

# Tumble Buggy

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Physics Period 6

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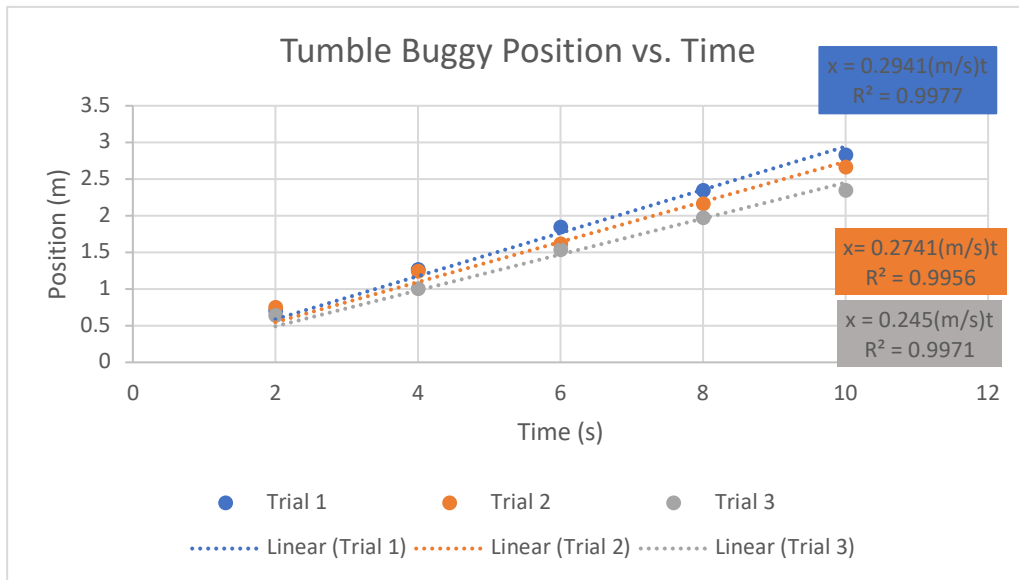
The purpose is to devise an experiment that will demonstrate the principals of constant speed.



The methodology for this experiment will involve measuring the speed of the above toy tumble buggy. Simply measuring the time it takes to travel a distance won't accomplish this endeavor as it won't incorporate position further than that determined by the chosen distance; therefore I've elected to measure the linear distance from a starting point to points determined by an interval of two seconds. The latter approach incorporates position and compares it to time; and linearly measuring the growth in distance from the starting point at every interval will accommodate the slight curve this tumble buggy tends to drive in. The intervals will be marked with sandbags, they'll be dropped at the position the tumble buggy is in at the end of every interval, after five intervals, the distance will be measured from the starting point to each sandbag and then input into the data into a table, then the process will be repeated two more times; then it's a simple matter of graphing with Excel (the resulting table can be seen on page [2](#) and the resulting graph can be seen on page [2](#)).

Tumble Buggy Position vs. Time

Period (seconds)	Trial 1	Trial 2	Trial 3
2	0.71	0.757	0.64
4	1.27	1.25	1.01
6	1.85	1.62	1.54
8	2.35	2.17	1.98
10	2.83	2.67	2.35



As we can see from the data above, the tumble buggy moves at a constant speed of, taking the average from the three trials, 27.11 centimeters per second. We see from the equations in the graph that we have accurate results as the  $R^2$  value is extremely close to 1 for all three trials.