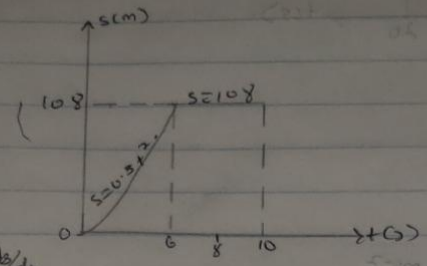
NAME: TUNDE- ADEWALA SIMISOLUWA.
MATRIC NO: 18/ENG08/022.
DEPARTMENT: BIOMEDICAL ENGINEERING.
COURSE: ENGINEERING MECHANICS (ENG234).
DATE: MAY 2020

1.



$v = ds/dt$

$v = 1 - 5t^2$

at $t = 6s$,

$v = 1 - 5(6)^2$

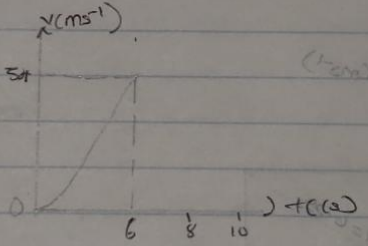
$= 1 - 5 \times 36$

$= -5 + ms^{-1}$

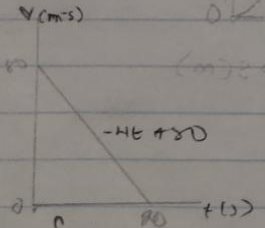
From $t = 6s - 10s$, $s = 10.8m$.

therefore, $v = 0$.

v-t graph.



2.



① $s = \int v\,dt$

$s = \int (-4t + 80)$

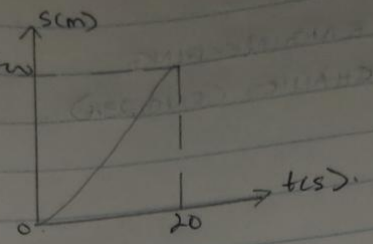
$s = -2t^2 + 80t$.

at $t = 20s$.

$s = -2(20)^2 + 80(20)$

$S = 160 - 80 = 80\,m$.

s-t graph.



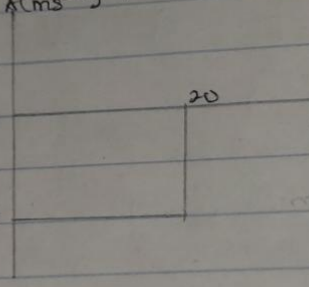
(b) Acceleration.

$a = \frac{dv}{dt}$

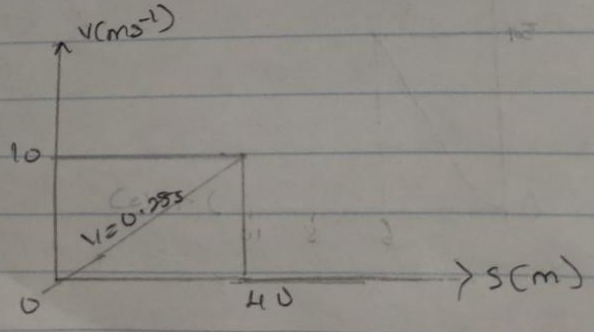
$\therefore a = -4\,ms^{-2}$

At $t = 20s$, $a = -4\,ms^{-2}$

A-t Graph.



(3)



$a = \left(\frac{dv}{ds}\right)v$

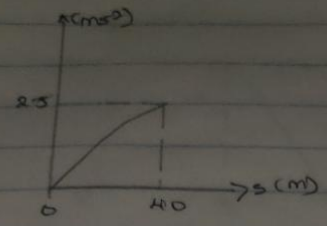
$v = 0.25s$

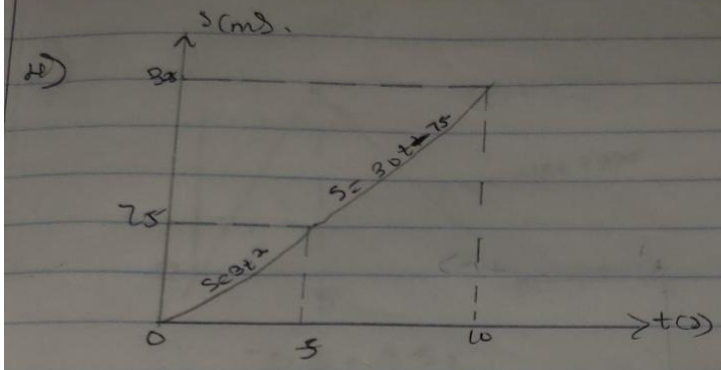
$a = 10 \times d(0.25s)/ds$

$a = 10 \times 0.25$

$a = 25\,ms^{-2}$

A-S Graph.





Velocity

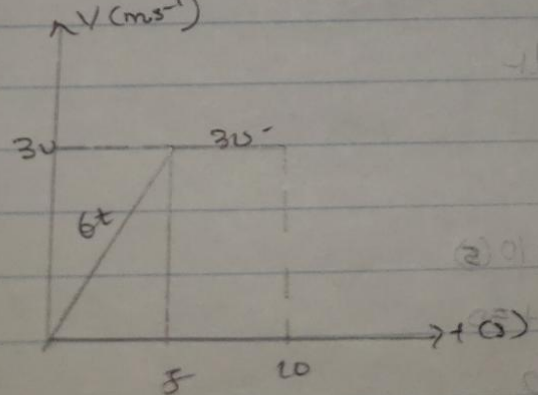
$$V = \frac{ds}{dt} = \frac{d(3t^2)}{dt} = 6t.$$

at $t = 5s$

$V = 6 \times 5$

$= 30 ms^{-1}$

V-t Graph.

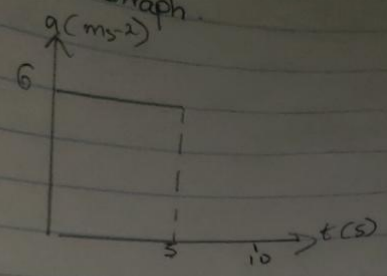


Acceleration.

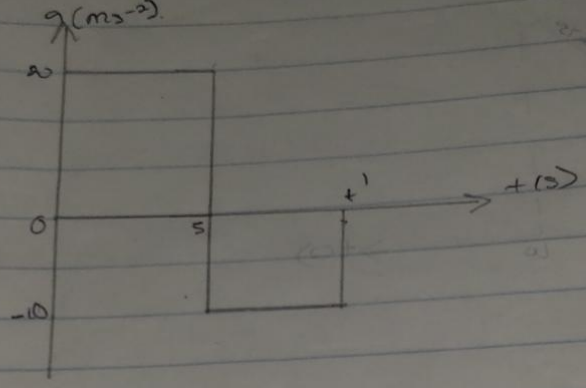
$$a = \frac{dv}{dt} = 6 ms^{-2}$$

at $t = 5s$, $a = 6 ms^{-2}$, at

A-t Graph.



5)



$V = \int a\,dt$

$V = \int 20\,dt$

$V = 20t$

at 5s

$V = 20 \times 5 = 100\ ms^{-1}$

$5s \le t \le t'$

$\int_{v_0}^{v} dv = \int_{5}^{t'} -10\,dt$

$v - 100 = -10t \Big|_5^{t'}$

$v - 100 = -10t' + 10(5)$

$v - 100 = -10t' + 50$

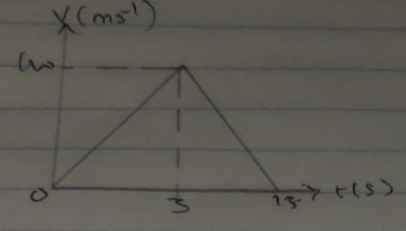
at t', $v = 0$

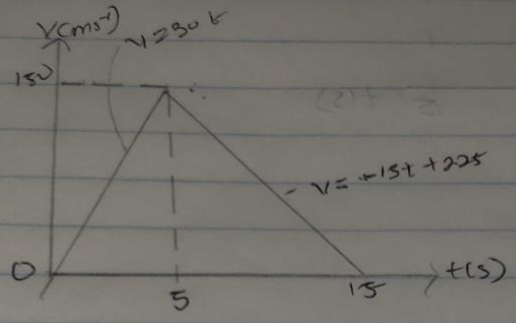
$0 - 100 = -10t' + 50$

$10t' = 150$

$t' = 15s$.

V-t Graph





$0 \leq t \leq 5s$

$V = 30t$

$\int_0^s ds = \int_0^5 30t$

$s = 15t^2 \Big|_0^5$

$s = 15(5)^2 - 15(0)^2$

$s = 15 \times (25)$

$s = 375m.$

$V = -15t + 225$

$\int_{375}^{s} ds = \int_5^{15} (-15t + 225)\, dt.$

$s - 375 = \frac{-15t^2}{2} + 225t \Big|_5^{15}$

$s - 375 = \left[\frac{-15(15)^2}{2} + 225(15)\right] - [$

$s - 375 = \left[\frac{-15 \times 225}{2} + 3375\right] - [$

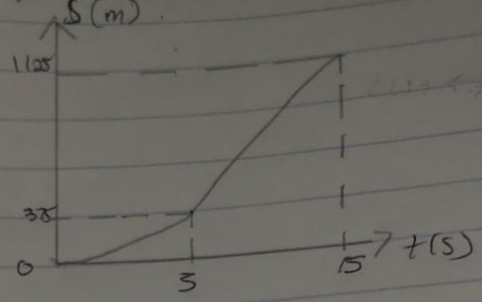
$s - 375 = [-1687.5 + 3375] - (-$

$s - 375 = +1687.5 - 937.5$

$s - 375 = 750$

$S = 1125m$.

S–t Graph.



TDDC

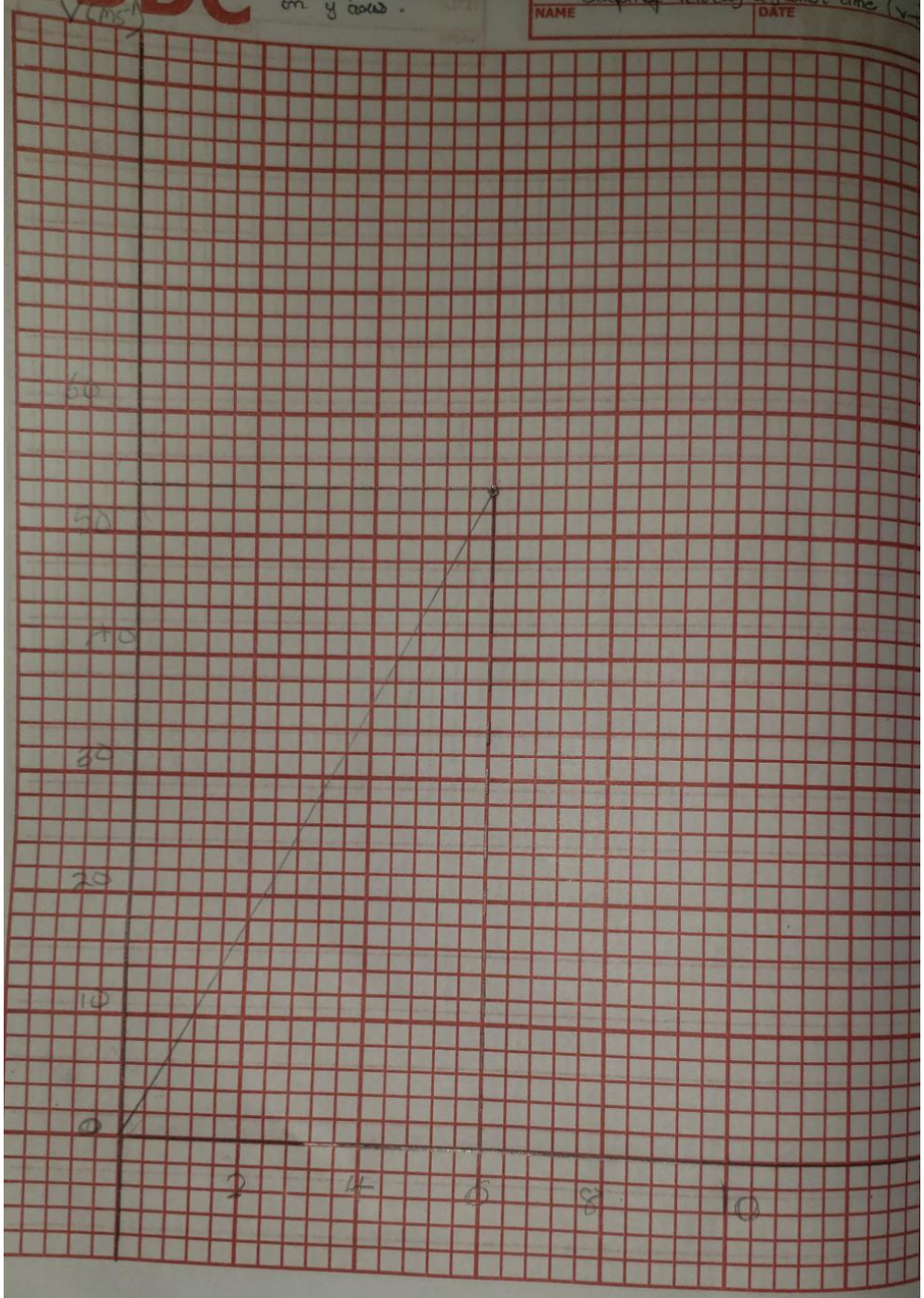
2cm represents 2 units on t axis.

2cm represents 10 units on y axis.

Velocity - Time Graph.

TITLE Graph of velocity against time (v-

NAME DATE



TDDC

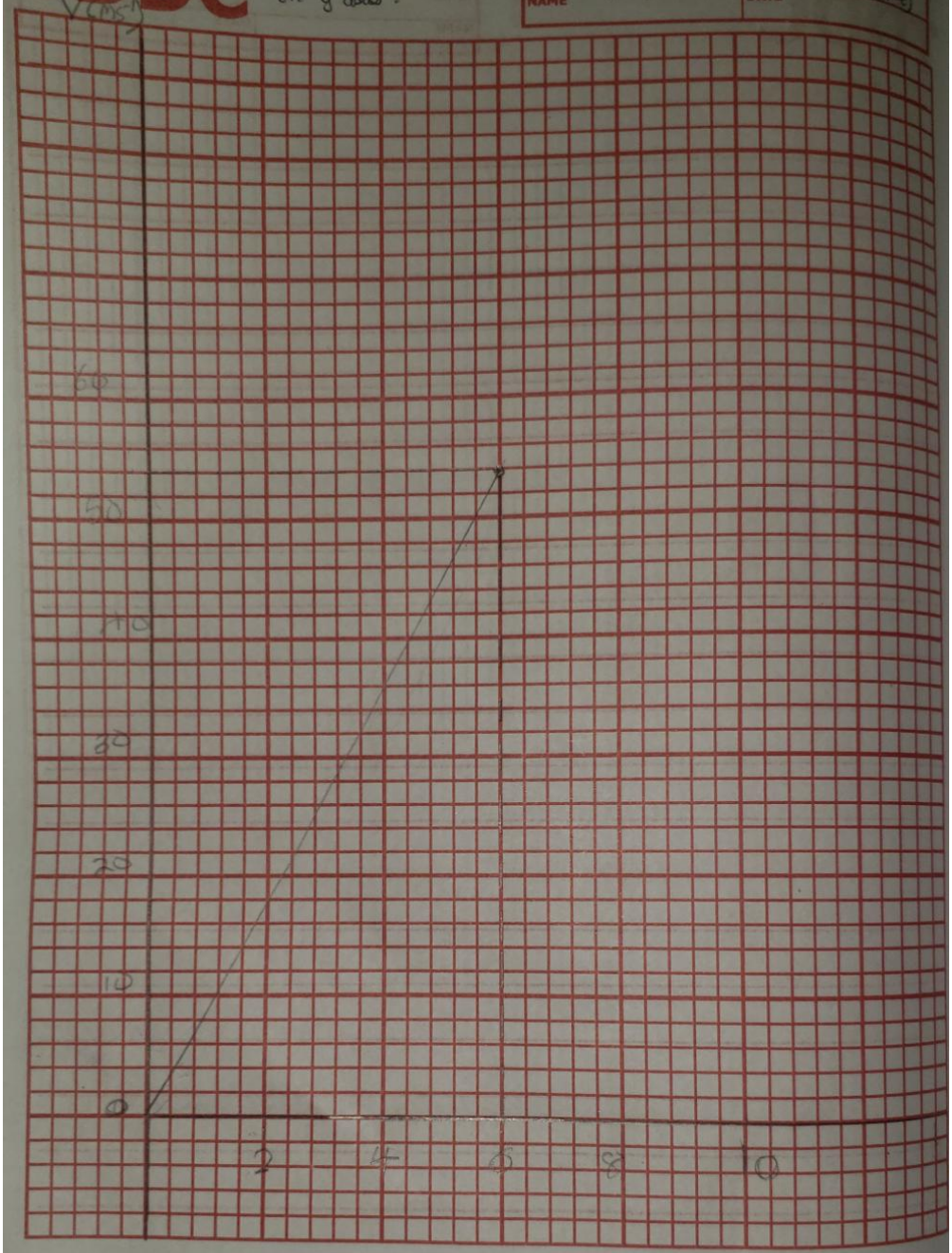
2cm represents 2 units on t axis.

2cm represents 10 units on y axis.

Velocity - Time Graph.

TITLE Graph of velocity against time (v-t)

NAME DATE

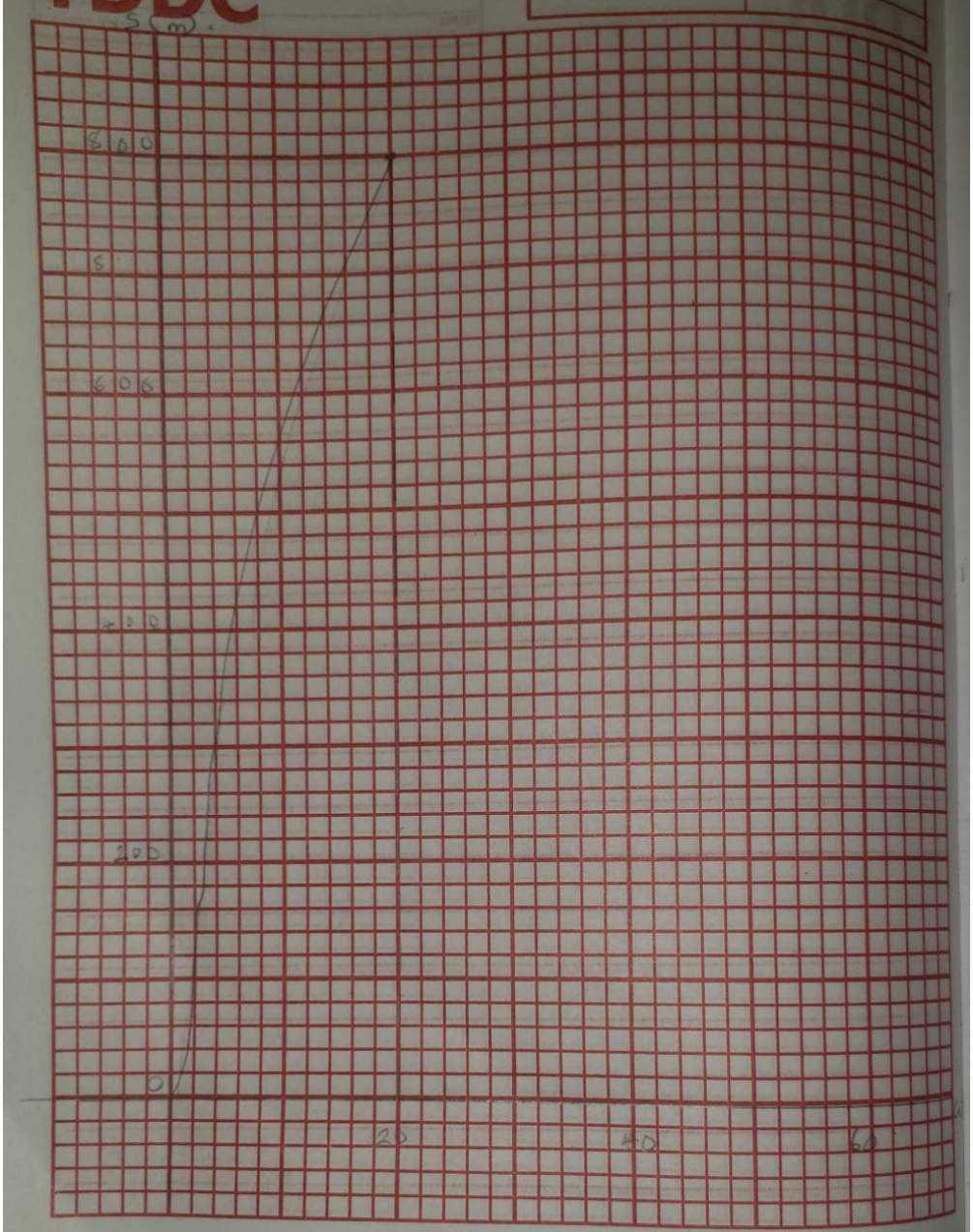


2(a)

scale on x axis: 4 cm represents 20 units
scale on s axis: 4 cm represents 200 units

TDDC

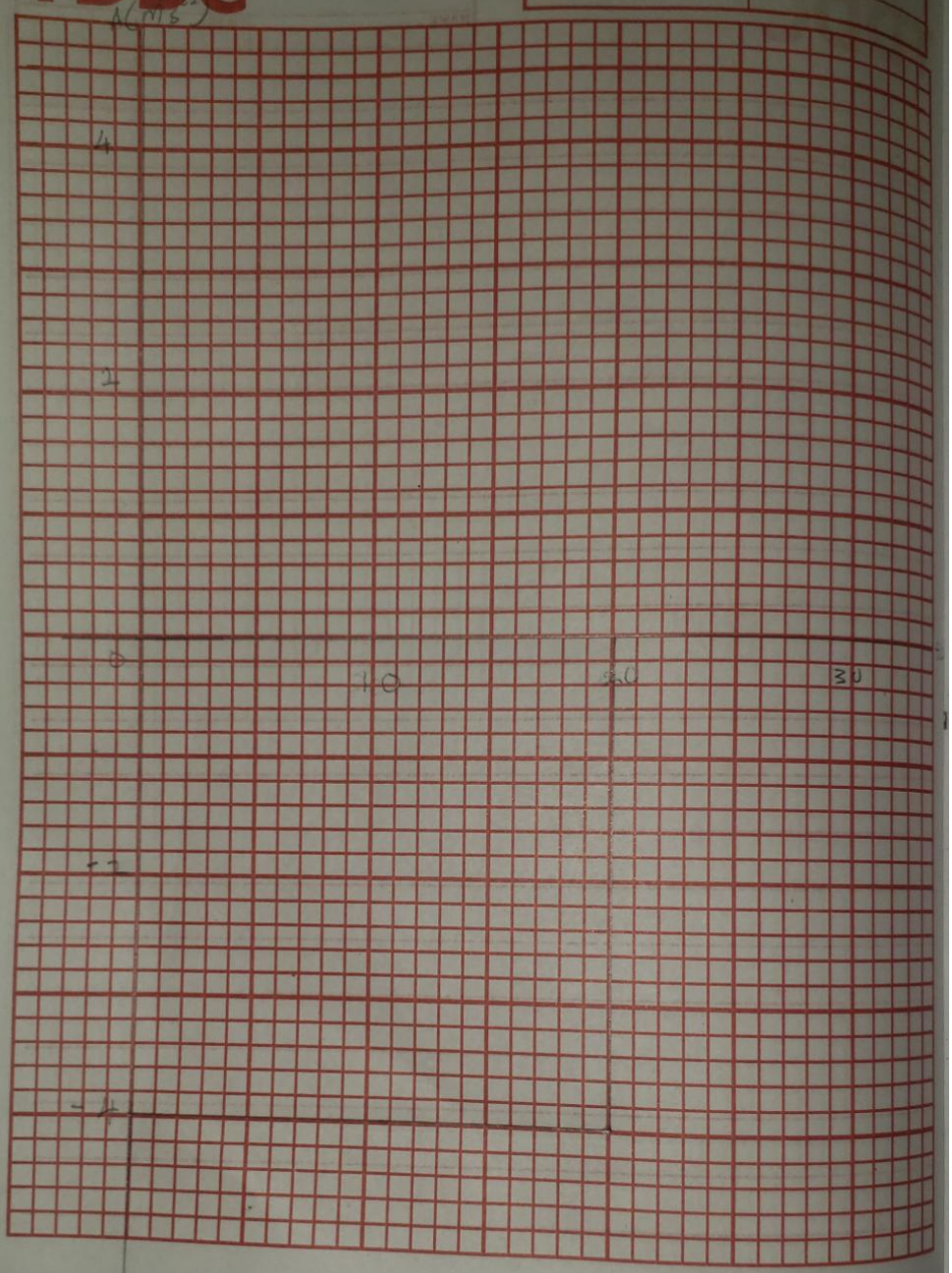
TITLE: Speed - Time Graph.
NAME:
DATE:



Scale on + axis: 1 cm represents 1 unit
Scale on a axis: 1 cm represents 2 units

TDDC

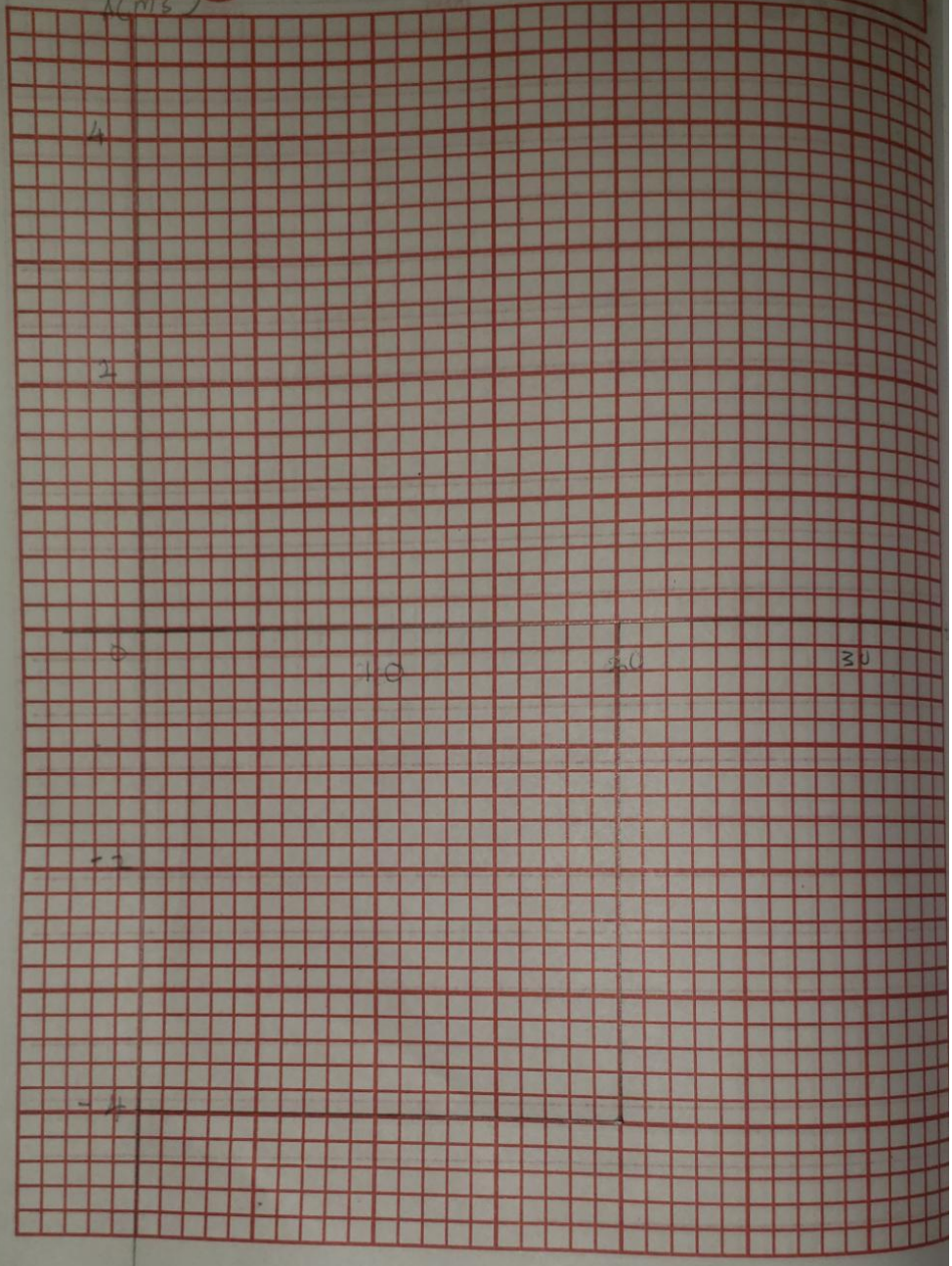
TITLE	Acceleration - Time Graph.
NAME	DATE



TDDC

Scale on t axis: 1 cm represents 10 s
Scale on a axis: 1 cm represents 2 m/s²

TITLE: Acceleration - time Graph.
NAME:
DATE:



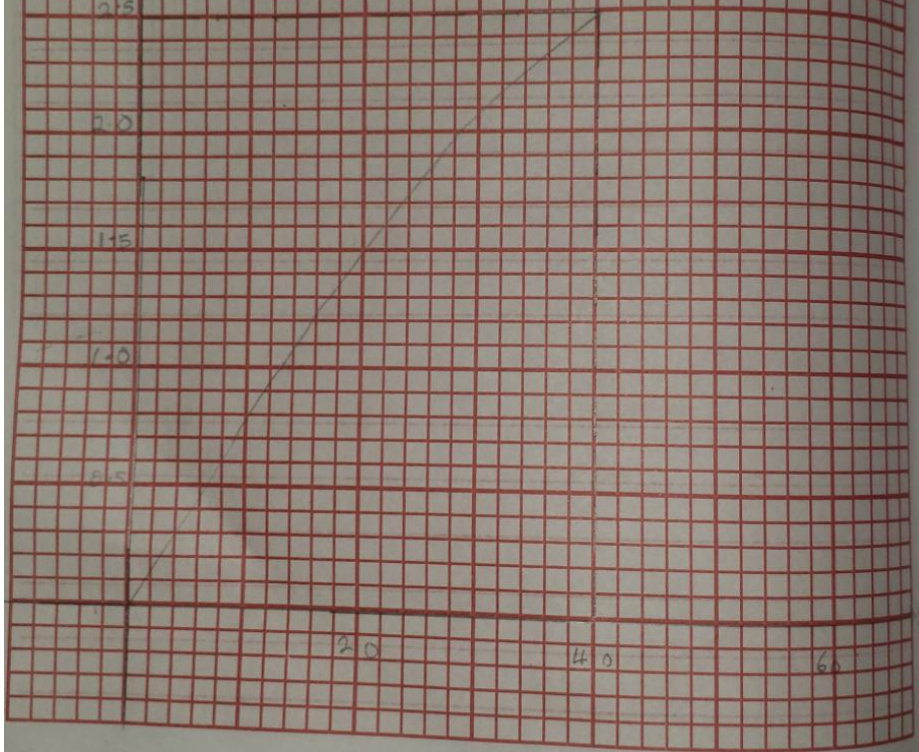
Scale on S axis: 1cm represents 20m
Scale on A axis: 2cm represents 0.5m/s²

TDDC

TITLE Acceleration- Speed Graph.

NAME DATE

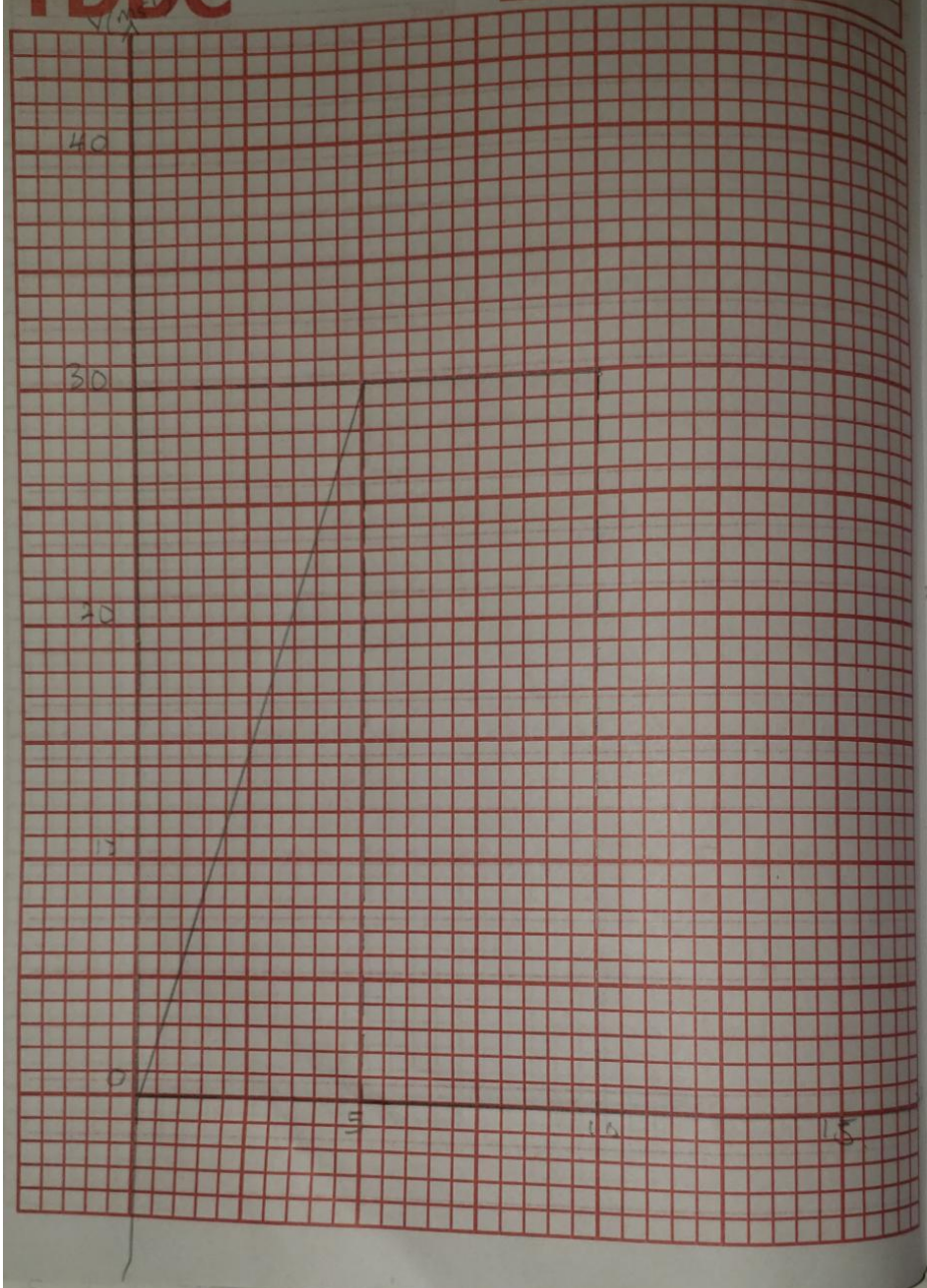
A m/s²



scale on t axis 4cm represents 5 unit
scale on v axis 4cm represents 10 units

TITLE Velocity - Time Graph
NAME DATE

TDDC



Scale on T axis : 1cm represents 1 sec
scale on A axis : 2cm represents 1 m/s²

TDDC

TITLE Acceleration-Time Graph

NAME DATE

A(m/s²)

6

5

4

3

2

1

0

5

10

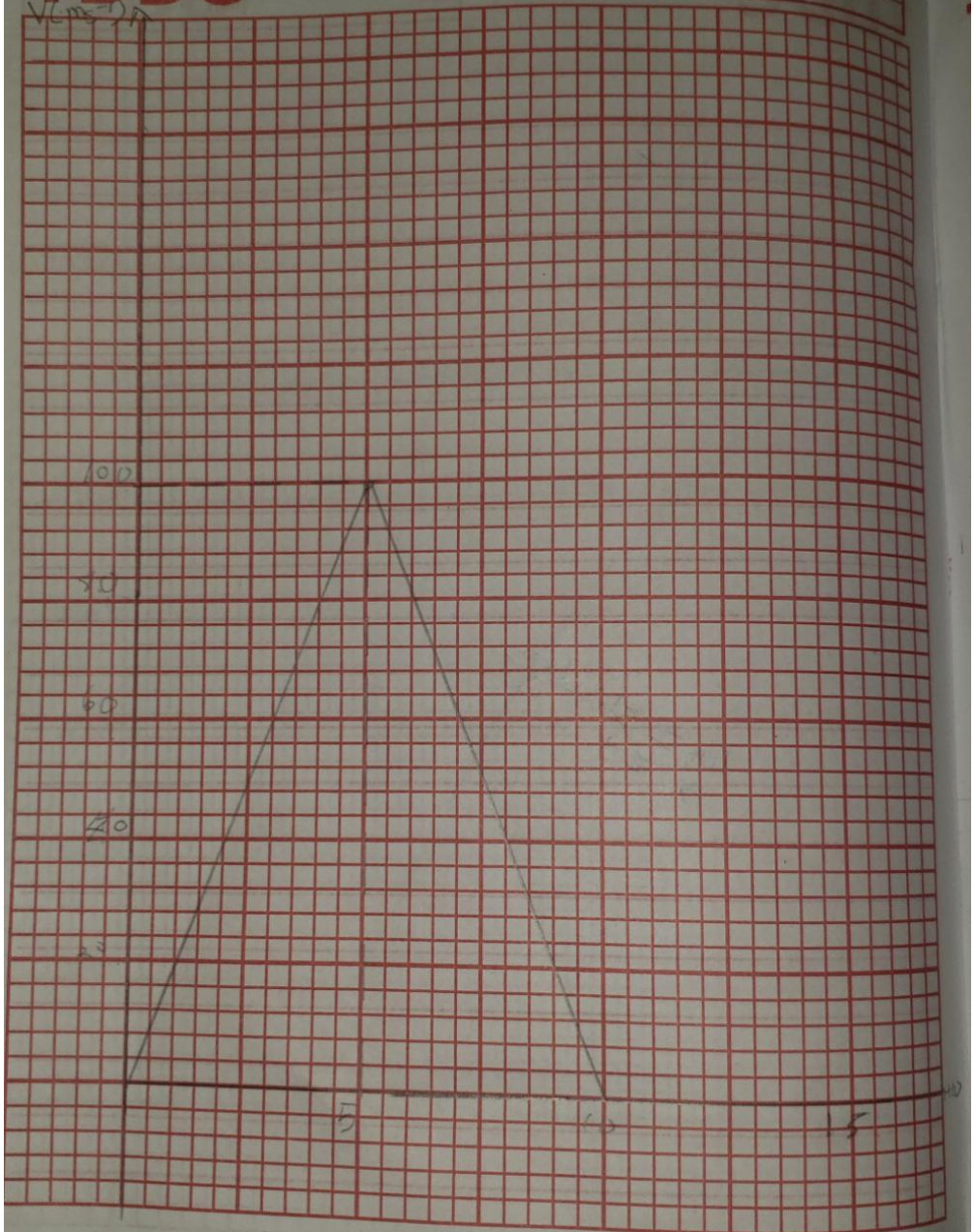
15

Scale on t axis: 1cm represents 5 units
Scale on v axis: 2cm represents 20 units

TDDC

TITLE Velocity-Time Graph

NAME DATE



(B)

Scale on t axis: 4 cm represents 5 s
Scale on s axis: 2 cm represents 5 m

TDDC

TITLE Speed – Time Graph
NAME DATE