

Name: _____

School: _____

1. _____ Find the geometric mean of the data set: $\{10, 8, 36\}$.
2. _____ What does $x^2 + y^2 - 8x + 2y + 17 = 0$ represent?
3. _____ Charlotte is walking on a nature trail. There is a 13.2% chance of rain and a $\frac{1}{11}$ chance of hail. What is the probability of Charlotte encountering both rain and hail during her walk?
4. _____ Jenny likes to eat birthday cakes. Evaluate $7 + 2^6 - 5 + (4^2 - 8)$.
5. _____ A triangle has sides 5 and 7. If the included angle is 60° , what is the length of the third side?
6. _____ What is the value of x when $0.2\overline{74} = \frac{x}{495}$?
7. _____ Find $a_1 + a_3 + a_5$ if a_1, a_2, a_3, \dots is a geometric sequence with common ratio 7 and $a_1 + a_5 = 4804$.
8. _____ Evaluate $\sum_{n=0}^3 \left(\frac{2}{3}\right)^n$.
9. _____ Which is larger, $\sqrt{8} + \sqrt{145}$ or $\sqrt{10} + \sqrt{143}$?
10. _____ What is the last digit of 224^{335} ?
11. _____ What is n if $\binom{6}{2} = \binom{4}{3} \times n$?
12. _____ $A = \begin{bmatrix} 5 & -1 \\ 4 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 \\ 2 & 0 \end{bmatrix}$. What is AB ?
13. _____ $\langle 2, 8, 6 \rangle \times \langle -1, 5, 7 \rangle = ?$
14. _____ $4^{\log_2 6} = ?$
15. _____ What is the sum of the first 6 positive cubes?
16. _____ What is the area of the triangle defined by the points $(1,7)$, $(2,2)$, and $(5, 1)$?
17. _____ How many zeroes does $99!$ end in?
18. _____ What are the roots of $2x^3 - 7x^2 + 7x - 2 = 0$?
19. _____ $\text{GCD}(344, 387) =$
20. _____ Rationalize $\frac{\sqrt{2} + 1}{\sqrt{5} - 1}$.
21. _____ Find the volume of a sphere with surface area 200π .
22. _____ Let $\frac{2 + 3i}{4 - i} = a + bi$. What is the value of $a + b$?
23. _____ Let $f(x) = \frac{1}{x + 1}$. Find $f^4(1)$.
24. _____ How many diagonals does an octagon have?
25. _____ 21% of a number is equal to 19. What is the number to the nearest tenth?