Name: _____ Date: _____

POLYNOMIAL CHALLENGE
COMMON CORE ALGEBRA II

As you've seen in previous lessons, when the zeros of a polynomial are known, its equation can easily be written in factored form:

$$y = a(x - z_1)(x - z_2)(x - z_3)...$$

where $z_1, z_2, z_3...$ are the zeros (*x*-intercepts) of the function and *a* is the vertical stretch constant. Recall that when *a* is negative, it also has the effect of reflecting the polynomial across the *x*-axis.

In this challenge, 20 polynomial graphs have been created on the graphing website Desmos. The challenge is to come up with as many equations as you can in 40 minutes. The equations must be written in factored form and must have exact values of *a*. On each graph, the zeros are integers and one point is specified to aid in the calculation of *a*.

Polynomial Challenge #1	**Calculation of *a* (if needed)**
Final Equation:	

Polynomial Challenge #2	**Calculation of *a* (if needed)**
Final Equation:	

Polynomial Challenge #3	**Calculation of *a* (if needed)**
Final Equation:	

Polynomial Challenge #4	Calculation of *a* (if needed)
Final Equation:	

Polynomial Challenge #5	Calculation of *a* (if needed)
Final Equation:	

Polynomial Challenge #6	Calculation of *a* (if needed)
Final Equation:	

Polynomial Challenge #7	Calculation of *a* (if needed)
Final Equation:	

Polynomial Challenge #8	Calculation of *a* (if needed)
Final Equation:	

Polynomial Challenge #9	Calculation of *a* (if needed)
Final Equation:	

Polynomial Challenge #10	Calculation of *a* (if needed)
Final Equation:	

Polynomial Challenge #11	Calculation of *a* (if needed)
Final Equation:	

Polynomial Challenge #12	Calculation of *a* (if needed)
Final Equation:	

Polynomial Challenge #13	Calculation of *a* (if needed)
Final Equation:	

Polynomial Challenge #14	Calculation of *a* (if needed)
Final Equation:	

Polynomial Challenge #15	Calculation of *a* (if needed)
Final Equation:	

Polynomial Challenge #16	Calculation of *a* (if needed)
Final Equation:	

Polynomial Challenge #17	Calculation of *a* (if needed)
Final Equation:	

Polynomial Challenge #18	Calculation of *a* (if needed)
Final Equation:	

Polynomial Challenge #19	Calculation of *a* (if needed)
Final Equation:	

Polynomial Challenge #20	Calculation of *a* (if needed)
Final Equation:	