2020 Castro Valley Junior Math Tournament
Algebra & Probability Team Test – 6th-8th Grades

1	What number is 47 more than the product of 8 and 62?
2	When the special number is divided by 3 and this result is increased by 11, the final result is 34. What is the special number?
3	A bag contains 5 red marbles, 6 orange marbles, 5 yellow marbles, 9 green marbles, and 5 blue marbles. When one marble is drawn at random, what is the probability that it is orange?
4	Evaluate **as a mixed number**: $9\frac{2}{6} - 7\frac{1}{8}$
5	At a spelling bee with 5 participants, there is a huge first-place trophy, a modest second-place medal, and a tiny third-place certificate. In how many ways might these be awarded?
6	Express 80530 in scientific notation.
7	When two cards are drawn from a standard 52-card deck, what is the probability that exactly 2 of them are 3s?
8	What is the discriminant of the quadratic $3x^2 - 3x - 7 = 0$?
9	A bag contains 1 red marbles, 2 orange marbles, 9 yellow marbles, 8 green marbles, and 5 blue marbles. What is the smallest number of marbles I can grab without looking and be certain that I have selected at least two marbles of the same color?
10	When the digits of a positive two-digit counting number are reversed, to create a new positive two-digit counting number, the new number is 9 more than the original number. What is the smallest possible value of the new number?
11	Arrange the letters below in order of **ascending** value (e.g. BCDA): A = $\frac{2}{5}$, B = 0.1, C = $\frac{1}{9}$, D = 0.61
12	The point (4, -7) is rotated 540 degrees counterclockwise about the point (0, -5). What are its new coordinates, in the form (x, y)?
13	When two fair coins are flipped, what is the probability that they show exactly 1 tail?
14	If it is currently 4:27 PM, what time was it 727 minutes ago? Include AM or PM.
15	A bag contains 3 red marbles, 7 green marbles, and 2 yellow marbles. A trusted friend draws a single marble, looks at it, and tells you it is not red. What is the probability that the marble is green?
16	If 144 chickens can lay 60 eggs in 8 days, how many chickens would it take to produce 360 eggs in 16 days?
17	When two standard six-sided dice are rolled, what is the probability that exactly 0 of them show(s) a number greater than 4?
18	Arrange the letters below in order of **ascending** value (e.g. BCDA): A = 2 x 2, B = 1 ÷ 3, C = 4 + 7, D = 2 - 5
19	Express the range of $m(k) = 5 - \sqrt{7n + 2}$ in interval notation, given that both the domain and range are subsets of the real numbers.
20	What is the solution, in the form (w, v, u), of the system of equations w + v = 4, w + u = 0, and u + v = 6 ?

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DO NOT TURN OVER THIS TEST UNTIL YOU ARE INSTRUCTED TO BEGIN

ONLY ANSWERS WRITTEN ON THE ANSWER SHEET WILL BE SCORED