
MOCK MATHCOUNTS

2009
■ School Competition ■
Sprint Round
Problems 1-30

Name _____

**PRIVATE MESSAGE YOUR ANSWERS TO
EITHER ernie, PowerOfPi, pytheagle, OR vallon22.**

This round of the competition consists of 30 problems. You will have 40 minutes to complete the problems. You are not allowed to use calculators, books, or any other aids during this round. If you are wearing a calculator wrist watch, please give it to your proctor now. Calculations may be done on scratch paper. All answers must be complete, legible, and simplified to lowest terms. Record only final answers in the blanks in the right-hand column of the competition booklet. If you complete the problems before time is called, use the remaining time to check your answers.

Total Correct	Scorer's Initials

1. Let $f(x) = 3x+2$. Find the value of $f(4)$.

1. _____

2. The children in Mr. Wilson's class were standing in a circle. Zach, who was the second person, stood directly across from Mary, the seventh person. How many people are there in Mr. Wilson's class?

2. _____

3. Brandon is baking cookies for the bake sale. He is using his grandma's special recipe, which calls for 7 ounces of flour for every 2 ounces of sugar. If he wants to make cookies with all of the 42 ounces of flour he has, how much sugar does he need? Give your answer in ounces.



3. _____

4. Sally rolled two six-sided dice numbered one through six. What is the probability that the sum of the numbers on the die is 10?



4. _____

5. A ladder is against a wall, with the base 6 feet away from the wall. If the ladder must reach 8 feet high, how long must it be? Give your answer in feet.

5. _____


6. David wrote all the integers 1 through 100, inclusive, on a piece of paper. How many times did he write the digit 4?

6. _____

7. Suzanne wants a particular pair of shoes that cost \$68. She earns \$5 a week for distributing newspaper in her area and \$3 a week for helping her neighbors mow the lawn. She already has \$20 dollars, and plans on buying the shoes in 2 weeks. If she also sets up a lemonade stand and earns \$4 a day, how many days should she have her lemonade stand every week for her to be able to buy the shoes?



7. _____

8. Julie has a $4 \times 4 \times 4$ cube, while Jimmy has a $3 \times 3 \times 3$ cube. What is the numerical difference between Julie's cube's surface area and Jimmy's cube's volume? 8. _____
9. How many positive multiples of 9 have three digits, all of which are the same? 9. _____
10. Andy and Rick have a total of \$5.60 together. When Andy gives Rick 30 cents, they have an equal amount of money. In dollars, how much money did Andy have in the beginning? 10. _____
11. Mr. Wilson's class took a two-page test. Four of the students forgot to put their name on the second page. When Mr. Wilson wanted to grade the tests, he randomly matched the second pages with no names to the four students' first pages. What is the probability that he correctly matches the first and second pages? Express your answer as a common fraction. 11. _____
12. Fred and Bob each wrote down the number of ways they can arrange the letters in their names (the two b's in Bob's name being indistinguishable). What is the positive difference between the two numbers they wrote down? 12. _____
13. When Katherine walks from her house to her school, she walks 1 mile east, 3 miles north, and another 3 miles east. If a straight line was drawn from Katherine's house to her school, what would the length of that line be? Give your answer in miles.  13. _____
14. On the planet Oogla, the names of different values of currency are booglas, pooglas, and mooglas. A boogla is equal to seven poogla and a poogla is equal to five moogla. Soogla and Toogla counted a certain amount of money. If Toogla counted 102 mooglas more than Soogla counted booglas, how many booglas were there? 14. _____
15. William wrote down all of the two digit squares and the sum of their digits. The sum of the digits of which two digit perfect square has the greatest value? 15. _____

16. In Geotown, there are two high schools: Trigonometry High School and Euclidean High School. Out of all of the high school students in the town, 40% go to Euclidean HS and the rest go to Trigonometry HS. If 55% of the students attending Trigonometry High school are male, then what percent of the total high school students in Geotown are male Trigonometry HS students?

16. _____

17. Jack's $5 \times 5 \times 5$ Rubik's Cube fell apart. If all of the faces visible when the cube was together has a sticker on it, then what is the total area covered by all of the stickers? Assume that each sticker covers exactly all of the side of a small cube and that each side of a small cube has area 1 square centimeters. Give your answer in square centimeters.



17. _____

18. Coach Dave was preparing a starting lineup for his Little Leagues hockey team, consisting of 1 goalie and 3 other players on the ice. If there are a total of 6 players on the team, in how many ways can Coach Dave pick a starting lineup?

18. _____

19. How many integral factors of 36 have 1 as a digit?

19. _____

20. Marty the Martian has 17 legs but no eyes. If he has an unlimited supply 3 different colors of socks, what is the minimum number of random socks he has to pull out of his drawer such that he gets at least 17 socks of the same color?

20. _____

21. At the ice cream parlor, Joey was going to get a two-scoop ice cream. You could have three choices for the first scoop: strawberry, chocolate, or vanilla. If you choose strawberry for the first scoop, you must have another scoop of strawberry. If you choose chocolate for the first scoop, you can have either chocolate or strawberry for the second. If you choose vanilla for your first, you can have one of vanilla, chocolate, or strawberry for the third. In how many ways can Joey choose his ice cream?



21. _____

22. Let $a \sim b$ be the positive difference between the product and sum of a and b . Find $(3 \sim 4) \sim 5$.

22. _____

23. A rectangular piece of paper is folded in half repeatedly for 4 times. Then, three holes are punched into the folded paper and it is unfolded. How many holes are visible when the paper is unfolded? 23. _____

24. Three coins are flipped. What is the probability that two of them come up as heads? 24. _____

25. Madison wants change for her quarter. If she wants the change in only pennies, nickels, or dimes, where there is an unlimited supply of each, then in how many ways can she receive her change? 25. _____

26. A polygon has 9 diagonals. How many sides does it have? 26. _____

27. Derek is hosting a party. He a certain amount of his friends such that, when everyone including Derek shakes hands with everyone else, there are exactly 15 handshakes. How many friends, not including himself, did he invite? 27. _____

28. How far away is the point $(-1, 3)$ from the line $y = x+1$? Express your answer in simplest radical form. 28. _____

29. Phil takes a number, doubles it, adds 4, divides by two, and gets twice the number he started with. If Travis takes that same number, adds 12 then doubles it, what will the resulting number be? 29. _____

30. Brooke has a certain amount of marbles. She gives one third of them to her brother, one fourth of the remaining marbles to her sister, and half of the remaining marbles to her friend, Anna. If she has 3 marbles remaining at the end, how many did she start with? 30. _____

