

8 minutes

- \_\_\_\_\_ 1.  $5 + \frac{5}{3} + \frac{5}{9} + \frac{5}{27} + \dots =$
- \_\_\_\_\_ 2.  $14+67+29+30+58$
- \_\_\_\_\_ 3. Find the inradius of a 6,8,10 triangle
- \_\_\_\_\_ 4.  $95^2 =$
- \_\_\_\_\_ 5. How many distinct arrangements are there of the word SEMEMES?
- \_\_\_\_\_ 6. *47% of 63 is what percent of 141?*
- \_\_\_\_\_ 7.  $1^2 + 2^2 + 3^2 + 4^2 + 5^2 + 6^2 =$
- \_\_\_\_\_ 8.  $i^{i^3} - i^4 + i^{i^3}$
- \_\_\_\_\_ 9.  $32 \times 31 = ?$
- \_\_\_\_\_ 10. *What is the distance between  $(-2, -5)$  and  $(3, 7)$ ?*
- \_\_\_\_\_ 11. What is the ratio of the surface areas of two similar spheres is the ratio of their volumes is 343:64?
- \_\_\_\_\_ 12. What is the slope of the line perpendicular to the line passing through  $(-7, 9)$  and  $(11, 36)$ ?
- \_\_\_\_\_ 13. If  $a * b = \frac{a+b}{4}$  find  $(29 * 7) * 9$
- \_\_\_\_\_ 14. *If  $2x - 4y = 12$ ,  $-5x + 3z = -2$ , and  $y - 6z = 17$ , What does  $x + y + z = ?$*
- \_\_\_\_\_ 15. *What is the sum of the interior angles of a nonagon ?*
- \_\_\_\_\_ 16. If A and B are independent, and  $P(A)=.4$  and  $P(B)=.2$ , what is  $P(A^c \cap B^c)$ ?
- \_\_\_\_\_ 17. Express as a fraction: .0717171....
- \_\_\_\_\_ 18. The simplified form of  $\sqrt[4]{1620}$
- \_\_\_\_\_ 19. Remainder when  $3x^3 - x^2 + 2$  is divided by  $(x + 2)$

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- \_\_\_\_\_ 20. *What is the sum of the roots of  $x^5 - 4x^3 + 2x + 12$*
- \_\_\_\_\_ 21. *What is  $\sin 45^\circ + \cos 45^\circ + \tan 45^\circ + \csc 45^\circ + \sec 45^\circ + \cot 45^\circ$*
- \_\_\_\_\_ 22. Five fair coins are tossed simultaneously. What is the probability that 3 of them land on tails?
- \_\_\_\_\_ 23. Diameter length so that the surface area and volume of a sphere are equal
- \_\_\_\_\_ 24.  $8^{3x} = 4^{2x+5}$
- \_\_\_\_\_ 25. Solve for x:  $2[(x - 2)^2 + 5] = 82$
- \_\_\_\_\_ 26. The number of terms in the expansion of  $(a + b + c)^{14}$
- \_\_\_\_\_ 27.  $e^{i\pi} = ?$
- \_\_\_\_\_ 28.  $404^2 - 396^2 =$
- \_\_\_\_\_ 29. The angles in a quadrilateral have values of  $4x$ ,  $8x$ ,  $7x$ , and  $17x$ . What is the second smallest angle?
- \_\_\_\_\_ 30.  $\frac{x! - 4!}{5!} = ?$
- \_\_\_\_\_ 31. *A polygon has 90 diagonals. How many sides does it have?*
- \_\_\_\_\_ 32. *What is the units digit of  $4^5 + 3^2 + 5^1 + 7^3$ ?*
- \_\_\_\_\_ 33. *What is the 15th term of an arithmetic sequence that starts 5, 2, -1, ...*
- \_\_\_\_\_ 34.  $2015_7 = ?_{10}$
- \_\_\_\_\_ 35. *What is the area of a regular hexagon with side length of 4?*
- \_\_\_\_\_ 36. *What is the expected value of a 6-sided die with side lengths 3, 5, 4, 2, 6, 4?*
- \_\_\_\_\_ 37. *If the coordinate of the vertex of  $y = x^2 - 6x + 12$  is  $(x, y)$ , what is  $x^x$ ?*

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- \_\_\_\_\_ 38. What is the volume of the largest sphere that can  
find into a cube with side length 3?
- \_\_\_\_\_ 39.  $\log_4(243) \times \log_2(256)$ ?
- \_\_\_\_\_ 40.  $\lim_{x \rightarrow 0^+} x^x = ?$