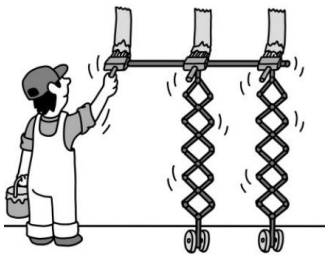
10. Our house is now 26 years older than I am. In 6 years our house will be twice as old as I am then. How old was our house 8 years ago?



A) 26 B) 28

C) 36 D) 38

11. Jay, Kay, and Elle can paint a house in 24 hours working together at their respective rates. If Kay and Elle can paint the house in 36 hours working together, how long would it take Jay to paint the house working alone?



A) 24 B) 48

C) 60 D) 72

12. Bobby writes each of the 5 letters in his name (in lowercase) on tiles and mixes them up in a bag. He then draws one tile at a time from the bag at random and writes down the letter on each tile in the order in which he draws them. How many different sequences of letters could possibly be the result?

A) 10 B) 20 C) 40 D) 120

13. The average area of 4 squares whose side-lengths are 1, 3, 5, and 7 is

A) 8 B) 16 C) 21 D) 28

14. What is the sum of all the whole numbers between 1 and 50 whose digits are all even?

A) 320 B) 340 C) 360 D) 400

15. The sum of the smallest prime factor of 117 and the greatest prime factor of 117 is

A) 14 B) 16 C) 22 D) 42

16. Sarah has 15 coins consisting of nickels and dimes. If the total value of her coins is \$1.05, how many dimes does she have?

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

17. If $\frac{2}{5}$ of my jersey number is 10, what is 20% of my jersey number?

A) 4 B) 5 C) 10 D) 25

18. If 10 people can build 5 houses in 40 days, how long would it take 5 people working at that same rate to build 10 houses?

A) 20 B) 40 C) 80 D) 160

19. Twice as many of Alice's friends arrived late for her party as arrived on time. Once everyone was at the party, 4 of her friends left and only 11 remained. How many of her friends arrived on time?

A) 4 B) 5 C) 6 D) 8

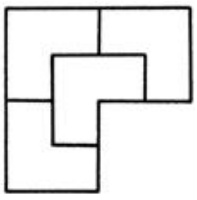
20. A palindrome is a number that reads the same forwards and backwards. What is the difference between the smallest and largest positive 4-digit palindromes divisible by 3?

A) 8448 B) 8778 C) 8888 D) 8998

21. In a competition with 35 chefs, 15 are baking bread, 13 are cooking carrots, and 4 are baking bread and cooking carrots. How many contestants are neither baking bread nor cooking carrots?

A) 4 B) 7 C) 11 D) 17

22. Four identical pieces with perpendicular sides are placed as shown. If the perimeter of each piece is 12 and each longer side of each piece is twice the length of each shorter side, what is the perimeter of the entire figure?



A) 24 B) 36 C) 42 D) 48

23. How many different triangles can be drawn by connecting three dots on the following grid?



A) 6 B) 12 C) 18 D) 24

24. How many of the factors of 18^2 are divisible by 3?

A) 4 B) 6 C) 8 D) 12

25. How many 3-digit positive integers have exactly two identical digits next to each other?

A) 90 B) 152 C) 162 D) 171

26. What is the hundreds digit of 5^{2025}?

A) 1 B) 2 C) 5 D) 6

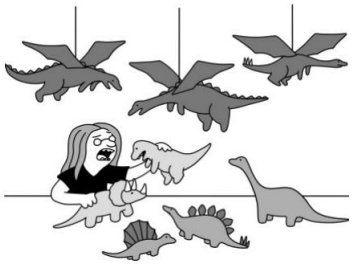
27. An ice cream truck is selling "super sundaes." A customer must choose 3 of 20 ice cream flavors, plus 2 of the 10 different wet toppings, plus 2 of the 5 different dry toppings. How many different super sundaes can be made?



A) 1195 B) 6950

C) 513 000 D) 12 312 000

28. In my model collection I have r dinosaurs and n dragons. The ratio r:n would be 1:3 if I had one less dinosaur, but it would be 1:4 if I just had 29 additional dragons. What would r:n be if I had 2 more of each?



A) 4:11 B) 3:13

C) 5:12 D) 67

29. If $s > 0$, $t > 0$, and $s = 5 - 2t$, which of the following could be the value of $30s + 70t$?

A) 150 B) 155 C) 175 D) 180

30. If $x = y + 4$, then $y^2 + 10y + 12 =$

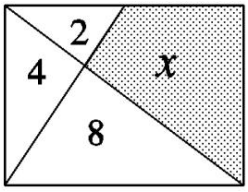
A) $x^2 - 6x - 3$ B) $x^2 - 6x + 9$

C) $x^2 + 6x$ D) $x^2 + 2x - 12$

31. How many of the first 2024 positive integers could be the perimeter of a square with an integer side-length?

32. How much greater is the sum of the first 10 prime numbers than the sum of the first 8 prime numbers?

33. As shown, a line segment drawn from a vertex of a rectangle, through a diagonal, to a side of the rectangle, partitions the rectangle into triangles with respective areas 2, 4, and 8, and a (shaded) quadrilateral of area x. What is the value of x?



34. For what value of A does $\dfrac{A}{x-1}-\dfrac{A}{x+1}=\dfrac{2024}{x^2-1}$ for all $x \neq \pm 1$?

35. My jigsaw puzzle has 2024 separate pieces, each called a *single*. When 2 or more singles are put together, the result is called a *group*. A *move* consists of connecting a single or group to another single or group. What is the least total number of moves required to complete the jigsaw puzzle?



Answers										
Question	1	2	3	4	5	6	7	8	9	10
Answers	**D**	**D**	**D**	**C**	**B**	**C**	**B**	**C**	**B**	**D**
Question	11	12	13	14	15	16	17	18	19	20
Answers	**D**	**B**	**C**	**C**	**B**	**A**	**B**	**D**	**B**	**B**
Question	21	22	23	24	25	26	27	28	29	30
Answers	**C**	**A**	**C**	**D**	**C**	**A**	**C**	**A**	**B**	**D**
Question	31	32	33	34	35					
Answers	**506**	**52**	**10**	**1012**	**2023**					