

COMBINATIONS

- 2016B 6. Laura added two three-digit positive integers. All six digits in these numbers are different. Laura's sum is a three-digit number S . What is the smallest possible value for the sum of the digits of S ?
- (A) 1 (B) 4 (C) 5 (D) 15 (E) 21
- 2013A 7. A student must choose a program of four courses from a menu of courses consisting of English, Algebra, Geometry, History, Art, and Latin. This program must contain English and at least one mathematics course. In how many ways can this program be chosen?
- (A) 6 (B) 8 (C) 9 (D) 12 (E) 16
- 2018A 7. For how many (not necessarily positive) integer values of n is the value of $4000 \cdot \left(\frac{2}{5}\right)^n$ an integer?
- (A) 3 (B) 4 (C) 6 (D) 8 (E) 9

- 2007B 8. On the trip home from the meeting where this AMC10 was constructed, the Contest Chair noted that his airport parking receipt had digits of the form $bbcac$, where $0 \leq a < b < c \leq 9$, and b was the average of a and c . How many different five-digit numbers satisfy all these properties?
- (A) 12 (B) 16 (C) 18 (D) 20 (E) 24
- 2010B 8. A ticket to a school play costs x dollars, where x is a whole number. A group of 9th graders buys tickets costing a total of \$48, and a group of 10th graders buys tickets costing a total of \$64. How many values for x are possible?
- (A) 1 (B) 2 (C) 3 (D) 4 (E) 5
- 2012B 8. What is the sum of all integer solutions to $1 < (x - 2)^2 < 25$?
- (A) 10 (B) 12 (C) 15 (D) 19 (E) 25
- 2017A 8. At a gathering of 30 people, there are 20 people who all know each other and 10 people who know no one. People who know each other hug, and people who do not know each other shake hands. How many handshakes occur?
- (A) 240 (B) 245 (C) 290 (D) 480 (E) 490
- 2012B 9. Two integers have a sum of 26. When two more integers are added to the first two integers the sum is 41. Finally when two more integers are added to the sum of the previous four integers the sum is 57. What is the minimum number of even integers among the 6 integers?
- (A) 1 (B) 2 (C) 3 (D) 4 (E) 5

- 2002B 9. Using the letters A , M , O , S , and U , we can form 120 five-letter “words”. If these “words” are arranged in alphabetical order, then the “word” $USAMO$ occupies position

(A) 112 (B) 113 (C) 114 (D) 115 (E) 116

- 2003B 10. Nebraska, the home of the AMC, changed its license plate scheme. Each old license plate consisted of a letter followed by four digits. Each new license plate consists of three letters followed by three digits. By how many times is the number of possible license plates increased?

(A) $\frac{26}{10}$ (B) $\frac{26^2}{10^2}$ (C) $\frac{26^2}{10}$ (D) $\frac{26^3}{10^3}$ (E) $\frac{26^3}{10^2}$

- 2014B 10. In the addition shown below A , B , C , and D are distinct digits. How many different values are possible for D ?

$$\begin{array}{r} ABBCB \\ + BCADA \\ \hline DBDDD \end{array}$$

(A) 2 (B) 4 (C) 7 (D) 8 (E) 9

- 2015A 10. How many rearrangements of $abcd$ are there in which no two adjacent letters are also adjacent letters in the alphabet? For example, no such rearrangements could include either ab or ba .

(A) 0 (B) 1 (C) 2 (D) 3 (E) 4