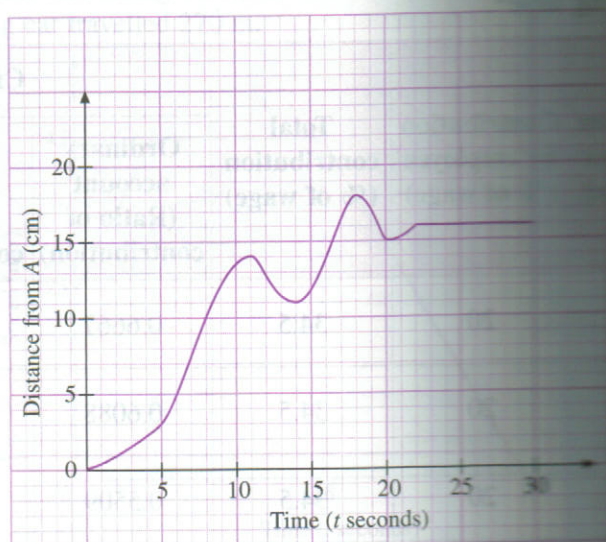


22. A boy inserted a beetle into the end A of a 20 cm transparent straw AB to observe its movement in the straw. The diagram shows the distance-time graph of the beetle during a period of 30 seconds.



- Find the total distance travelled by the beetle during the 30 seconds.
- Calculate the average speed of the beetle during the 30 seconds.
- How far from B was the beetle at the end of the 30 seconds?
- Suppose the beetle rested at the spot in (c) from  $t = 22$  onwards.  
To push the beetle out of the straw, the boy inserted a satay stick into A at  $t = 30$ .  
Assuming that the boy moved the satay stick in the straw at a uniform speed of  $0.8 \text{ cm/s}$ .
  - Find the value of  $t_1$  if the satay stick reached the beetle at  $t = t_1$ .
  - Find the value of  $t_2$  if the satay stick pushed the beetle out of the straw at  $t = t_2$ .