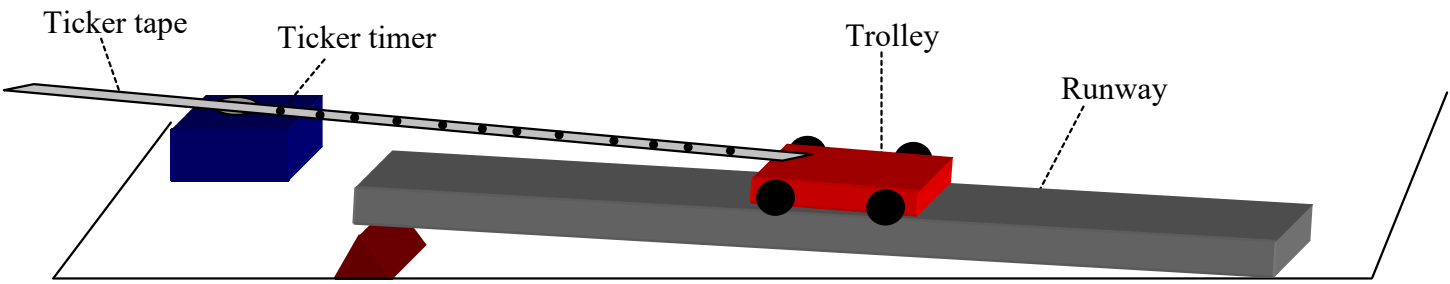
MEASUREMENT OF VELOCITY

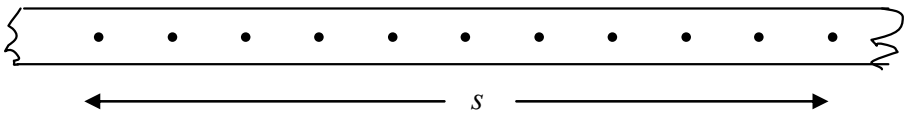
Apparatus

Ticker timer and tape, suitable low-voltage a.c. power supply, trolley, runway, laboratory jack or stand.



Procedure

1. Set up the apparatus as in the diagram.
2. Connect the ticker timer to a low-voltage power supply.
3. Give the trolley a small push to start it moving.
4. Adjust the angle of inclination of the runway until the trolley moves with constant velocity – the spots on the tape are all equidistant.
5. Most ticker timers make 50 spots per second. Therefore the time interval between two adjacent spots is 0.02 s.
6. Measure the length s of ten adjacent spaces.



7. The time t is $10 \times 0.02 = 0.2$ s.
8. As the trolley was travelling at constant velocity we can say that $v = \frac{s}{t}$.
9. Repeat using pushes of varying strengths.
10. Tabulate results as shown.

s/m	t/s	v/m s^{-1}

Results

Notes

Ignore the initial five or six dots on the tape as this shows the initial acceleration due to the push.

Ticker timers that use precarbonated tape are recommended because the friction due to paper drag is reduced.

Ensure that the voltage rating of the timer is not exceeded.

Some timers make one hundred dots in one second.