MATHCOUNTS

■ Speed and Accuracy Practice Test 8■

Name _____

Date _____

DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO.
The test consists of two parts. Each part has 40 problems. You will have 15 minutes to complete the part 1 and 25 minutes to complete the part 2. You are not allowed to use calculators, books, or any other aids during this round. Calculations may be done on scratch paper. All answers must be complete, legible, and simplified to lowest terms. Record only final answers. Do each problem as quick as you can. If you finish one problem, go to the next. Do not spend any time to check your answers.

	Total Correct	Scorer's Initials
Part I		
Part II		

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Part I Problems 1–40

1. $6 \times 0.45 =$

2. $\frac{3}{4}+\frac{2}{4}+\frac{3}{4} =$

3. Express 8.5% as a decimal

4. $815 \times 11 =$

5. $3{,}972 - 1{,}746 + 28 - 254 =$

6. $23 \times 17 =$

7. Express the median of 28, 21, 10 and 32 as a fraction.

8. 29 quarters minus 8 dimes = $—

9. $105^2 =$

10. Find the largest prime factor of 1633.

11. Express base 10 numeral 0.8 in base 5.

12. Express $33\frac{1}{3}\%$ as a repeating decimal.

13. The perimeter of a rectangle with area 30 and length 6 is

14. Find the remainder of $(92 - 29) \div 7$.

15. $43^2 - 23^2 =$

16. $96 \times 32 =$

17. If $\frac{5x}{11} = \frac{5}{11x}$, what is the smallest value for x?

18. The radius of a circle with circumference 11π is

19. $7^3 + 3^3 =$

20. $\sqrt{20499} =$

21. 16% of 24 is 64% of

22. $-29^2 =$

23. The sum of the supplement and the compliment of a 30° angle is —° .

24. 35 is two and one-third of what number?

25. $16 \times 142 =$

26. Express $\frac{21}{40}$ in a percent form ——

27. If $43_b = 39_{10}$, then $b =$ 9

28. $33\frac{1}{3} \times 96 =$

29. $353 \times 101 =$

30. $7\frac{5}{7} \times 483 =$

31. Write $\frac{5}{11} + \frac{11}{5}$ as a mixed number.

32. What is the remainder when $6\frac{1}{3} \times 9\frac{1}{3}$ is divided by 8 ?

33. Express 21_3 in base 5.

34. $7^2 + 24^2 =$

35. 69% of what number is 69?

36. The slope of the line $\frac{1}{4}y = 256x + 17$ is

37. The sum of the roots of the quadratic equation $x^2 + 6x - 9 = 0$ is

38. Expand $(m-7)^2 =$

39. $72_9 - 54_9 =$ ——

40. $8^2 \times 2^4 =$

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Part II Problems 41–80

41. What is the sum of the number of faces, vertices and edges in a cube?

42. One-third of a 30-student class is absent today. One-half of the class were absent yesterday. At most how many students are absent in two consecutive days?

43. Compute: $(16+10)^2-(16-10)^2$.

44. Two of Mr. Smith's classes took the same test. His class of 24 students had an average score of 90. His other class of 36 students had an average of 80. What was the average score for all 60 students?

45. The radius of a circle is increased by 300%. By what percent is the area of the circle increased?

46. Compute $(17-\sqrt{17^2-8^2})^{10}$.

47. What is the least common multiple of 21, 28 and 56?

48. In any given year, the dates (represented as month/day) 4/4, 6/6, 8/8, 10/10 and 12/12 all fall on the same day of the week. April 3, 2015 is a Friday. What day of the week is December 15, 2015?

49. Taylor wants to buy cases to hold her 437 compact discs. Each case holds less than 20 discs. At least how many cases does she need to buy?

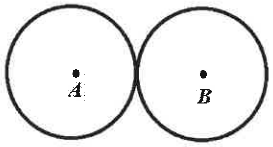
50. A board whose length is 144 inches is cut into three pieces in the ratio 3:4:5. What is the number of inches in the length of the longest piece?

51. How many integers can be represented as a difference of two distinct members of the set {1, 2, 3, 4}?

52. At what time is the sum of the digits which represent the hours and minutes on a 12-hour digital watch the greatest?

53. What is the sum of the coordinates of the midpoint of the segment with endpoints (5, 12) and (–7, –2)?

54. A penny *A* is rolling around a second penny *B* without slipping until it returns to its starting point. How many revolutions does *penny A* make?



55. What is the sum of all the prime numbers less than 50?

56. Eighteen is 60% of what number?

57. Mike has 88 cents with seven coins. He has no any half-dollars. Find the number of dimes Mike has.

58. What is the number of square units in the area of a triangle whose sides are 9, 40 and 41 units?

59. The point A(–8, 5) is reflected across the *x*-axis onto point B. Point B is reflected over the y-axis onto point C. What is the sum of the coordinates of point C?

60. If $x = 5$ and $y = 4$, then what is the value of $\dfrac{5x^2 - 4y^2}{61}$

61. What is the value of $512 \times 256 \times 128 \times 64 \times \frac{1}{2} \times \frac{1}{4} \times \frac{1}{8} \times \frac{1}{16} \times \frac{1}{32} \times \frac{1}{1024}$?

62. Set A has 26 elements and set B has 47 elements. The union of sets A and B has 53 elements. How many elements are in the intersection of sets A and B?

63. John drove at an average rate of 48 miles per hour. How many minutes did it take for him to drive 68 miles?

64. For what value of n does $\frac{\sqrt{3}\times\sqrt[3]{3^5}}{3^3} = 3^n$? Express your answer as a common fraction.

65. What part of 10 hours is 10 seconds? Express your answer as a common fraction.

66. The cost of the daily school lunch increased from \$1.25 to \$1.95. What was the percent increase?

67. For class president, Tim received 45% of the votes, James received 40% of the votes and Anna received the remaining 78 votes. How many votes did Tim receive?

68. Compute: (4 + 14 + 24 + 34) + (96 + 86 + 76 + 66).

69. The average of nine consecutive integers is 23. What is the sum of the least and greatest of these integers?

70. If the sides of a triangle are quadrupled, then the new area is what percent of the original area?

71. Ervin made 32.5% of the shots he took during his basketball game. If he took exactly 40 shots during the game, how many shots did he make?

72. The numbers 1 through 990, inclusive, are printed on a piece of paper. How many digits are printed on the paper?

73. How many pairs of prime numbers have a sum of 48?

74. What is the sum of the first 60 positive odd integers?

75. What is the greatest real number that is at least as large as its square minus 6?

76. If the 7^{th} day of the month is on a Tuesday, o what day is the 25^{th} day?

77. It is now 9:45. What time will it be 2 hours 15 minutes?

78. If $2^{2016} - 2^{2015} = 2^x$, what is the value of x ?

79. Calculate: $\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\frac{1}{16}+\frac{1}{32}+\frac{1}{64}$.

80. How many times in a 24 hour period do the hour and minute hands of a clock form a right angle?