Name: _____
School: _____

1. _____ 2436+7664
2. _____ Find 20% of 15% of 320, expressed as an improper fraction.
3. _____ Find the volume of a regular hexahedron with side length of 6.
4. _____ Solve $\left|\frac{4x+1}{x-2}\right| \leq 1$
5. _____ Josh and Nihar like building sand castles. Individually, Josh needs 12 minutes to build a sand castle while Nihar needs 8 minutes. If they work together, how many minutes will it take them to build 5 sand castles?
6. _____ Find the ones digit of $484^{222}$
7. _____ Find the area of the polygon defined by the points (1,−1), (3,2), (0,2), (4,0), and (0,0).
8. _____ Solve for $x$: $log_4 x + log_4 x - 6 = 2$
9. _____ Find the angle formed by the minute and hour hand of a clock at 6:11.
10. _____ Find the number of terms in the simplified expansion of $(c+h+e+n)^6$
11. _____ $F(x) = 2x^3 - 4x^2 - 3x + 7$. Let the roots of $F(x)$ be $s$, $r$, and $i$. Find $s^3 + r^3 + i^3$. (Hint: Use Newtons Sums)
12. _____ If June 29th, 2017 was a Thursday, what day of the week was September 19th?
13. _____ The point $P$ (3,2) is rotated counterclockwise $\frac{\pi}{3}$ radians in the cartesian coordinate plane to the point $Q$. $Q$ can be written as $(x, y)$. Find $x + y$.
14. _____ Find the product of the non-real roots of the cubic root(s) of 1.
15. _____ Rida learned to drive! She is driving along Jim Lee Road which is defined by $x + 2y = -4$. Rayyan is at the point (2, 2). What is the shortest distance that Rayyan has to walk in order to reach Jim Lee Road?
16. _____ Cherry wants to buy a tobe. Find the number of distinct arrangements for the word FREETOBE.
17. _____ Let $M = \begin{bmatrix} 3 & 0 & 6 \\ 15 & -3 & 3 \\ 0 & 9 & -3 \end{bmatrix}$. Find $|M|$.
18. _____ The derivative of a function $f(x)$ can be described as $f'(x) = \lim_{\Delta x \to 0} \frac{f(x+\Delta x) - f(x)}{\Delta x}$. Find $f'(2)$ given that $f(x) = 3x^3 + 7x - 8$.
19. _____ Find the 7th term in the sequece: −11, 1, 3, 13, 41 ...
20. _____ Now that Jasmine is almost done writing this test she can watch all 208 episodes of How I Met Your Mother. Assuming that each episode is 22 minutes long and she watches nonstop, what is the minimum number of hours she needs to finish the entire series?