3.) Using a graphing calculator and quadratic regression to find a model:
A study compared the speed x, in miles per hour and the average fuel economy y (in miles per gallon) for cars. The results are shown in the table. Find a quadratic model in standard form for the data.

Speed x	15	20	25	30	35	40	45	50	55	60	65	70
Fuel Economy y	22.3	25.5	27.5	29	28.8	30	29.9	30.2	30.4	28.8	27.4	25.3

Define variables. $x =$ $y =$

a) Write a quadratic model for the data.

b) Find the speed to travel to obtain 24 mpg.

c) Find the fuel economy if the speed is 42 mph

4.) The table shows how wind affects a runner's performance in the 200meter dash. Positive wind speeds correspond to tailwinds and negative winds corresponds to headwinds. Positive changes in finishing time mean worsened performance (your time is slower) and negative changes mean improve performance (your time got faster).

Wind Speed (m/sec) s	-6	-4	-2	0	2	4	6
Change in finishing time t	2.28	1.42	0.67	0	-0.57	-1.05	-1.42

Define variables. $x =$ $y =$

a) Find the quadratic model for the data.

b) Find change in finishing time when wind speed is -1.

c) Find wind speed when change in finishing time is 1.