Name: _____ Name of Partner: _____

Quadratics I – TIPS Assigment

1. Most cars get their best gas mileage when travelling a relatively modest speed.
   The gas mileage, M for a certain new car is modeled by the function

$$M = -\frac{1}{18}s^2 + 8s - 270$$

   where s is the speed in km/h and M is measured in km/L. What is the car's best gas mileage, and at what speed is it attained?

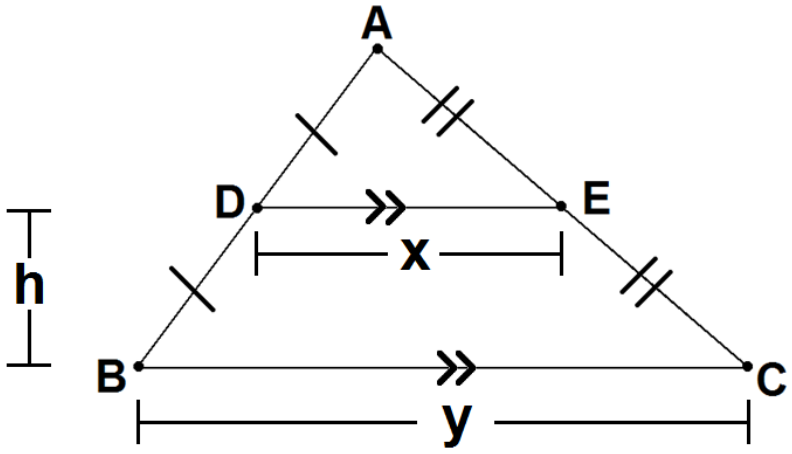
2. Determine the equation of the parabola represented in the Table of Values below.

x	y
-2	-53
-1	-42.5
0	-33
1	-24.5
2	-17

3. In Grade 9, you learned that

"A line segment joining the midpoints of two sides of a triangle is parallel to the third side and half the length."

You also learned that the equation for the area of a trapezoid is $A = \frac{(a+b)h}{2}$ where *a* and *b* are the lengths of the parallel sides of the trapezoid and *h* is the height of the trapezoid.

a) If ***h* + *y* = 32**, determine the **maximum area** of trapezoid BCED and the values of *x, y*, and *h* when the maximum area is achieved given the diagram below.

b) What is the area of ΔADE when the maximum area is achieved? **EXPLAIN WHY**