

2011 Thanksgiving Math Tournament

November 26, 2011

Names: _____

Grade: _____

1. Evaluate: $12\overline{)156}$
2. What value(s) of b satisfy $6b - 5 = 37$?
3. How many vertices does a cube have?
4. How many positive integers are factors of 40?
5. If $d(f) = 4f + f^2$, evaluate $d(3)$.
6. What is the perimeter, in meters, of a regular octagon with sides measuring 23 m?
7. In how many distinguishable ways can the letters in the word "MOMMY" be arranged?
8. Evaluate: 3^5
9. What is the length, in meters, of the hypotenuse of a right triangle with legs measuring 5 m and 12 m?
10. What is the sum of the positive integers from 1 to 50 inclusive?
11. What is the area, in square meters, of a circle inscribed in a square with sides measuring 24 m?
12. What is the area, in square meters, of a rectangle with sides measuring 15 m and 9 m?
13. What is the mode of the data set $\{1, 3, 5, 1, 7, 5, 2, 7, 5, 6, 3, 5, 7\}$?
14. What is the sum of twenty-four and thirty-seven?
15. When the special number is decreased by 15 and this result is divided by four, the final result is 31. What is the special number?
16. What is the measure of an angle complementary to a 52° angle?
17. How many of these numbers are divisible by two? 12, 21, 35, 49, 57, 63, 79, 88, 96
18. If Iris drives at a rate of 30 miles per hour for one hour and a speed of 60 miles per hour for two hours, what is her average speed in miles per hour?

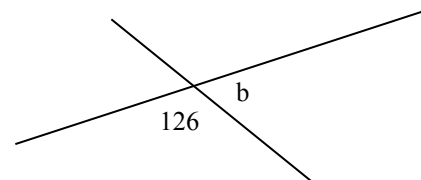
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19. How many diagonals can be drawn in a regular hexagon?
20. A bag of marbles contains nine red marbles, seven white marbles, and two blue marbles. When a single marble is drawn, what is the probability that the marble is not red?

21. Evaluate: $\frac{3}{4} \times \frac{14}{27}$

22. Simplify by combining like terms: $4d + 8 - d + 3d^2 + 7 - d^2 + 6d - 1$



23. In the figure to the right, all angle measures are given in degrees. What is the value of b ?
24. A recursive sequence is defined by $f_1 = 6$ and $f_n = f_{n-1}^2 - 29$ for $n > 1$. What is the value of f_3 ?
25. When a positive two-digit integer is reversed to produce a new positive two-digit integer, the result is 45 less than the original number. What is the second-largest possible value of the original number?
26. What is the perimeter, in meters, of an isosceles triangle with sides measuring 9 m and 4 m?
27. In the subtraction problem to the right, each instance of a given letter represents a particular digit, and different letters represent different digits (e.g. if one A is a 9, all of the A's are 9's and B cannot be 9). What is the smallest possible value of the four-digit number ABCD?
28. If three processors can perform 48 million operations per second, how many seconds would it take one processor to perform 24 million operations?
29. What are the coordinates, in the form (x, y) , of the point of reflection of the point $(-9, 4)$ across the line $y = -1$?
30. A sheep is tethered to an external corner of a square barn. If the barn measures 20 m on each side and the sheep is tethered with a 40 m rope, what is the total area, in square meters, of the area the sheep can graze? (Hint: Draw a picture to help you).

ABC

-DB

DD