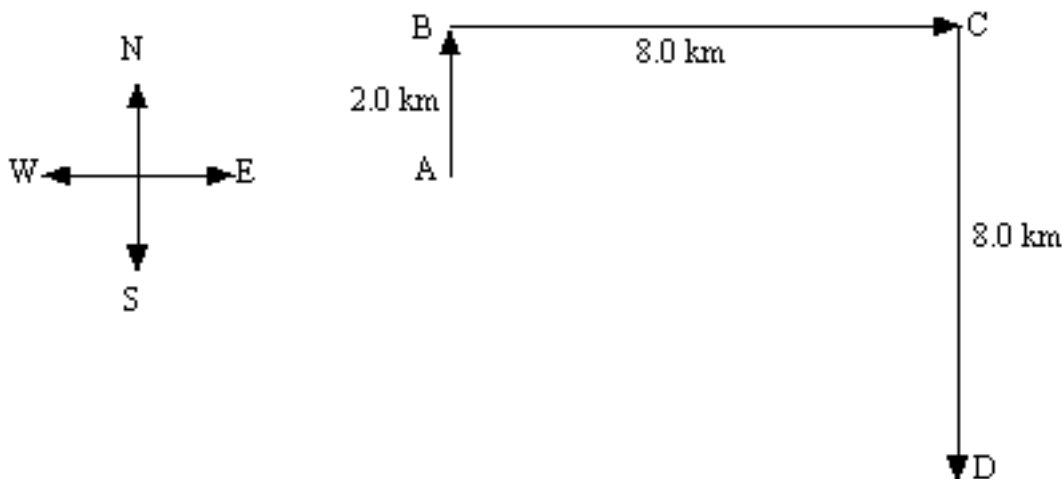


GRADE 11 PHYSICS  
ASSIGNMENT  
KINEMATICS -Part 1

1. During a short interval of time the velocity,  $v$ , in m/s of an automobile is given by  $v = at^2 + bt^3$  where the time  $t$  is in seconds. Determine the units of  $a$  and  $b$ .
2. An impatient motorist considers speeding as he travels between two cities. If the trip normally takes 2.80h at an average speed of 100km/h, how much time will be saved if he exceeds the speed limit by 10.0km/h?

3. A group of hikers sets out from point A, proceeds to B, then to C, and finally to D. The entire trip takes 6.0h.



- (a) Determine the hikers' average speed for the trip.
  - (b) What is the hikers' final displacement relative to their initial position?
  - (c) If the hikers release a homing pigeon upon their arrival at point D and the bird returns to point A 30 minutes later, what is the bird's average velocity during the flight?
4. A boat sets out from the north shore of a 200m wide east-flowing river. The boat always faces due south but the current carries it 300m downstream while crossing. The trip takes 2.00 minutes.
  - (a) What is the boat's displacement during the trip?
  - (b) What is the boat's average velocity during the trip?
  - (c) If the boat's velocity relative to the water is 1.70m/s [S], what is the velocity of the current?
5. A sprinter who is competing in a 100m race accelerates from rest to a top speed of 10.0m/s over a distance of 60.0m. The remainder of the race is run at a constant speed.
  - (a) What length of time is required for the sprinter to reach top speed?
  - (b) What is the sprinter's acceleration?
  - (c) What is the sprinter's time for the entire race?