

**Project: Height of a Basketball** A basketball is dropped from a height of about 5.25 feet. The height of the basketball is recorded 23 times at intervals of about 0.02 second. \*The results are shown in the table.

Time, $x$	Height, $y$
0.0	5.23594
0.02	5.20353
0.04	5.16031
0.06	5.09910
0.08	5.02707
0.099996	4.95146
0.119996	4.85062
0.139992	4.74979
0.159988	4.63096
0.179988	4.50132
0.199984	4.35728
0.219984	4.19523
0.23998	4.02958
0.25993	3.84593
0.27998	3.65507
0.299976	3.44981
0.319972	3.23375
0.339961	3.01048
0.359961	2.76921
0.379951	2.52074
0.399941	2.25786
0.419941	1.98058
0.439941	1.63488

- Use a graphing utility to plot the data.
- Describe the trend in the data.
- Use the *regression* feature of the graphing utility to find a quadratic model for the data.
- Use a graphing utility to graph the model from part (c) and the original data in the same viewing window. How well does the model fit the data?
- Describe how to predict the time when the basketball will hit the ground. Then determine this time.

\*Data was collected with a Texas Instruments CBL (Calculator-Based Laboratory) System.