

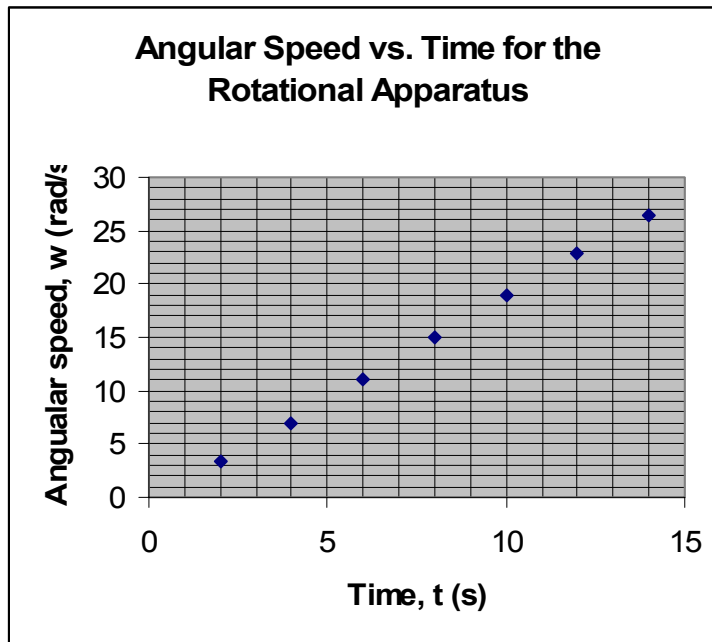
DATA AND RESULTS.

The aim of this lab was to experimentally find the angular acceleration for a wheel under the influence of a constant force. Data regarding time and angular speed was collected using the PASCO GLX Explorer and is recorded in Table 1. The first column includes seven selected times, measured in seconds, and the next column is the instantaneous angular speed, measured in radians per second.

Time (sec)	Angular Speed (rad/s)
2	3.3
4	6.9
6	11.1
8	15.0
10	18.9
12	22.9
14	26.4

Table 1: Angular Speed for the Rotational Apparatus.

You will notice that the angular speed increases with time. This effect was expected as a constant application of a force on the outer rim of the wheel would produce an angular acceleration. From the appearance of the data it is possible the relationship is linear. This hypothesis was tested graphically and results can be seen in the Figure 1.



Reading Figure 1:

This plot represents the relationship between time and angular speed for a wheel experiencing a constant force. The independent variable for this graph is time measured in seconds. Note that as time passes the instantaneous angular speed increases. Units for angular speed are rad/s. The slope of this line is 1.93 rad/s^2 .

Figure 1: Graphical Representation of Data.

As can be seen from Figure 1, the relationship is indeed linear, and thus, the slope of the line represents of the angular acceleration according to the kinematic equations. For a complete understanding of this concept see the introduction portion of this lab. Linear Least Square Fit calculations are found in Appendix B. The angular acceleration was found to be 1.93 rad/s^2 .