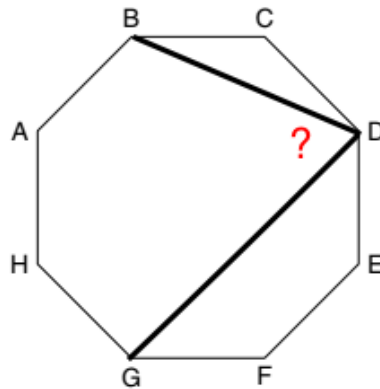


Magic Math Contest**PLEASE DO NOT PUT UNITS IN ANSWER**

1. _____ Evaluate $20 \cdot 9 + 20 \cdot 11$.
2. _____ How many sides does a square, hexagon, triangle, and octagon have combined?
3. _____ What is the sum of all odd numbers between 6 and 14?
4. _____ A right triangle has a leg of length 7 and hypotenuse of 25. What is the length of the third side?
5. _____ Bob walked at a rate of 4 mph for 30 minutes and then 3 mph for 20 minutes. How many miles did he walk in total?
6. _____ How many positive integers divide 72?
7. _____ What is the remainder when $12 \cdot 11 \cdot 9$ is divided by 10?
8. _____ What is the smallest prime number greater than 200?
9. _____ how many diagonals does a heptagon have?
10. _____ What is $66\frac{2}{3}\%$ of 99?
11. _____ What is the sum of the digits of 1111^2
12. _____ How many proper subsets (non-empty subsets) are there of the set $[1, 2, 3, 4, 5]$. A subset of a set is any combination of the numbers. Examples would be $[1, 3, 5]$ or $[1, 2, 3, 4]$. Remember the order of the numbers does not matter.
13. _____ Evaluate $a^3 + 3a^2b + 3ab^2 + b^3$ if a is 7 and b is 3.
14. _____ 2 dice are rolled. What is the probability that the sum of the dice is 7? Answer as a common fraction in simplest form.
15. _____ Bob and John are working on mowing a lawn. Bob can mow the lawn alone in 60 minutes. John can mow it in 30 minutes. How long will it take them to mow the lawn if they work together?

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16. _____ The side lengths of a square are increased by 2. If the area increases by 40, what is the new side length of the square?
17. _____ The triangle $\triangle ABC$ has angle bisector \overline{AD} . \overline{BD} is 10 and \overline{CD} is 8. If the perimeter of the triangle is 72, What is $\overline{AB} - \overline{AC}$?
18. _____ Simplify $\frac{9^3 4^{55}}{3^3 2^8}$
19. _____ The image below shows a regular octagon ABCDEFGH. What is the measure of angle $\angle BDG$? Express your answer as a decimal to the nearest tenth.



20. _____ From a deck of 52 cards (standard 4 suits with 13 unique cards each) 2 cards are dealt. What is the probability the second card has the same number as the first card if they both are the same color (red or black)?

PLEASE DO NOT PUT UNITS IN ANSWER**Bonus Problems**

21. _____ A equilateral triangle with side length 6 is inscribed in a circle. What is the area of the circle. Don't write π in your answer. So if the answer was 17π , just answer 17.
22. _____ What is the area of a triangle with side lengths of 17, 25, and 26?