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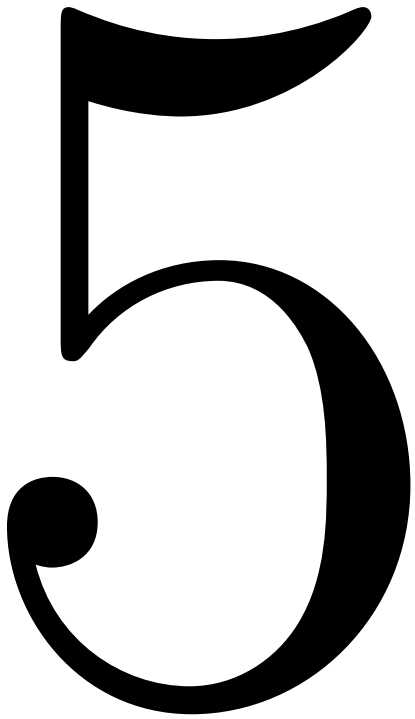
SPRINT ROUND – GRADE



No Peeking: Wait for instructions to start!

This area is for the use of the markers only

Problems 1-9 (max 9)	Problems 10-18 (max 9)	Problems 19-26 (max 8)	Stage Tot. (max 26)	Re-marker Name

1. $x = \frac{1}{2} + \frac{1}{4}$. Express x as a fraction in lowest terms. _____ 1.

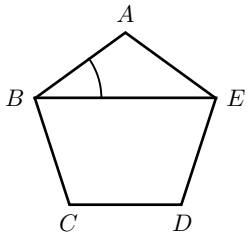
2. There are two platters of cookies: the first has 8 cookies and the second has 12 cookies. If one cookie is moved from the first platter to the second platter, what percentage of all cookies will be on the first platter? _____ (%) 2.

3. $N > 0$ is the smallest odd number such that $78 < 0.75N$. What is N? _____ 3.

4. For every 100 grade 7 students, there are 104 grade 6 students. If there are 130 grade 6 students at ELMACON, how many grade 7 students are there? _____ 4.

5. $x > 0$ and $x - \frac{256}{x} = 0$. Find x. _____ 5.

6. ABCDE is a regular pentagon. What is the value of $\angle ABE$ in degrees (°)?



_____ (°) 6.

7. Amy spent \$750 on baby needs. She bought 320 diapers at a cost of \$0.45 per diaper. What percentage of her spending was on diapers? Round the answer to the nearest whole number. _____ (%) 7.

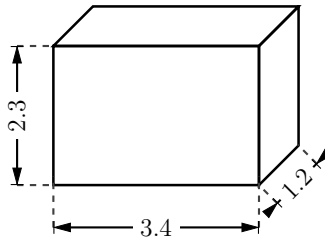
8. Calculate $\frac{1 + 2024}{2500}$. Express the answer as a fraction in lowest terms. _____ 8.

9. x is a 2-digit positive number whose digits are two consecutive numbers. y is defined to be the 2-digit positive number with the digits of x reversed. What is the maximum possible value of $N = x + y$? _____ 9.

10. The following is an arithmetic sequence: $N, N+K, N+2K, N+3K, \cdots$. The value of the 2024^{th} term of the sequence is 10000, and the value of the 1000^{th} term is 784. What is the value of N (the first term)? _____ 10.

11. 100 cups of coffee were prepared. Sugar was added to 70 of them and milk was added to 60 of them. Of these 100 cups, 50 had both sugar and milk. How many of the cups had neither sugar nor milk? _____ 11.

12. What is the total area of the 6 faces of a box with sides 1.2, 2.3, and 3.4? Round the answer to the nearest whole number.



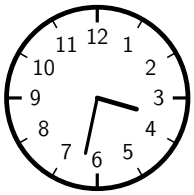
_____ 12.

13. $N + M = 50$ where $N < M$ are both primes. How many different values of N are there? _____ 13.

14. Express $0.5333\cdots$ as a fraction in lowest terms. _____ 14.

15. A box contains 5 white marbles and 2 black marbles. Andrew took 2 marbles out of the box at random and placed them on the table. What is the probability that at least 1 of the marbles was white? Express the answer as a fraction in lowest terms. _____ 15.

16. What is the value, in degrees, (°), of the acute angle between the hour hand and the minute hand of a clock at the time 3:32pm (3 hours and 32 minutes)?



_____ (°) 16.

17. Rona rides her bike at a speed of 8 metres per second (8 m/s) for 7 minutes, and at a speed of 12 m/s for 12 minutes. How far does she travel, in kilometres (km)? _____ (km) 17.

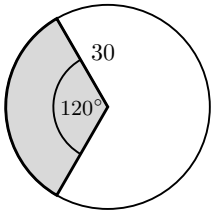
18. The temperature of magma inside a volcano is $T_F = 2024°F$ (degrees Fahrenheit). Convert this to degrees Celsius ($°C$) using the equation

$$T_F = 32 + T_C \times \frac{9}{5}$$

where T_C is the temperature in Celsius. Round the answer to the nearest whole number. _____ ($°C$) 18.

19. What is the sum of the prime factors of 2024? _____ 19.

20. What is the perimeter of a 120° sector of a circle with radius 30? Use $\pi = 3.14$ and round the answer to the nearest whole number.



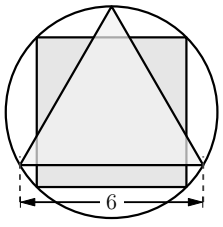
_____ 20.

21. When $999,999^2$ is expressed as a whole number, how many of the digits are equal to zero? _____ 21.

22. 54 people are invited to a party. If a 6×6 square cake feeds 4 people, how many 9×9 cakes should be ordered to feed all 54 people? _____ 22.

23. There are 4 aces in a deck of 9 cards. Dan was dealt 3 cards (at random) from this deck, and at least one of them was an ace. What is the probability that he was dealt *exactly* 1 ace? Express the answer as a fraction in lowest terms. _____ 23.

24. An equilateral triangle and a square are inscribed in the same circle. The length of the side of the triangle is 6, calculate the area of the square.



_____ 24.

25. The sum of the two largest prime factors of N is 30. The sum of the two smallest prime factors of N is 7. What is the smallest possible value of N? _____ 25.

26. Larry and Mike play a game. Two fair dice are rolled: if the sum $(N + M)$ of the dice is even, Larry pays Mike $N \times M$ tokens; if the sum is odd, Larry receives $N \times M$ tokens from Mike. The game is played twice. What is the probability that after 2 games, Mike's net gain (in tokens) is 19? Express the answer as a fraction in lowest terms. _____ 26.