c) Displacement = area under velocity-time graph

$$\text{area} = l \times w$$
$$= 10.0\text{ s} \times 15.0\text{ m/s}$$
$$= 1.50 \times 10^2\text{ m north}$$

7 a) Displacement = area of velocity-time graph

Greatest area = A

b) B

8. a) Velocity = slope of position-time graph

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$
$$= \frac{(40 - (-40))\text{ m}}{(11.0 - 5.0)\text{ s}}$$
$$= 13\text{ m/s north}$$

b) Velocity = slope of position-time graph

slope = 0

c) Read displacement from the graph

$d = 80.0$ m north

9. a) D **b)** A

c) C **d)** B

10. a) i) Velocity = slope of position-time graph

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$
$$= \frac{(10.0 - 95.0)\text{ m}}{(20.0 - 15.0)\text{ s}}$$
$$= -17.0\text{ m/s or } 17.0\text{ m/s west}$$

ii) Distance: A + B = 65 m
C = 0
D = 85 m
E = 20m
Total = 170 m OR 1.70×10^2 m

iii) Position at the end = position at the beginning

$d = 0$

iv) average speed = $\frac{\text{distance}}{\text{time}}$

$$= \frac{1.70 \times 10^2\text{ m}}{25.0\text{ s}}$$
$$= 6.80\text{ m/s}$$

b) i) Velocity = slope of position-time graph

neg slope = D

ii) Velocity = slope of position-time graph

Greatest slope = D

11. a) Read velocity from velocity-time graph

Greatest velocity = A at 25.0 m/s

b) Acceleration = slope of a velocity-time graph

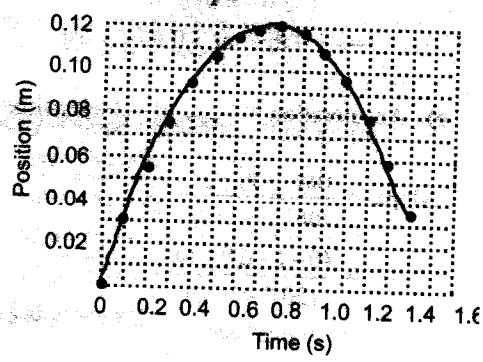
slope = zero during A

Greatest slope = D

12. a)

time (s)	displacement (m)	displacement during time interval (m)	average velocity during time interval (m/s)
0	0		
0.10	0.030	0.030	0.30
0.20	0.055	0.025	0.25
0.30	0.076	0.021	0.21
0.40	0.094	0.018	0.18
0.50	0.107	0.013	0.13
0.60	0.115	0.008	0.08
0.70	0.119	0.004	0.04
0.80	0.120	0.001	0.01
0.90	0.117	-0.003	-0.03
1.00	0.109	-0.008	-0.08
1.10	0.096	-0.013	-0.13
1.20	0.079	-0.017	-0.17
1.30	0.059	-0.020	-0.20
1.40	0.034	-0.025	-0.25

b) Position-Time Graph



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