1. Compute $2 \cdot 17 \cdot 59$.

2. If six tics equal eight tacs and two tacs equal three toes, then how many toes are in twenty-one tics?

3. Kevin is paid \$5.00 to start playing *Mario Party 7*. Moreover, he receives \$7.00 for each hour he plays. Kevin played five hours on Saturday. How many dollars did he receive?

4. A certain triangle has sides with lengths 3 inches, 4 inches, and 5 inches. How many square inches are in its area?

5. Compute:

$$1+2+4+8+16+32+64+128+256+512+1024+2048.$$

6. Eight years ago, Judy's age was double Mary's age. In two years, Mary will be the same age Judy is currently. What is Judy's age, in years?

7. A bank has ten \$10 bills, ten \$5 bills, and ten \$1 bills. If Kausteya must withdraw five of a certain type of bill, four of another, and three of the final, what is the maximum amount of money, in dollars, he can withdraw?

8. Daniel needs to make a triangular pen for his pigs. He has fences of length 8 feet and 15 feet, but need to purchase fencing for the third side of the pen. If fencing costs \$3 per foot and can only be purchased by the foot, what is the least amount, in dollars, that Daniel needs to spend?

9. $26\frac{2}{3}\%$ can be written in the form $\frac{a}{b}$, where a and b are relatively prime positive integers. What is $a + b$?

10. Let $x \otimes y = (x+y)(x-y)$. What is $3 \otimes (2 \otimes 1)$?

11. Suppose equilateral triangle $\triangle ABC$ has all sides length 20. Inscribe a circle within $\triangle ABC$ and then inscribe equilateral triangle $\triangle DEF$ in this circle. What is the area of $\triangle DEF$?

12. What is the remainder when $2^{2006} + 0^{2006} + 0^{2006} + 6^{2006}$ is divided by 10?

13. Suppose, for some integer n,

$$1(1!) + 2(2!) + 3(3!) + 4(4!) + 5(5!) = n! - 1.$$

What is the value of n?

14. What is the distance between (–4, –20) and (5, 20)?

15. Compute:
$(3367 \cdot 2)+(3367 \cdot 4)+(3367 \cdot 6)+(3367 \cdot 8)+(3367 \cdot 10)+(3367 \cdot 12)$.

16. What is the slope of the line perpendicular to the line with (3, 4) and crossing the *y*-axis at $y = 3$?

17. If $f^{1}(x)=x+1$, and $f^{n}(x)=f\left(f^{n-1}(x)\right)$, for what value of x will $f^{2006}(x)=0$?

18. If x is a digit such that $12345x6$ is divisible by 18, determine x.

19. Nan takes a random number and divides it by 5. He then adds 2 to the result and divides by 5 again. He then subtracts 1 from this result to get the smallest positive integer. What is Nan's random number?

20. A rectangular prism has surface area 216. What is the maximum volume it can have?

21. Suppose the local ice cream store has an infinite supply of chocolate, vanilla, and strawberry ice cream. If the order of scoops does not matter, in how many ways can Omar get a bowl of ice cream with 15 scoops at the local ice cream store if he must have at least 3 chocolate scoops, at least 2 vanilla scoops, and at least 5 strawberry scoops?

22. Suppose a regular polygon has the property that the total number of sides of the polygon exceeds the measure of each of its interior angles, in degrees, by 2. How many sides does this polygon have?

23. Determine C so that there are infinite ordered pairs (x, y) that satisfy both of the following equations:

$$Cx + 2y = 6,$$

$$12x + 3y = 9.$$

24. Suppose the average of 8 numbers is 4 and the average of 4 other numbers is 10. What is the average of the 12 numbers?

25. A positive two digit number AB has all nonzero digits. A new number , BA is formed by reversing the digits of AB. If $BA - AB = 54$, find the sum of all possible values of AB.

26. If $2x - 3$, $3x - 3$, $x + 3$ are three consecutive terms of an arithmetic progression, what is the value of x?

27. If $f(x) = x^2 - bx + 21$, and $f(3) = 0$, then what is the value of b?

28. Rahul rolls two fair six-sided dice. If the probability the sum of the dice is greater than 6 can be expressed in the form $\frac{p}{q}$ where p and q are two distinct positive relatively prime integers, what is $p + q$?

29. Let S be the answer to this problem. What is the numerical value of $2S - 3$?

30. Let r_1, r_2, r_3, r_4 be distinct solutions to $x^4 - 6x^2 + 8 = 0$. Compute $(r_1 + 1)(r_2 + 1)(r_3 + 1)(r_4 + 1)$.

1. How many three digit integers have at least one digit even? ____________________

2. Find the sum of all digits which can be the last digit of a perfect cube. ____________________

3. If a prism has 20 vertices, how many rectangular faces does it have? ____________________

4. Gilbert is throwing darts at a dartboard with two different regions. One region gives 9 points and the other gives 13. Gilbert begins with 0 points and at any point, he may choose to reset his score to 0. If Gilbert has all the time in the world, what is the highest score he cannot obtain? ____________________

5. Solve for x: $\sqrt{34+3\sqrt{4+4\sqrt{x+1}}}=7$. ____________________

6. What is the area of an isosceles triangle with sides 25, 25, and 14? ____________________

7. Let ABCD be a square with side length 4. Let S be the set of points P inside the square such that $\angle APB$ is obtuse. What is the area of S?

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8. If $A = 1 + \cfrac{1}{1 + \cfrac{1}{1 + \dots}}$, then what is the value of $A - \frac{1}{A}$?

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