|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0.00 | 2 | 1.00 | 3 | 2.00 | 6 | 3.00 | 11 | 4.00 | 18 |
| 0.05 | 2.0025 | 1.05 | 3.1025 | 2.05 | 6.2025 | 3.05 | 11.3025 | 4.05 | 18.4025 |
| 0.10 | 2.01 | 1.10 | 3.21 | 2.10 | 6.41 | 3.10 | 11.61 | 4.10 | 18.81 |
| 0.15 | 2.0225 | 1.15 | 3.3225 | 2.15 | 6.6225 | 3.15 | 11.9225 | 4.15 | 19.2225 |
| 0.20 | 2.04 | 1.20 | 3.44 | 2.20 | 6.84 | 3.20 | 12.24 | 4.20 | 19.64 |
| 0.25 | 2.0625 | 1.25 | 3.5625 | 2.25 | 7.0625 | 3.25 | 12.5625 | 4.25 | 20.0625 |
| 0.30 | 2.09 | 1.30 | 3.69 | 2.30 | 7.29 | 3.30 | 12.89 | 4.30 | 20.49 |
| 0.35 | 2.1225 | 1.35 | 3.8225 | 2.35 | 7.5225 | 3.35 | 13.2225 | 4.35 | 20.9225 |
| 0.40 | 2.16 | 1.40 | 3.96 | 2.40 | 7.76 | 3.40 | 13.56 | 4.40 | 21.36 |
| 0.45 | 2.2025 | 1.45 | 4.1025 | 2.45 | 8.0025 | 3.45 | 13.9025 | 4.45 | 21.8025 |
| 0.50 | 2.25 | 1.50 | 4.25 | 2.50 | 8.25 | 3.50 | 14.25 | 4.50 | 22.25 |
| 0.55 | 2.3025 | 1.55 | 4.4025 | 2.55 | 8.5025 | 3.55 | 14.6025 | 4.55 | 22.7025 |
| 0.60 | 2.36 | 1.60 | 4.56 | 2.60 | 8.76 | 3.60 | 14.96 | 4.60 | 23.16 |
| 0.65 | 2.4225 | 1.65 | 4.7225 | 2.65 | 9.0225 | 3.65 | 15.3225 | 4.65 | 23.6225 |
| 0.70 | 2.49 | 1.70 | 4.89 | 2.70 | 9.29 | 3.70 | 15.69 | 4.70 | 24.09 |
| 0.75 | 2.5625 | 1.75 | 5.0625 | 2.75 | 9.5625 | 3.75 | 16.0625 | 4.75 | 24.5625 |
| 0.80 | 2.64 | 1.80 | 5.24 | 2.80 | 9.84 | 3.80 | 16.44 | 4.80 | 25.04 |
| 0.85 | 2.7225 | 1.85 | 5.4225 | 2.85 | 10.1225 | 3.85 | 16.8225 | 4.85 | 25.5225 |
| 0.90 | 2.81 | 1.90 | 5.61 | 2.90 | 10.41 | 3.90 | 17.21 | 4.90 | 26.01 |
| 0.95 | 2.9025 | 1.95 | 5.8025 | 2.95 | 10.7025 | 3.95 | 17.6025 | 4.95 | 26.5025 |
|  |  |  |  |  |  |  |  | 5.00 | 27 |

This Program is written in C++, using the g++ compiler on Linux should run this program smoothly.

/\*

This Program will calculate the final position of a equaition at a certain time t.

The equation is: x = x\_0 + v\_0\*t +.5\*a\*t^2.

\*/

// These are the libraries that I am needing to call for my program:

// THis one allows me to output results.

#include <iostream>

// This one allows me to use the pow(x,y) feature.

#include <cmath>

// This program allows me to use the setprecision tool so that I can make my output pretty.

#include <iomanip>

using namespace std;

// I wrote this as a function just because that is what made me comfortable.

double DisplacementCalculator()

{

// Set my starting point.

double x = 2, x\_0 = 2, v\_0 = 0, a = 2, dt = 0.05, t\_0 = 0, t = 5, T = 0, v;

// Created a loop so that I can increase the time in increments.

while (t\_0 < t)

{

// The equation needed to be done.

x = x\_0 + v\_0\*t + .5\*a\*pow(t\_0, 2);

//Display what time we are in.

cout << "Time: " << setprecision(2) << fixed << t\_0;

// Display the displacement.

cout << " Displacement: " << setprecision(4) << fixed << x << endl;

// Increment the time interval.

t\_0 = t\_0 + dt;

};

return 0;

}

int main()

{

// Here it is.

cout << "Here is the program." << endl;

DisplacementCalculator();

return 0;

}