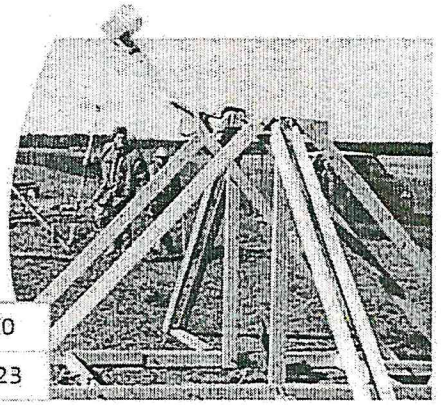
Alg 2 5.1 Quadratic Regression Applications Name_____

1.) **PUMPKIN TOSSING** A pumpkin tossing contest is held each year in Morton, Illinois, where people compete to see whose catapult will send pumpkins the farthest. One catapult launches pumpkins from 25 feet above the ground at a speed of 125 feet per second. The table shows the horizontal distances (in feet) the pumpkins travel when launched at different angles. Use a graphing calculator to find the best-fitting quadratic model for the data.



Angle (degrees)	20	30	40	50	60	70
Distance (feet)	372	462	509	501	437	323

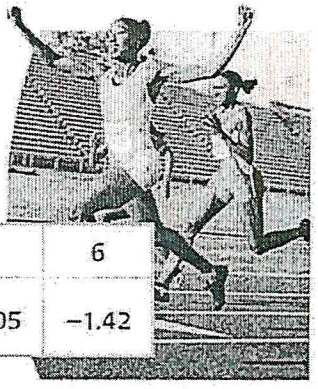
Define variables. x = y =

a) Write quadratic model for the data.

b) Find the distance that a 35° angle would produce.

c) Find the angle that would produce a distance of 450 ft.

2.) **RUNNING** The table shows how wind affects a runner's performance in the 200 meter dash. Positive wind speeds correspond to tailwinds, and negative wind speeds correspond to headwinds. The change t in finishing time is the difference beween the runner's time when the wind speed is s and the runner's time when there is no wind.



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

Define variables. x = y =

a) Write quadratic model for the data.

b) Find the change in finishing time when the wind speed is 10 m/sec.

c) Find the wind speed if the change in finishing time is 1.3