Name: _____
School: _____

1. _____ What is the sum of the following series: $13 + 14 + 15 + \ldots + 36 + 37$?

2. _____ What is $23 \cdot 27$?

3. _____ Find the abscissa of the minimum value of the equation: $x^2 + 4x - 6$.

4. _____ $f'(3)$ if $f(x) = 3x^2 + 4x + 12$

5. _____ What is the sum of the area and perimeter of a rectangle with side lengths 4 and 20?

6. _____ What is the remainder when 673 is divided by 13?

7. _____ What is the sum of the squares of the roots of $2x^2 - 4x + 9$?

8. _____ How many diagonals does a decagon have?

9. _____ What is the sum of the interior angles of a nonagon?

10. _____ If $\sin(\theta) = \dfrac{5}{13}$ then what is $\cos(\theta)$?

11. _____ What is $\cos(60°)$?

12. _____ What is the eccentricity of the following conic: $(x - 4)^2 + (y + 3)^2 = 1$

13. _____ Roehl bought a friendship bracelet, but then realized he doesn't have any friends. The bracelet has 6 different charms. How many different ways can Roehl arrange the charms around the bracelet?

14. _____ Meit is going to eat dinner at Taco Smell, and plans to get three different entrees. If Taco Smell offers eight different entrees, how many different combinations of entrees can Meit order?

15. _____ What is the slope of a line perpendicular to the following line: $3x + 5y = 17$

16. _____ Shardul forgot to turn in his Mental Math test. It was due on July 9th, which happened to be a Wednesday. If he finally turned it in on August 8th, which day of the week was it?

17. _____ $\sqrt{(12 + 6 \cdot (17 + 35))}$

18. _____ Find the sum of all values of θ on the interval $0 \le \theta \le 2\pi$ that satisfy $|\sin(\theta)| = \dfrac{1}{2}$.

19. _____ What is the area of a triangle with side lengths 5, 6, and 7?

20. _____ $332 + 643 + 221$

21. _____ What is the volume of a sphere with a radius of 7?

22. _____ What is 15% of 20% of 3% of 50,000?

23. _____ Kyle plays 7 hours of League of Legends each day. How many minutes of League of Legends does he play in the month of April, if he plays every day, except for on April Fools?

24. _____ A right triangle with legs 9 and 40 is inscribed in a circle. What is the area of the circle?

25. _____ What is the surface area of a right cone with a height of 8, and a radius of 4?

26. _____ If Roehl randomly selects a card from a standard deck of cards (no jokers), what is the probability that he will select a 4?

27. _____ What are the roots of the following quadratic: $x^2 - 28x + 132$

28. _____ Jasmine is going to paint the outside of her house pink. Each bucket of paint costs 7 dollars, and will cover 10 square feet. Her house is a perfect cube with a square pyramid on top. The square pyramid completely covers the top of the cube, with no overhang. If the side length of the cube is 4 yards, and the height of the square pyramid is 8 feet, how much money will she have to spend in order to fully paint her house? Assume she doesn't paint the bottom of her house, and that she cant buy a fraction of a bucket of paint. Give your answer in dollars.

29. _____ What is the determinant of the following matrix: $\begin{bmatrix} 1 & 7 \\ 3 & 8 \end{bmatrix}$

30. _____ What is $\log_4 128 + \log_8 16$?

31. _____ $(6!)^2$

32. _____ $(17)^3$

33. _____ Rida went grocery shopping for some fruits. She bought 10 apples, 7 bananas, and 16 peaches. If an apple costs 30 cents, a banana costs 25 cents, and a peach costs 15 cents, then how much money did Rida spend? Give your answer in dollars.

34. _____ If $a\&b = a^b - b$, then what is $47\&2$?

35. _____ If one mole of a substance is equal go 6×10^{23} atoms of that substance, how many atoms of oxygen are present in 8×10^{-18} moles of oxygen? Give your answer in scientific notation.

36. _____ How many distinct arrangements of the word WENXIN are there?

37. _____ What is the 15th prime number?

38. _____ What is the 10th triangular number?

39. _____ How many asymptotes does the following function have: $\dfrac{(4x^2 + 5x + 6)}{(x^2 + 13x + 42)}$.

40. _____ What is the mean of the median, range, and mode of the following data set: {1,3,2,1,3,2,1,3,2,1,2,2,2,3,3,1,1,2,2,1,2,3}