

Velocity-Time Equations
QUESTION 1
QUESTION 2

1) From the graph of the graph, given $s = 0.5t^2 + 10t$
 $v = \frac{ds}{dt} = 1t + 10$
 At $t = 0$, $v = 10$
 At $t = 10$, $v = 1(10) + 10 = 20$
 From the graph, the area under the graph is $10 \times 10 = 100$
 $s = \int v dt = \int (10 + t) dt = 10t + \frac{1}{2}t^2$
 $s = 10(10) + \frac{1}{2}(10)^2 = 100 + 50 = 150$
 The area is 150

2) From the graph, $s = \frac{1}{2}at^2 + v_0t + s_0$
 $s = 0.5t^2 + 10t$
 $0 = 0.5t^2 + 10t$
 $0 = t(0.5t + 10)$
 $t = 0$ or $t = -20$
 $t = 0$ or $t = -20$
 $t = 0$ or $t = -20$
 $t = 0$ or $t = -20$
 $t = 0$ or $t = -20$

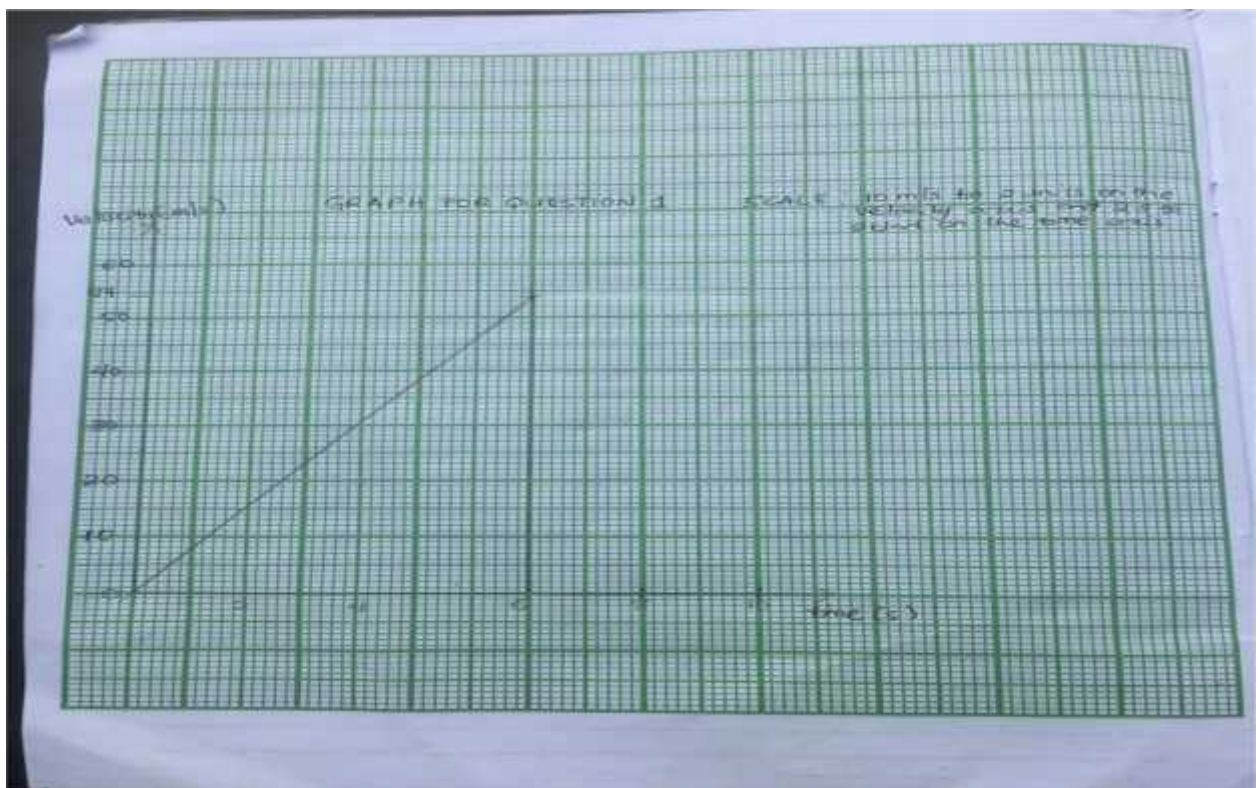
3) From the graph, $s = \frac{1}{2}at^2 + v_0t + s_0$
 $s = 0.5t^2 + 10t$
 From the graph, the area under the graph is $10 \times 10 = 100$
 $s = \int v dt = \int (10 + t) dt = 10t + \frac{1}{2}t^2$
 $s = 10(10) + \frac{1}{2}(10)^2 = 100 + 50 = 150$
 The area is 150

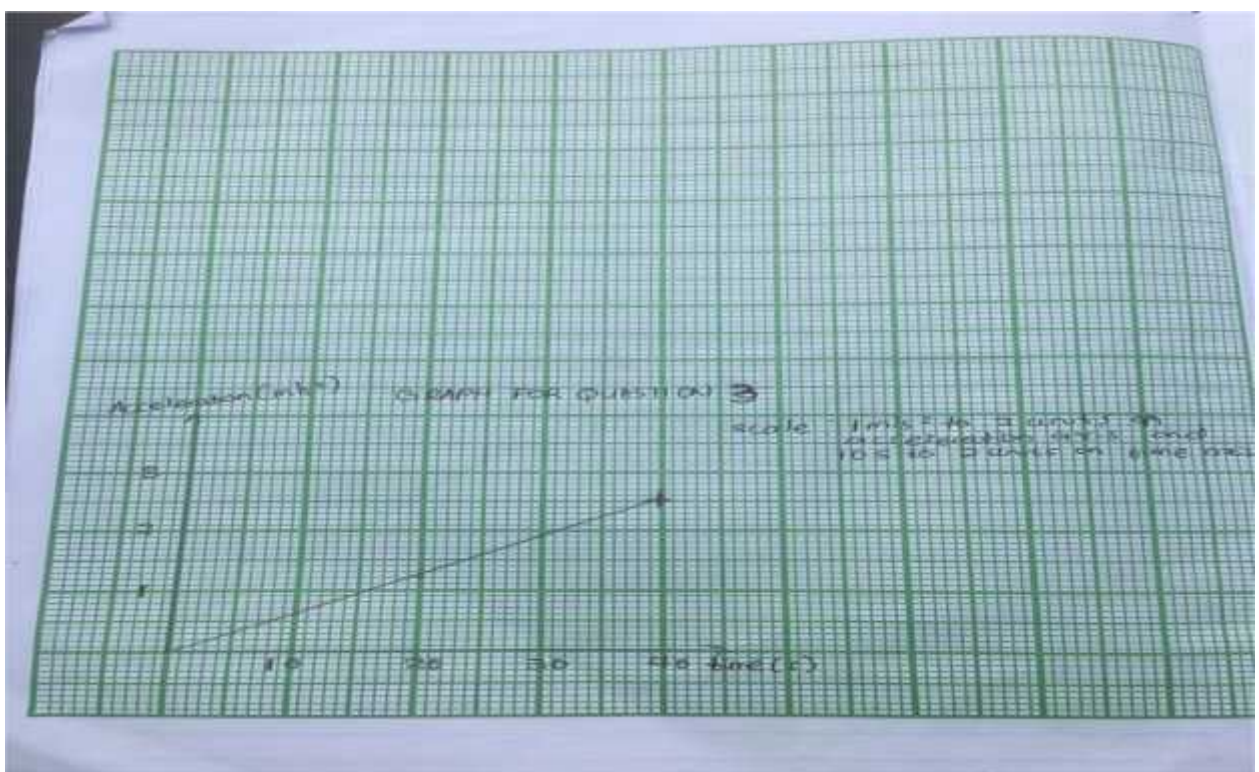
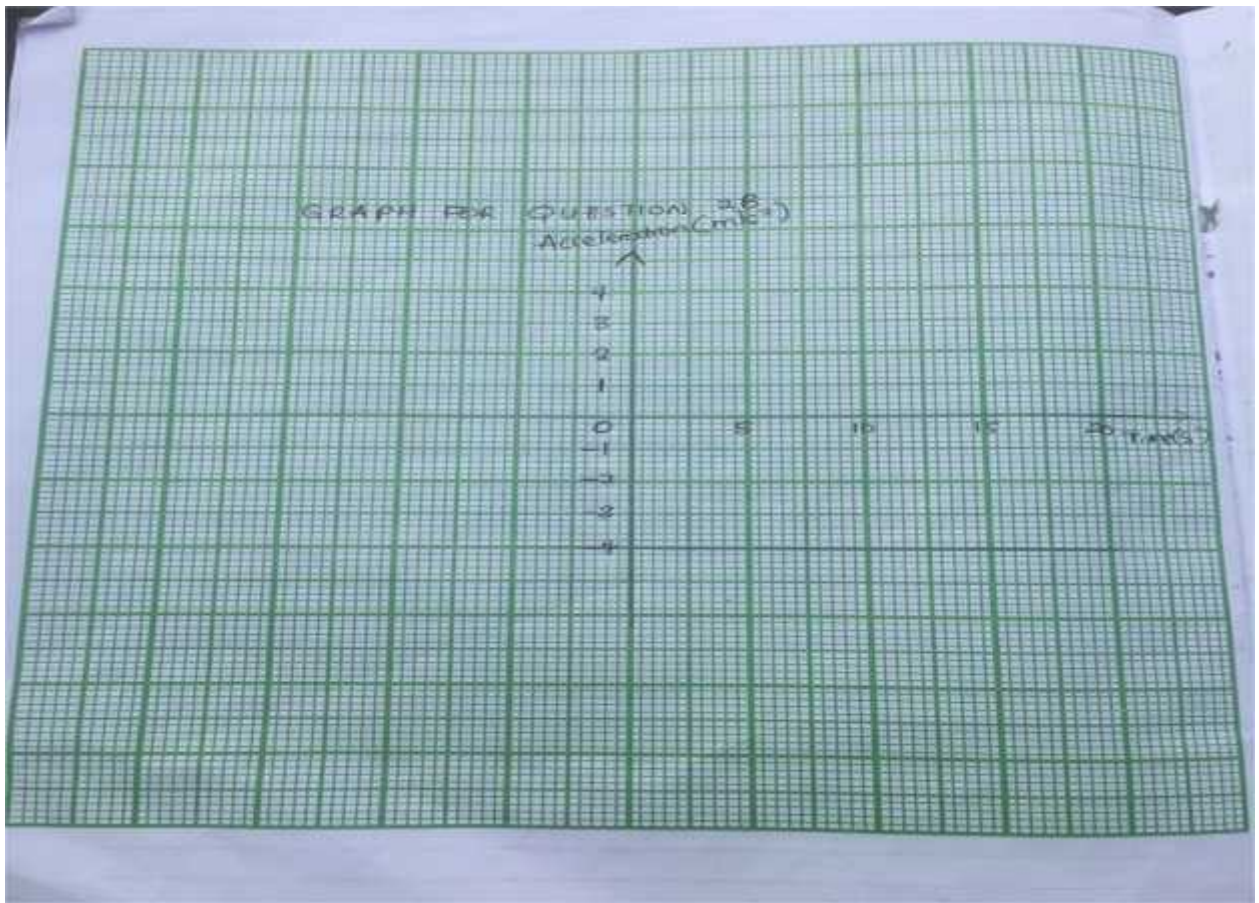
4) From the graph, the area under the graph is $10 \times 10 = 100$
 $s = \int v dt = \int (10 + t) dt = 10t + \frac{1}{2}t^2$
 $s = 10(10) + \frac{1}{2}(10)^2 = 100 + 50 = 150$
 The area is 150

5) From the graph, the area under the graph is $10 \times 10 = 100$
 $s = \int v dt = \int (10 + t) dt = 10t + \frac{1}{2}t^2$
 $s = 10(10) + \frac{1}{2}(10)^2 = 100 + 50 = 150$
 The area is 150

6) From the graph, the area under the graph is $10 \times 10 = 100$
 $s = \int v dt = \int (10 + t) dt = 10t + \frac{1}{2}t^2$
 $s = 10(10) + \frac{1}{2}(10)^2 = 100 + 50 = 150$
 The area is 150

7) From the graph, the area under the graph is $10 \times 10 = 100$
 $s = \int v dt = \int (10 + t) dt = 10t + \frac{1}{2}t^2$
 $s = 10(10) + \frac{1}{2}(10)^2 = 100 + 50 = 150$
 The area is 150

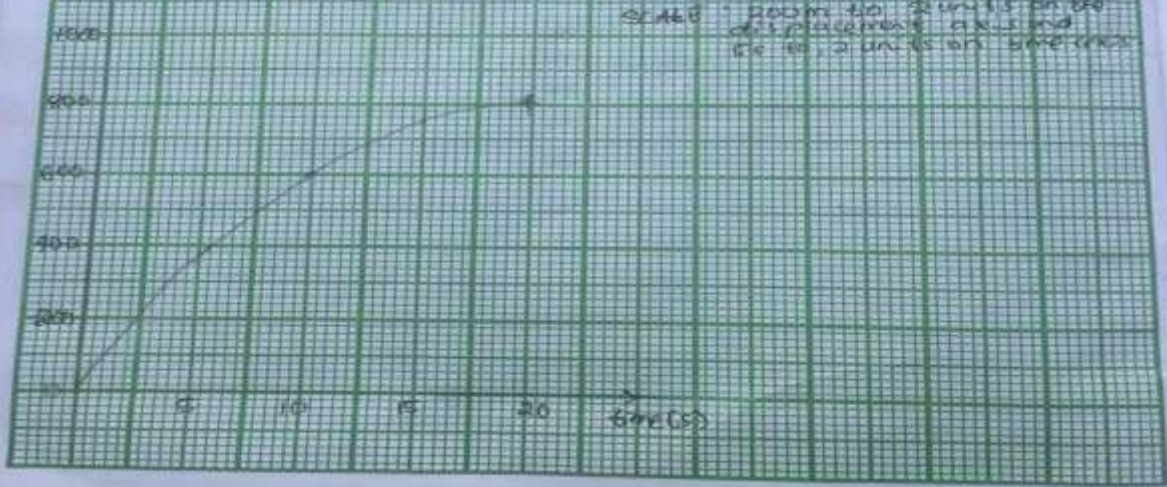




Displacement (m)

GRAPH FOR QUESTION 2A

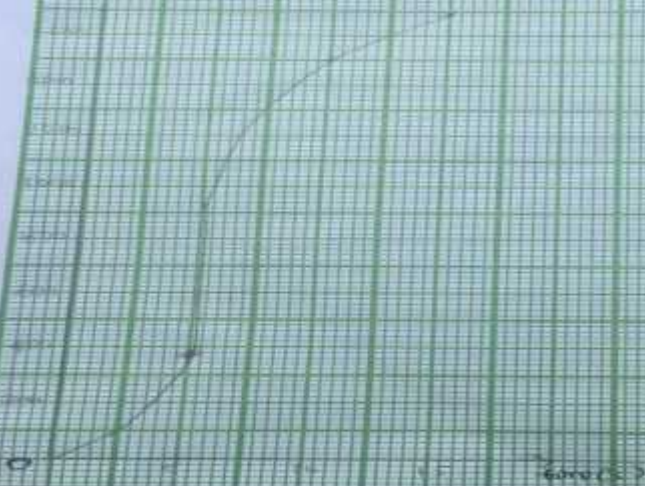
SCALE: 200m to 2 units on the displacement axis and 10 to 2 units on the time axis



Displacement
m

GRAPH FOR QUESTION 3

Scale: 200m to 2 units on displacement axis and 2s to 1 unit on time axis



Velocity (m/s)

GRAPH FOR QUESTION 4

Scale: 10 m/s to 2 units on the velocity axis and 2 s to 1 unit on the time axis

