## 5 POINTS

1. Summer vacation lasts 75 days. During summer vacation, what is the greatest number of Fridays that could occur?

   A. 10 B. 11 C. 9 D. 12 E. 8

2. A brontosaurus weighed approximately 27,000,000 grams. How many kilograms did a brontosaurus weigh? Write your answer in scientific notation.

   A. 27×10^3 kg B. 27×10^5 kg C. 0.27×10^6 kg D. 2.7×10^4 kg E. 2.7×10^7 kg

3. What is the smallest positive integer that 6120 can be multiplied by to produce a perfect square?

   A. 70 B. 130 C. 170 D. 190 E. 250

4. Rick needs to go to the grocery store, Home Depot, the pharmacy, and the post office. In how many different orders can he run these four errands?

   A. 24 B. 12 C. 8 D. 6 E. 4

5. At the store Comix Collectibles, the price of antique robot toy has changed 4 times.
   First, the price increased 50%, then it decreased 50%, then increased 50% again, and finally decreased 50% again. If after the fourth price adjustment the robot toy costs $180, how much did the robot toy originally cost?

   A. $150 B. $180 C. $200 D. $250 E. $320

6. N is the smallest 4-digit positive integer that has a prime factorization in the form $N = a^1 \cdot b^1 \cdot c^1$, where a, b, c are all different primes. What is the value of $a + b + c$?

   A. 18 B. 31 C. 33 D. 41 E. 49

7. Eight workers took 2 ¼ days to dig half of a tunnel.
   If only two workers are going to finish the tunnel, how long will it take them?

   A. 5 days B. 7 days C. 9 days D. 11 days E. 2 weeks

8. Two sides of ΔABC each have a length of 20 inches and the third side has a length of 24 inches. The area of this triangle is _____.

   A. 141 in² B. 173 in² C. 192 in² D. 224 in² E. 240 in²

7 POINTS

9. Gold can be pounded into very thin sheets. If a 1-inch by 1-inch by 1-inch gold cube is pounded into a sheet exactly 1.25 in wide and 20 inches long, how thick is the sheet?

   A. 0.008 inch B. 0.01 inch C. 0.02 inch D. 0.03 inch E. 0.04 inch

10. The number in each circle is the product of the 2 numbers above it. What is the value of n?

    A. $\dfrac{5}{2}$ B. $1\dfrac{1}{3}$ C. $\dfrac{3}{2}$ D. $\dfrac{7}{2}$ E. $\dfrac{7}{3}$
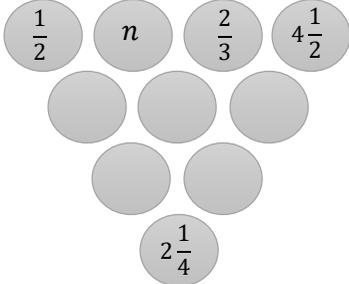
11. Eric has 59 coins that include pennies, nickels, dimes and quarters. There are twice as many dimes as nickels and 3 times as many quarters as dimes. The total value of the coins is $7.23. How many quarters does Eric have?

    A. 24 B. 23 C. 12 D. 8 E. 4

12. A 5 inches by 5 inches by 5 inches solid cube is cut in two identical rectangular prisms. The two parts are then placed next to each other tightly as shown. How much more is the surface area of the new rectangular prism than the surface area of the original cube?
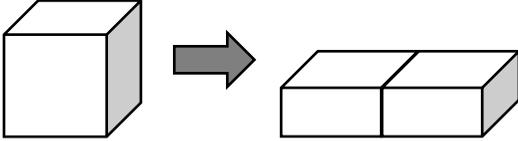
    A. 0 in² B. 15 in² C. 20 in² D. 25 in² E. 30 in²

13. A box is filled with pennies, nickels, and dimes in a ratio of 2 : 3 : 4. If the total number of coins in the box is 1620, how many coins other than pennies are in the box?

    A. 180 B. 360 C. 1260 D. 1440 E. 1500

14. If Alex hikes up a mountain at 2 mph and hikes down at 5 mph, what is his average speed?

    A. 3.5 mph B. 2.86 mph C. 2 mph D. 3 mph E. 3.2 mph

15. A micron is a thousandth of a millimeter. How many microns are in 5 meters?

    A. 2,500,000 B. 2,500,500 C. 5,000,000 D. 10^5 E. 5^{10}

10 POINTS

16. A detective story book has its pages numbered from 1 to 117. If any page number that contains the digit 2 is entirely erased, what is the sum of all of the page numbers that were left in the book?
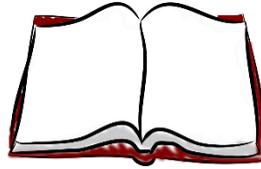
   A. 5050   B. 5996   C. 6030   D. 6157   E. 6219

17. The sum of the page numbers of Chapter 2 of a math book is 374. If there are 11 pages in Chapter 2, on what page does Chapter 2 begin?

    A. 29   B. 31   C. 37   D. 49   E. 55

18. What is the largest possible value of the expression $3ab + 5bc + 2cd$, if the values of $a, b, c,$ and d are distinct and chosen from 5, 7, 11, and 13?

    A. 776   B. 824   C. 884   D. 1076   E. 1098

19. Twelve congruent circles touch each other as shown. What is the perimeter of the triangle created by the sides of the rectangle and its diagonal, if its diagonal has a length of 200 inches?
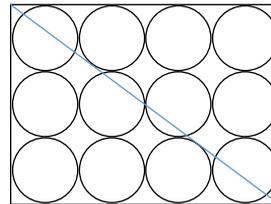
    A. 120 inches   B. 240 inches   C. 480 inches   D. 600 inches   E. 9600 inches

20. Benjamin is in the middle of playing a board game in which he may move forward 1 or 3 spaces or move back 2 spaces on any turn. At the end of his 6th turn, he has moved forward 5 spaces from his starting point. How many different sequences of moves could produce this result?

    A. 25   B. 26   C. 28   D. 30   E. 32

MATH CHALLENGE TOURNAMENT MASTERS 2019

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ELLIPSIS ACADEMY

Problem Solving Challenge

Grade 6

Problem 1 – 20

Do not begin until you are instructed to do so.

Problem Solving Challenge (40 minutes)

You may use scratch paper to do any calculation to reach final answers.
Mark your answers in the ANSWER SHEET.
You have 40 minutes to complete the Problem-Solving Challenge