

Name _____

Date _____

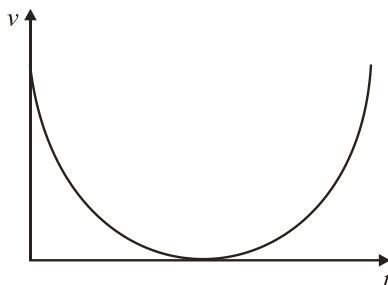
Mr Rawson



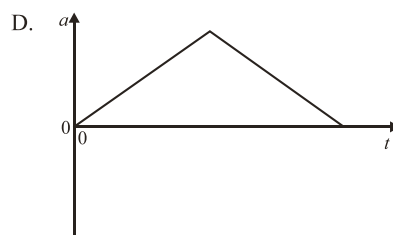
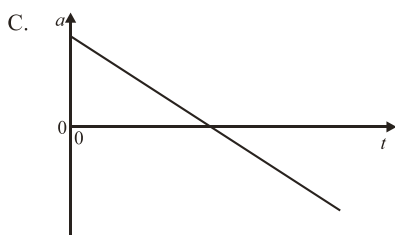
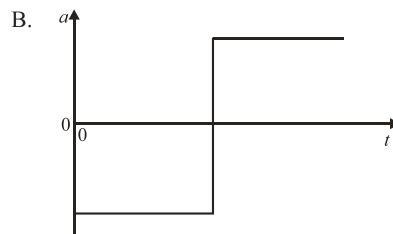
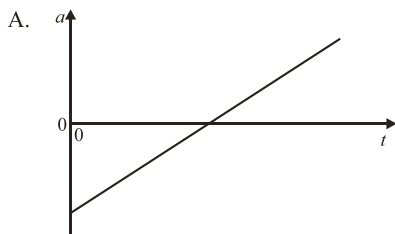
Velocity I

1. Paula Radcliffe, arguably the best female runner of the past decade, currently holds the world marathon record, 2 h 15 m 25 s. The marathon distance is 42.195 km, or 26.2 miles. Determine her average speed in $\text{m}\cdot\text{s}^{-1}$ and minutes/mile of a runner achieving this record.

2. The graph below shows the variation with time t of the velocity v of an object.



Which one of the following graphs best represents the variation with time t of the acceleration a of the object?



3. Runner A is initially 5.0 km west of a flagpole, and is running with a constant velocity of 3.5 km/h due east. Runner B is initially 4.0 km east of the flagpole and is running with a constant velocity of 2.5 km due west. Where are the runners in relation to the flagpole when their paths cross? Give a displacement in kilometers.

4. A tortoise can run with a speed of $.16 \text{ m}\cdot\text{s}^{-1}$, and a hare can run exactly 15 times as fast. In a race, they both start at the same time, but the hare stops to rest for 2.00 min. If the tortoise wins by 20 cm:

A. How long does the race take? (*You should get an answer between 100 – 150 seconds.*)

B. What is the length of the race?