4th Grade Competition

Bergen County Academies Math Competition
21 October 2007

1. A student has to compile 250 questions for a math competition. She asked each student on the math team to write 1 question. If there are 125 students on the team, not including herself, how many extra questions does she have to produce?

2. $2 + 0 - 0 + 7 =?$

3. How many \$0.30 packs of gum can I purchase with \$3.00?

4. Tom, Dick, and Harry have 100 marbles. Tom has as many marbles as Dick. Harry has 40 marbles. How many marbles does Dick have?

5. A clock chimes once at 1:00, twice at 2:00, three times at 3:00, and so on. Starting at 12:30, how many times will the clock chime in 6 hours?

6. Scott bought a record collection for \$10, sold it for \$15, bought it back for \$20, and finally sold it for \$25. How much money did Scott make or lose?

7. The physical education department tells Veena during sophomore year that she is 5'2" tall. In junior year she is told that she is 62.25" tall. By how many inches did Veena grow?

8. The Bergen County Academies' field measures 13 meters by 17 meters. What is the total area?

9. Evaluate the following: $429863 + 228987 + 536741$

10. Rachel likes to collect gemstones. Her favorite gems are peridots. Out of her 147 gems, 74 are peridots. How many gems does she have that are not peridots?

11. Mark writes three math questions Monday, five math questions on Tuesday, seven Math questions on Wednesday, and so on. How many questions will he have written, in total, at the end of Sunday?

12. If Jordan eats three pieces of candy every two days and Elen eats four pieces of candy every three days, how many pieces of candy will both of them have eaten in twelve days?

13. Hyesoo accidentally subtracted 5 instead of dividing by 5 on a math problem. Her answer was 15. What should her answer have been?

14. How many hours are there in $3\frac{1}{4}$ days?

15. Sylvia has 5 apples and 3 bananas. Each apple costs a dollar and each banana costs a half dollar. How many *cents* did she spend to buy all of them?

16. Every time Ethan enters Mr. Holbrook's room, he drinks three cans of soda. If Ethan enters Mr. Holbrook's room three times a day, how many cans of soda will he have had after five days?

17. What is the perimeter of a square of area 16?

18. What is the area of a triangle with base 7 and height 4?

19. Find the sum of the numbers from 1 to 15 inclusive.

20. Sang has to collect and dry wildflowers for his biology project. He finds 8 each time he goes out, but the first 3 always rot before he can get home to dry them. How many times does he have to go out to get the minimum requirement of 25?

21. It takes 20 of Beowulf's men to beat a dragon in battle. If Beowulf has 170 men, how many dragons could they beat in battle?

22. In the ARML song contest, Ben and Joe wanted to sing a duet. However, their timing was terrible: Ben sang at 60 beats per minute and Joe sang at 80 beats per minute. If they sang their notes on the first beat together, how many beats will they be apart at the end of the song, 2 minutes and 45 seconds later?

23. How many integers equal their own squares?

24. Before the big organic chemistry test, the last of 6 in the year, Arthur realizes that he needs an 88 to get a 93 average. What is his average so far?

25. An adult working alone requires three hours to do a certain job. A child working alone requires six hours to do the same job. How many hours will it take the adult and child, working together, to do this job?

26. At the Bergen County Academies, a *club* consists of 10 students. A subcommittee must be formed by choosing 3 students from this club. How many possible subcommittees can be formed?

27. At age 8, Christine decided to start saving money from her allowance. She saved \$2 a month the first year, \$3 a month the second year, \$4 a month the third year, etc. She turned 18 today. How much money has Christine saved so far?

28. What is the number halfway between $\frac{1}{11}$ and $\frac{1}{7}$?

29. Kevin, Watson, Robert, and Ricky are all standing in a line. Robert is standing somewhere between Kevin and Watson. Ricky is standing immediately to the right of Watson, but is not standing next to Robert. Who is standing next to the person all the way on the right?

30. Robert has two watches, one which loses 6 seconds every 24 hours and one which gains 1 second per hour. He sets both of them to the correct time at 6 : 00 p.m. How many hours will pass before the difference between the time shown on both watches is 1 minute?

31. When a number is divided by 16, the remainder is 5. What is the remainder when the same number is divided by 4?

32. Find the largest factor of $111,111$ less than $111,111$.

33. Two passenger trains traveling in opposite directions meet and pass each other. Each train is 1/24 miles long and is traveling at 50 miles per hour. How many seconds after the front parts of the trains meet will their rear parts pass each other?

34. The chickens, ducks and pigs in Farmer Lee's barn have the same number of heads and have a total of 72 legs. How many pigs are in the barn?

35. A rectangle is 12 m wide and 5 m long. If the width is reduced by 10% and the length is increased by 20%, what is the percentage change in the area (from old to new)?

36. Find the sum of the counting numbers from 1 to 25 inclusive.

37. If the sum of 5 even numbers in a row is 320, what is the smallest of the five even numbers?

38. Let $x = 99887766554433221100$. Find the remainder when x is divided by 9.

39. Edward's Bike Shop has a total of 32 bicycles and tricycles for rent. He checks all 74 wheels at the beginning of the season. How many tricycles does Edward have?

40. The residents of Pinnatug greet each other by tugging each other's ears simultaneously. At a gathering, a total of 136 pairs of tugs took place. If each person tugged every other person's ear exactly once, how many residents attended?

41. How many factors does the number 3300 have?

42. The mean of a set of 5 numbers is 32. The number 132 is removed from the set. By how much is the mean reduced?

43. The biology flower picking project is over, and the students get their grades. Their teacher gives 4 points for a correct flower identification and -2 points [takes 2 points off] for an incorrect one. If Sang collected 25 flowers and has a grade of 70, how many flowers did he correctly identify?

44. Sandhya numbers the pages in her 3-subject notebook from 1 to 132. How many 1's did she use in the page numbers?

45. David borrowed 3/5 of Mark's money and spent 3/5 of it on music. He then returned the remaining money to Mark, which was 48 dollars less than the amount Mark had after lending him the money. How many dollars did Mark have originally?

46. What is the smallest integer that $864,000$ must be multiplied by to get 6 terminating zeros?

47. Sherry packed 480 math books in boxes so that the number of boxes was 16 less than twice the number of math books in each box. How many boxes did Sherry use?

48. When Ben has a "sharpie battle," he has a 1/3 chance of poking his opponent's arm and a 1/5 chance of poking their neck (neither affects the other). When he faces Yoonjoo, he gets three chances to poke her. What is the probability that he pokes her arm, her neck, and her arm again in that order?

49. Andy flips a coin 7 times. What is the probability that all 7 flips are heads?

50. $\log_2 32 = ?$