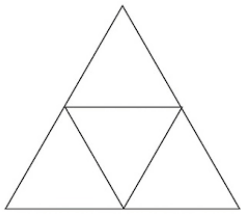


1. How many different digits could replace the symbol “ $\otimes$ ” to make this sentence $473 \leq 47\otimes$ correct? A. 7      B. 6      C. 5      D. 4      E. 3
2. What is the value of $12 - 4 \times 0 + 16 \div 4$ ? A. 4      B. 6      C. 8      D. 12      E. 16
3. What is the biggest prime factor of 2019? A. 3      B. 9      C. 19      D. 673      E. 763
4. Express 1.23 as a percentage. A. 0.123%      B. 1.23%      C. 12.3%      D. 123%      E. 100.23%
5. What is $\frac{2}{5}$ of $\frac{15}{10}$ of 75 in lowest terms? A. $\frac{225}{50}$ B. 75      C. $\frac{15}{2}$ D. 48      E. 45
6. Convert into a mixed number: $2.0\overline{19}$ A. $2\frac{19}{990}$ B. $2\frac{19}{99}$ C. $2\frac{19}{33}$ D. $2\frac{19}{445}$ E. $\frac{19}{990}$
7. How many zeros will the result of this product have? $1 \times 2 \times 5 \times 4 \times 10 \times 5 \times 15$ A. 1      B. 2      C. 3      D. 4      E. 5
8. What is the numerical value of the sum in a simplest form $\frac{1}{1 \cdot 2} + \frac{1}{2 \cdot 3} + \frac{1}{3 \cdot 4}$ ? A. $\frac{1}{4}$ B. $\frac{3}{4}$ C. $\frac{1}{3}$ D. $\frac{1}{2}$ E. $\frac{5}{6}$
9. In the number 1295.823 the value of the place occupied by the digit 9 is how many times as great as the value of the place occupied by the digit 3? A. $\frac{1}{100}$ B. 100      C. 1000      D. 3000      E. 10000
10. Matt, Eliza and Lucia shared a sum of money in the ratio 2 : 5: 7. Express Matt’s share as a fraction of the total sum of money. A. $\frac{1}{7}$ B. $\frac{1}{6}$ C. $\frac{1}{5}$ D. $\frac{1}{4}$ E. $\frac{1}{2}$
11. What is the measure, in degrees, of the smaller angle between the minute and hour hand on a clock at 10:00 a.m.? A. $6^\circ$ B. $15^\circ$ C. $30^\circ$ D. $45^\circ$ E. $60^\circ$
12. If the ratio of two supplementary angles is eight-to-one, what is the mean of two angles? A. $20^\circ$ B. $50^\circ$ C. $80^\circ$ D. $90^\circ$ E. $160^\circ$
13. If $5/m = 3$ , what is the value of $m$ ? A. $\frac{5}{3}$ B. $\frac{3}{5}$ C. 3      D. 5      E. $1\frac{1}{5}$
14. Simplify $2019 + 2(20 - 17)^2$ A. 2021      B. 2046      C. 2027      D. 2028      E. 2037

15. What is the sum of all possible answers for this equation $ x - 5  = 8$ ? A. 3      B. 10      C. 13      D. 15      E. 26
16. Simplify: $-13 - (8 - 13) - (-7 - 11)$ A. -12      B. -8      C. 0      D. 10      E. 13
17. How many positive 2-digit integers contain exactly one 9? A. 10      B. 11      C. 15      D. 17      E. 18
18. The sum of three consecutive integers is 0. What is their median? A. -3      B. -1      C. 0      D. 1      E. 3
19. The area of an expanding square increased from $10 \text{ in}^2$ to $40 \text{ in}^2$ . By what percent did the side lengths increase? A. 100%      B. 200%      C. 250%      D. 300%      E. 400%
20. If $\frac{2}{3}$ of a cup of fish food can feed 8 goldfish, then how many goldfish can 4 cups of fish food feed? A. 12      B. 26      C. 36      D. 38      E. 48
21. The mean of 11 numbers is 37. Andy increases every number by 7. What is the value of the new mean? A. $37\frac{7}{11}$ B. 39      C. $41\frac{3}{11}$ D. 44      E. 49
22. Fill in the blank: 12 cups = ____ gallon. A. $\frac{1}{2}$ B. $\frac{3}{5}$ C. $\frac{3}{4}$ D. 1      E. 1.5
23. What fraction of 1 yard is 4 inches? A. $\frac{1}{12}$ B. $\frac{1}{9}$ C. $\frac{3}{4}$ D. $\frac{1}{3}$ E. $\frac{4}{3}$
24. Two legs of a right triangle are 9 in. and 12 in. What is the length of the hypotenuse? A. 3 in.      B. 4 in.      C. 5 in.      D. 10 in.      E. 15 in.
25. The value of $15^4 = a^n b^m$ , where $a, b$ are prime factors. Find $n + m$ . A. 8      B. 7      C. 5      D. 4      E. 2
26. What is the sum of interior angles of a regular hexagon in degrees? A. $60^\circ$ B. $540^\circ$ C. $720^\circ$ D. $900^\circ$ E. $1080^\circ$
27. For how many different positive integers $x$ is the expression $\sqrt{16 - x}$ also a positive integer? A. 1      B. 2      C. 3      D. 4      E. 15
28. In scientific notation: $(2 \times 10^{19}) - (1.9 \times 10^{18}) = a \times 10^N$ , where $1 \leq a < 10$ and $N$ is an integer. Find the value of $a$ . A. 0.1      B. 1      C. 1.81      D. 1.2      E. 18.1
29. Which value below equals $\frac{1}{4}\%$ of 1000? A. 0.25      B. 2.5      C. 25      D. 200      E. 250

30. Dillon sings every 3rd day, Ann sings every 4 <sup>th</sup> day, William sings every 5 <sup>th</sup> day. They all sang together on Thursday. On what day of the week will they all next sing together? A. Monday    B. Wednesday    C. Friday    D. Saturday    E. Sunday
31. A standard (6-sided) die lays on the table. What is the probability, that the face touching the table is a composite number? A. 1/6    B. 1/3    C. 1/2    D. 1    E. 0
32. What is the unit's digit of 2019 <sup>7</sup> ? A. 1    B. 3    C. 5    D. 7    E. 9
33. Find the coordinates of the point (-2,7) after reflection across the $x = 2$ . A. (6, 7)    B. (-1, 7)    C. (-2, -3)    D. (-2, -5)    E. (-2, 5)
34. In miles per hour, what is the positive difference between the speed of an object travelling 5 miles per minute and another object traveling 5 minutes per mile? A. 0    B. 144    C. 288    D. 312    E. 480
35. What is the slope of the line, represented by $x = 4$ A. 0    B. 1/4    C. -1/4    D. 4    E. undefined
36. What relation is not a function? A. $x = 1$ B. $y = 1$ C. $y = x$ D. $y = -x$ E. $y = x^2$
37. Which term below could be a polygon with the least number of even sides? A. triangle    B. hexagon    C. circle    D. trapezoid    E. prism
38. An equilateral triangle is split into 4 congruent equilateral triangles. Each of those is then split into 4 congruent equilateral triangles. What is the ratio of the area of the original triangle to one of the smallest triangles? 
A. 1/16    B. 1/8    C. 1/4    D. 4/1    E. 16/1
39. How many different ways can you rearrange the letters in "ABBA"? A. 4    B. 6    C. 12    D. 18    E. 24
40. The total area of four congruent circles is $144\pi$ . What is the circumference of one circle? A. $4\pi$ B. $6\pi$ C. $12\pi$ D. $24\pi$ E. $36\pi$

# MATH CHALLENGE TOURNAMENT

## MASTERS

April 20, 2019



## Mental Math Challenge

Grade 6

Problem 1 – 40

**Do not begin until you are instructed to do so.**

***Mental Math Challenge (15 minutes)***

Mark your answers on the ANSWER SHEET.

You may not do any written work.

Solve as many problems as you can.