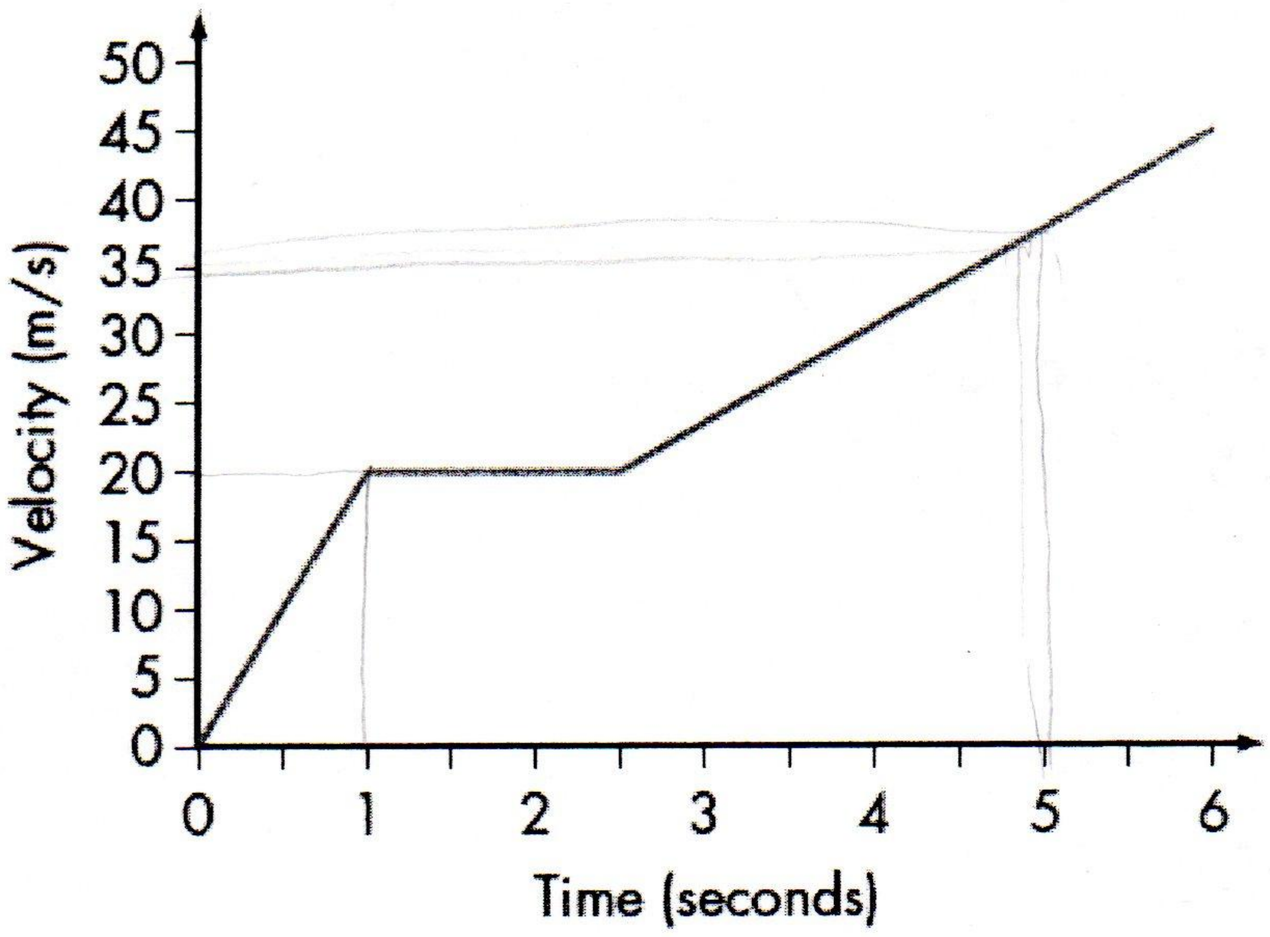
Real life graph

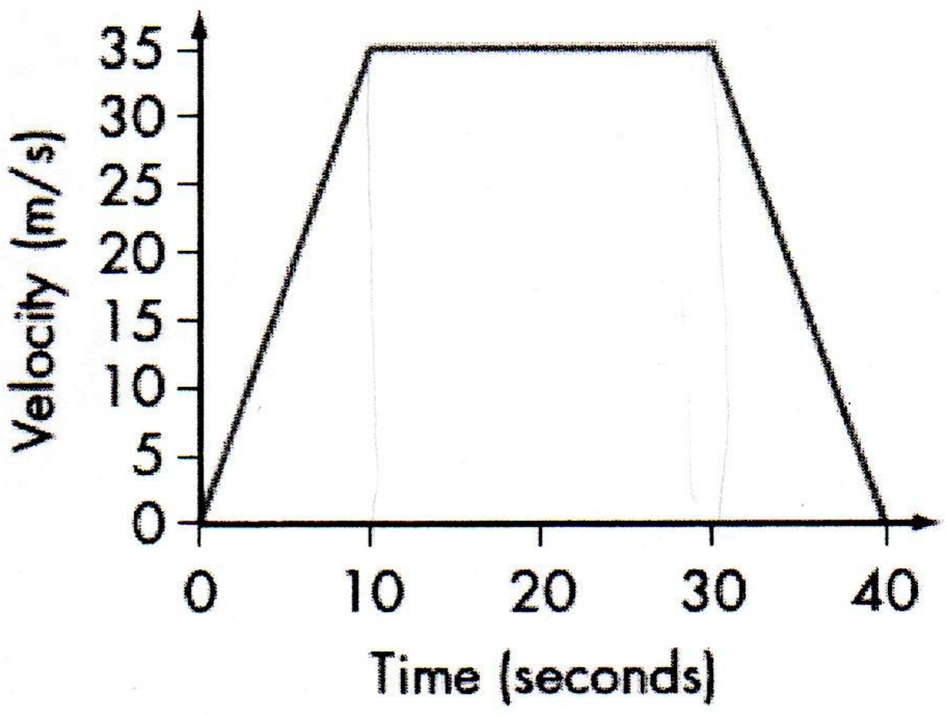
1) The diagram shows the velocity of a model car over 6 seconds.



Calculate the acceleration:
a over the first second

b after 5 seconds.

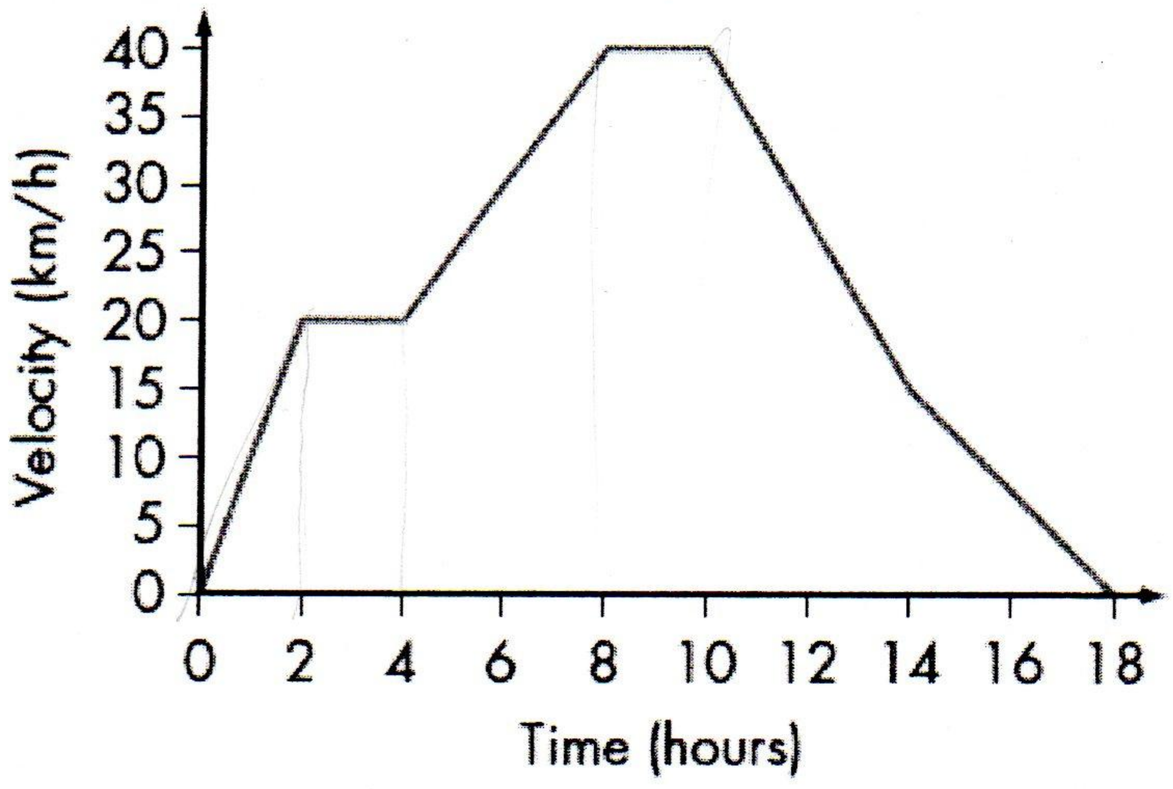
2) The diagram shows the velocity–time graph for a short tram journey between stops.



Find:
a the acceleration over the first 10 seconds

b the deceleration over the last 10 seconds.

3)The diagram shows the velocity of a boat over an 18-hour period.



Calculate:

a the times at which the boat was travelling at a constant velocity

b the acceleration during each part of the journey.

4) An aircraft flying at a constant height of 300 m dropped a load fitted to a parachute. During the
times stated, the velocity of the parachute was as follows:

0–2 seconds The load accelerated uniformly up to 20 m/s.

2–6 seconds The parachute opened, which brought the velocity down uniformly to 2 m/s.

After 6 seconds The load fell with a constant speed of 2 m/s.

Draw a velocity–time graph for the first 8 seconds.

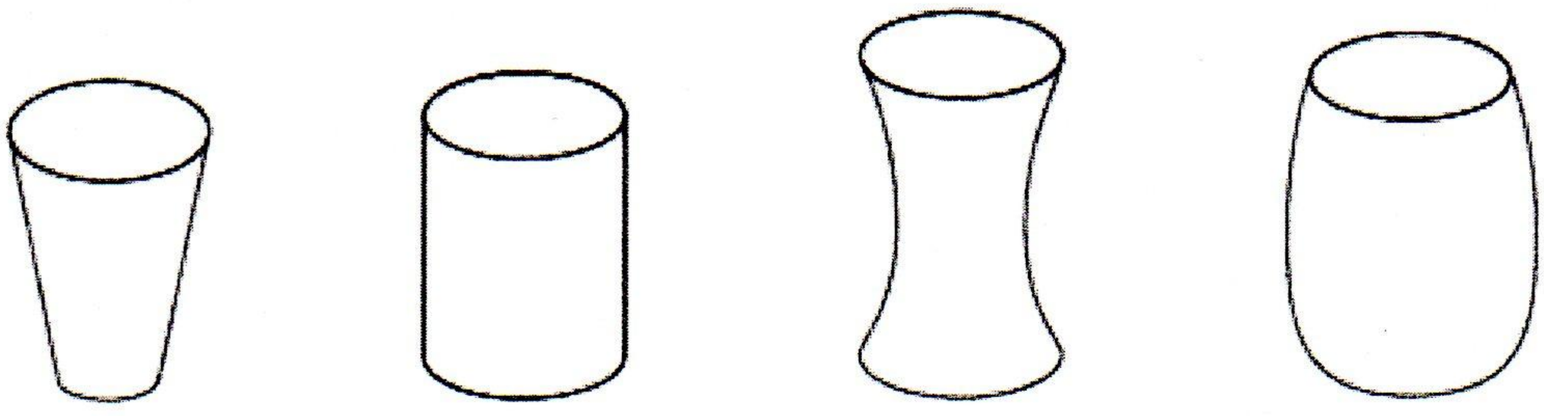
5) Starting from rest (zero velocity), a particle travels as indicated below.

- Accelerates at a constant rate over 5 seconds to reach 15 m/s.
- Keeps this velocity for 10 seconds.
- Accelerates over the next 5 seconds to reach 25 m/s.
- Steadily slows down to reach rest (zero velocity) over the next 10 seconds.

a Draw the velocity–time graph.

b Calculate the acceleration over the first 5 seconds.

Q**6**. Here are four containers.
Water is poured into each container at a constant rate.



1 **2** **3** **4**

Here are four graphs.
The graphs show how the depth of the water in each container changes with time.