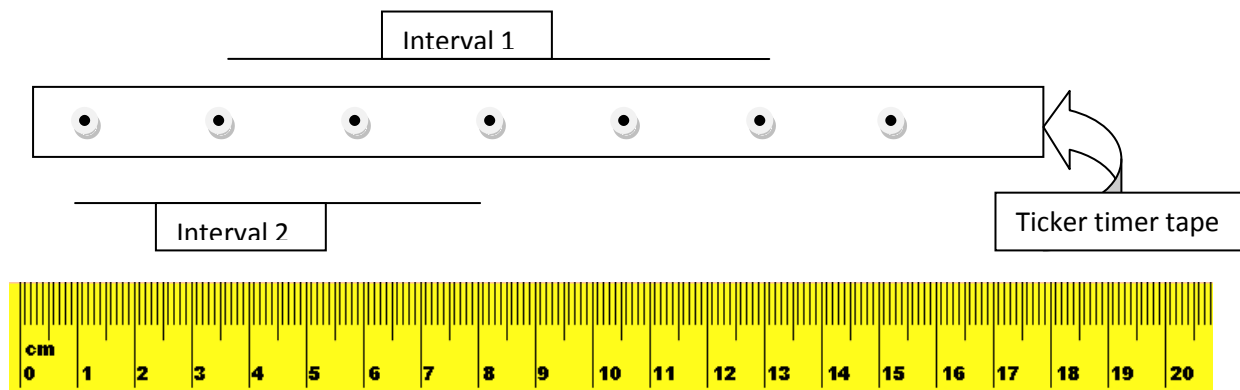


USING A TICKER TIMER TAPE TO CALCULATE VELOCITY

A ticker timer is a piece of equipment that can be used to measure both time and displacement. From these measurements it is possible to calculate velocity and acceleration.



A ticker timer makes a mark every 0.02 seconds. The total time can be determined by counting the number of white spaces and multiplying by 0.02

The time for interval 1 = $4 \times 0.02 = 0.08 \text{ s}$

The time for interval 2 = $3 \times 0.02 = 0.06 \text{ s}$

The displacement can be measured by using a ruler to measure between the two dots.

Interval 1 is 9.5 cm long

Interval 2 is 7 cm long

The velocity of a section of ticker timer tape can be found by knowing the time and displacement and applying the formula: $v = \frac{s}{t}$

E.g.: Velocity using interval 1:

$$v = \frac{s}{t} = \frac{9.5 \text{ cm}}{0.08 \text{ s}} = 119 \text{ cm s}^{-1}$$

Velocity using interval 2:

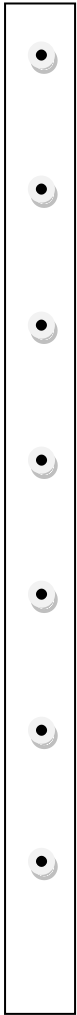
$$v = \frac{s}{t} = \frac{7 \text{ cm}}{0.06 \text{ s}} = 117 \text{ cm s}^{-1}$$

We might expect the answers to be exactly the same as the distance between each of the drops is the same indicating the velocity is constant. Due to slight errors in measuring with a ruler, the answers are close, but not exact.

Questions

Determine the velocity of each of the ticker timer tape samples below.

1.



2.



3.

