

Gauss School and Gauss Math Circle
2020 Gauss Math Tournament
Division I (Sprint Round 50 minutes, 40 Questions)

1. $329 - 633 + 1671 - 67 = ?$
2. How many prime numbers are there under 10?
3. A square has area 36. What is the length of one of its sides?
4. $2600 / (52 * 25) = ?$
5. If $12 * x = 82$, what is the integer closest to x ?
6. How many minutes are there in three and a half hours?
7. In 5 minutes, Bobby solved 80 Mad Math problems while Bob solved 120 problems in the same amount of time. On average, how many more problems did Bob solve per minute?
8. If chocolate is worth 2 dollars apiece and soda is worth 1.5 dollars per can, how many sodas can you buy with 20 dollars if you first need to buy 6 pieces of chocolate for Jessica's chocolate addiction?
9. Two cities are 180 miles apart. If a train travelling at 40 mph leaves the first city at 1:00, how far will it be from the second city at 2:45?
10. How many two-digit numbers are divisible by 2?
11. Penelope the pheasant isn't very pleasant. If she starts with 17 friends and loses 10, how many friends will she need to gain if she wants to have more than 25 friends?
12. Two craft teams are given the same amount of paper cranes to make. The first group made 36 cranes each day and reached their goal in 10 days. The second team used 2 more days to finish the same goal. How many cranes did the second team make each day?
13. Two basketball teams, the Houston Hot Pockets and the Los Angeles Bakers, are playing each other in a best of 5 match. If there are no ties and either team has an equal chance of winning each game, what is the probability that the Houston Hot pockets win the series?
14. Andy is given an 8.5 x 11-inch piece of paper. What is the perimeter of the paper?
15. Lugia has a number of chickens (with 1 head and 2 legs) and a number of (non-attached) chicken legs (with 0 heads and 1 leg) in a room. If she counts 5 chicken heads and 17 chicken legs in the room, how many non-attached chicken legs does she have?

16. I am a two-digit integer. Double me and you get ten times the sum of my digits. What number am I?
17. What is the largest divisor of 2020 less than 100?
18. Alexis is flipping coins. She flips 2 coins at once. What is the probability both coins will show heads?
19. What is the maximum number of Mondays that can happen in one 365-day year?
20. Bessie has 4 shapes to choose from, and 5 colors to choose from. How many ways can Bessie choose a shape and paint it?
21. This year Leo is 6 years old and Leah is 10 years old. After how many years will the sum of their ages be 42? Assume they have the same birthday.
22. Seven bunnies are sitting in a line. If one of them randomly leaves, what is the chance there is still a single line of bunnies with no gaps?
23. Bobby has a sequence of 10 positive integers. If the mean of all the numbers is 3, what is the largest possible value of a number in the sequence?
24. Compute $2020^2 - 2018^2$.
25. If 3000, x , and -6000 form a decreasing arithmetic sequence (the difference between each value is the same, ex. 1,2,3), what is x ?
26. Ian is committing tax fraud and manages to pay 20% less to the IRS than what he should have. If he paid \$84, how much was he supposed to pay as a law-abiding citizen?
27. The average of 4 numbers A, B, C, D, is 10. If the average of A and B is 8, what is the average of C and D?
28. If four workers can clear a field in an hour, how many minutes will it take twelve workers to clear a field twice the size?
29. Connor has the ability to bake cakes at an inhuman 40 cakes each hour. Each cake feeds 8 people. How many people can Connor feed each hour?
30. A 100-member group of students and teachers dug 100 holes. If each teacher dug 3 holes and 3 students together dug 1 hole, how many students are there?
31. Zowo is triple Goorun's age. If in exactly two years Goorun will be half of Zowo's age, how old is Zowo right now?
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32. January 1, 1900 was a Monday. What day of the week was February 8, 1900? (January has 31 days.)
33. What is the second most number of coins (pennies, nickels, dimes, and quarters) that can be used to make \$0.70?
34. How many degrees are in an interior angle of a regular hexagon?
35. In a group of 8 people, each person shakes every other person's hand once. How many total handshakes happen?
36. 28. Alicia and Kevin are making a compilation of funny clips. Alicia only uses clips that are 4 seconds long, while Kevin only uses clips that are 6 seconds long. There is a 1 second transition between clips. The video they create is 107 seconds long and has 20 clips. How many clips did Kevin add?
37. Maddy is reading a book that has 105 pages. On the first day, she reads 1 page; each day after that she reads 1 more page than the previous day. For instance, on the third day she will read 3 pages and on the fifth day she will read 5 pages. How many days will it take for her to finish reading the book?
38. In how many distinct 6-digit numbers does 1 appear once, 2 appear twice, and 3 appear thrice?
39. Felix is building a wall. Every day he builds 11 meters of wall, but Ralph wrecks 9 meters of wall every night. If Felix must build a 100-meter wall, how many days will he take to finish the wall for the first time?
40. Bob cuts out the letters from a sign that says FNATIC. If any 4-letter combination of letters is considered a word, how many distinct words can Bob make?