Clover Math Competition

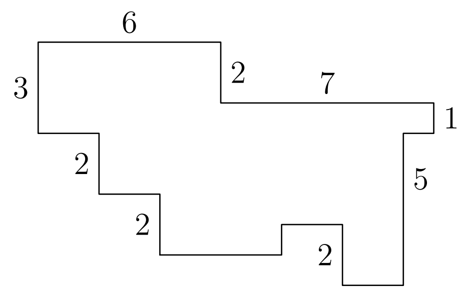
Form B

May 2, 2025

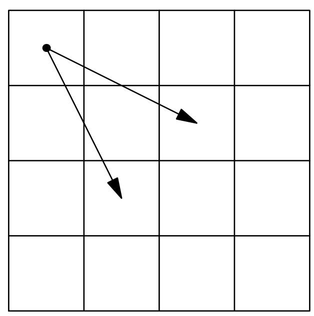
1. If a rectangle has a length of 8 and an area of 40, what is the width?
2. You have a rope that's 12 feet long. You fold it in half, then fold it in half again. How many feet long is it now?
3. Find the sum of the first 5 odd numbers.
4. Allison has 12 more clovers than Brian. After Allison gives Brian some number of his clovers, they each have an equal number of clovers. How many clovers did Allison give Brian?
5. Which is bigger: $\frac{3}{5}$ or $\frac{4}{7}$?
6. A clock shows 3:00. How many degrees are between the hour hand and the minute hand?
7. There are 5 strawberries and 3 blueberries in a bowl. Suppose Arthur reaches in without looking and grabs a random fruit. As a fraction, what is the chance that he gets a strawberry?
8. Greg is randomly flipping a fair two-sided coin. The past four flips have been all heads. What is the probability that his 5th flip lands heads?
9. How many two-digit numbers are there where the digits add up to 5?
10. Two people start at opposite ends of a 100-meter track. One runs at 5 m/s, the other at 3 m/s. How many seconds until they meet? Express your answer as either an integer or decimal.
11. A class has fewer than 30 students. When they sit in rows of 4, there are 3 left over. When they sit in rows of 5, there are 4 left over. How many students are there?
12. Solution A is 10 liters and is made up of 20% salt and the rest water. Solution B is 12 liters and is made up of 10% and the rest water. Half of solution A and 5/6 of solution B is mixed together to make solution C. What fraction of solution C is salt?
13. Sheila has a drawer of 13 black socks, 9 blue socks, 8 white socks, and 3 red socks. The light in her room is off so she cannot see what color sock she takes from the drawer and chooses randomly. What is the least number of socks Sheila must take from the drawer until she is guaranteed to have 5 socks of the same color?
14. If you investigate the stump of a tree, you can tell how old it is by the number of rings. In the special species of Euclid tress, the distance between each ring is exactly 1 cm and every ring is equal to exactly 1 year of life. If an Euclid tree stump has an area of $25\pi\ cm^2$, how many months old is the tree?
15. A palindrome is a number that reads the same forward and backward. How many three-digit palindromes are there (ex. 343)?
16. A magic square has the property that the sum of the three numbers in every row and column is the same. What is the number in the square shown with a question mark?

3	5	
		2
		?

17. In the diagram shown, all labels indicate the lengths of the sides in centimeters. What is the perimeter of the shape, in centimeters?

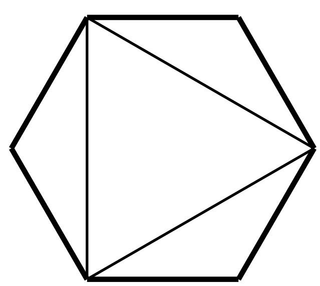


18. A particle is in the top left cell in a 4×4 grid, as shown. It can either move 2 squares horizontally and 1 square vertically, or 1 square horizontally and 2 squares vertically. For example, it could go as drawn for the first move. What is the least number of moves it needs in order to get to the bottom left cell?



19. How many ordered pairs of integers (a, b) are there such that $\gcd(a, b) = 6$ and $\text{lcm}(a, b) = 1260$? Here, $\gcd(x, y)$ is the greatest integer that divides both x and y and $\text{lcm}(a, b)$ is the least integer that is a multiple of x and y.

20. Suppose that in a regular hexagon, a triangle is drawn between 3 of its vertices as shown. What is the ratio of the area of the hexagon to the area of the triangle?



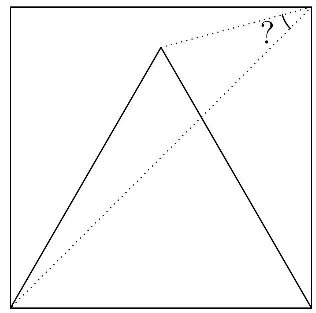
21. What is the units digit of the value of the product of the first 2025 odd primes?

22. You divide up a circular pizza with 4 straight cuts. These cuts can start and end from anywhere on the edge. What's the maximum amount of pieces you can make?

23. Jonathan flips a coin six times in a row. As a fraction, what is the probability that the coin lands on heads at least twice?

24. Max computes 3^{2024} and writes the result on a chalkboard. He then adds up all of the number's digits, erases the original number, and replaces it with this new sum. He repeats this process until he is left with a single digit. What is this digit?

25. A square and an equilateral triangle share a side, as shown. What is the measure of the marked angle, in degrees?



26. Let a_n be a recursive sequence with $a_1 = -2$ and $a_{n+1} = a_n^2 - 7$ for $n \geq 1$. Find a_{2025}.

27. A machine takes any positive integer as an input. If the input is even, then the machine divides it by 2. If the input is odd, then the machine adds 1. Three of these machines are chained together, so for example, if 6 is put into the first machine, they produce 2 as the output. Suppose Tommy puts in a number that results in a 5 as an output. What is the sum of all the possible numbers that Tommy could have put in?

28. Michael randomly rolls a regular four-sided die exactly four times. What is the probability that there were at least two rolls that showed the same face?

29. What is the 2025th smallest positive integer that only uses the digits present in the integer 2025?

30. In question 15 you were asked to find the number of 3-digit palindromes. Find the sum of all these palindromes.