Quiz 1

Name: _____ Student Number: _____

1. (6 marks) A child runs into the street in front of a car travelling 40 km/hr through a school zone. The driver slams on the brakes and has a maximum deceleration of 4 m/sec^2.

a) (4 marks) How far does the car travel before it stops?

$40 \frac{km}{hr} = 40 \frac{km}{hr} \times 1000 \frac{m}{km} \times \frac{1}{3600} \frac{hr}{sec}$

$= 11.1$ m/sec

Stopping Time $-4 \frac{m}{sec^2} = \frac{0 - 11.1 \text{ m/sec}}{t}$

$t = 2.78$ sec.

Distance travelled $x = ut + \frac{1}{2}at^2$

$= 11.1 \times 2.78 - \frac{1}{2}(4)(2.78)^2$

$= 15.4$ meters

b) (2 marks) Repeat problem if initial speed of car is 60 km/hr.

$60 \frac{km}{hr} = 16.7$ m/sec.

Stopping Time = 4.16 sec.

Distance travelled $x = 34.6$ meters

2. (4 marks) A car is driven at a speed of 80 km/hr for 0.50 hr, 100 km/hr for 0.25 hour and 60 km/hr for 0.75 hour.

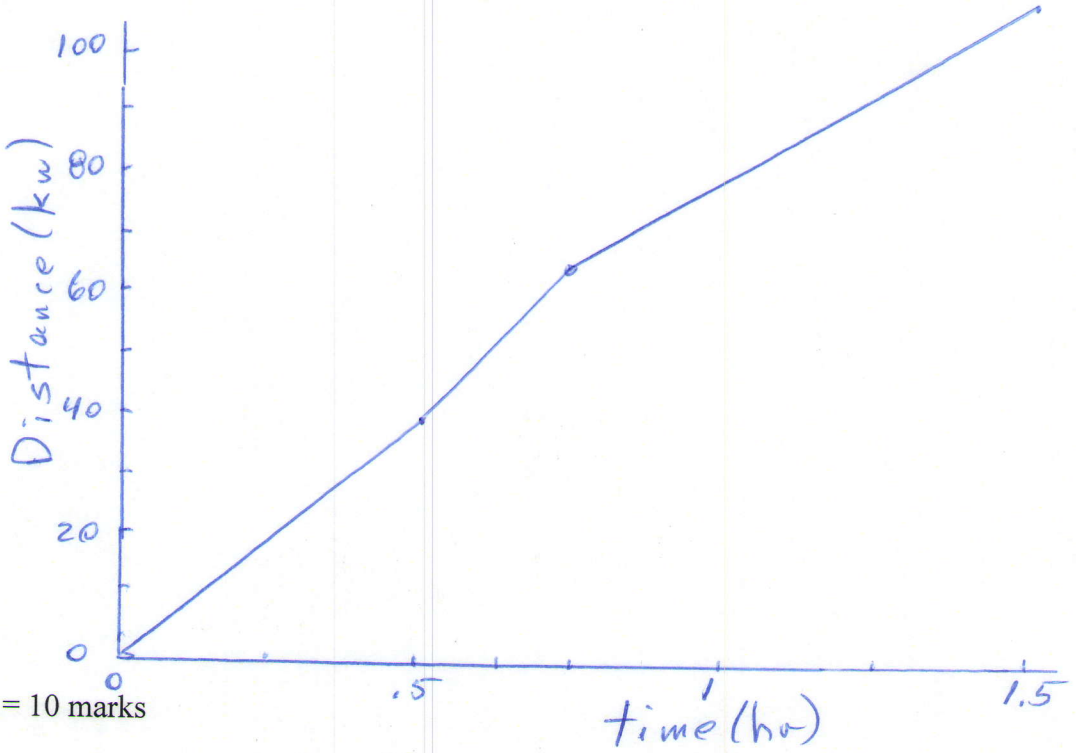
a) (2 marks) Calculate its average speed for the trip.

Time Interval	Speed	Distance
$0 \rightarrow 0.5$ hr	80 km/hr	40 km
$0.5 \rightarrow 0.75$	100	25
$0.75 \rightarrow 1.5$	60	45
	Total Distance	110 km

$\therefore$ Average Speed $= \frac{110 \text{ km}}{1.5 \text{ hr}}$

$= 73$ km/hr

b) (2 marks) Draw the distance time graph for the trip.



Total = 10 marks