

**TEXAS A&M UNIVERSITY
DEPARTMENT OF MATHEMATICS
MATH FAIR CONTEST
GRADES 5-7**

APRIL 22, 2012

Problem 1. Calculate $\frac{3}{4} - \frac{1}{2} \times \frac{3}{5}$. (Give the answer as a fraction in reduced form.)

Problem 2. What is the decimal representation of $\frac{11}{13}$, rounded to two decimal places?

Problem 3. What is the greatest common divisor of 48 and 80?

Problem 4. Calculate the value of the expression $2(a - b) + c$, if $a = 3$, $b = -2$, $c = -4$.

Problem 5. The school gym needs to have 3 basketballs for every 80 students in the school. If the school has 560 students and it already has 10 basketballs, how many basketballs are still needed?

Problem 6. Start with 10. Then add 3, subtract 4, add 5, subtract 6, add 7, subtract 8, and keep adding and subtracting in this fashion until you add 97 and subtract 98. What is the number you obtained?

Problem 7. The floor in a room that is 10 feet long and 15 feet wide needs to be covered with tiles. If the size of the tiles is 6 by 6 inches, how many tiles are needed for the job?

Problem 8. How many prime numbers are there between 30 and 50?

Problem 9. A certain item used to cost 1000 dollars. Its price was then increased by 10 percent, then later reduced by 10 percent and then increased by 10 percent again. What is its current price?

Problem 10. What is the largest possible number of rectangular cards of size 3 cm by 5 cm that can be cut out of a rectangular piece of paper of size 15 cm by 7 cm?

Problem 11. I had some number of marbles. I counted them and I gave half of them to my sister. The next day I lost one. On the third day I counted them again and I gave half of what I had to my brother. Now I have 7 marbles. How many did I have to begin with?

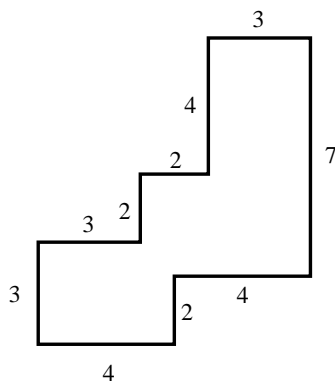
Problem 12. Farmer Joe has some number of pigs and some number of chickens. He counted one day that the pigs and the chickens together have 30 legs and 18 wings. How many pigs does farmer Joe have?

Problem 13. Jane wrote all numbers from 1 to 1000 on the board. How many times did she use the digit 1?

Problem 14. There are 5 blue, 4 green and 3 red balls in a jar. Susan randomly takes three balls, one by one, out of the jar (she does not return the balls once she takes them out). What is the chance (probability) that the first two balls are blue, but the third one is not? (You can leave the answer as a product of fractions).

Problem 15. The numbers 1,2,3,4,5,6,7,8,9 are written, in some order, in three rows, three numbers in each row. Bill noticed that the sum of the numbers in each row was the same. If the first two numbers in the first row are 8 and 1 what is the third number in that row?

Problem 16. What is the area of the following figure (the length of each side is indicated with a number)?



Problem 17. In a certain month, there were three Sundays on even dates (the day of the month was even). What day (Monday, Tuesday, ...) was the 15th day of that month?

Problem 18. One day John said “two days ago I was 8 years old, and next year I will be 11”. When is John’s birthday (what date)?

Problem 19. I have several stickers and my sister has some of her own. If I gave her one of my stickers she would have the same number of stickers as me. But if she gave me two of hers, I would have three times as many as she has. How many stickers do I have?

Problem 20. Bob wanted to buy three video games A , B and C . However, he realized that he only had enough money for two. The total price without Game A was 84 dollars, without Game B was 74 dollars and without Game C was 70 dollars. What is the cost of Game B ?