

Motion Graphs Test Memorandum

Naam: _____

Jou Selnommer: _____

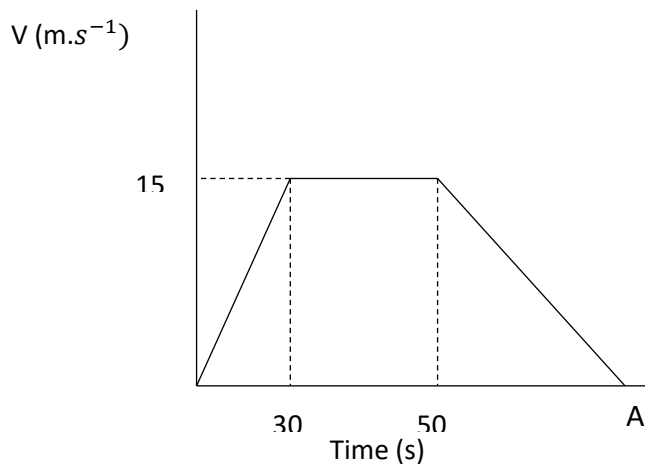
Jou e-posadres: _____

QUESTION 1:

- 1.1) A.
- 1.2) C.
- 1.3) D.
- 1.4) A.
- 1.5) A.

QUESTION 2:

- 2.1) The following graph represents a motorcar's velocity over a period of 50s. The motorcar initially moved out of a stationary position.



- 2.2) Calculate the rate in change of velocity for the first 30 seconds. (3)
2.3) Use calculations and determine if the motor car will travel 525m. (5)

QUESTION 2:

- 2.2) Acceleration = slope from $t=0$ tot $t=30s = \frac{\Delta V}{\Delta t} = \frac{15}{30} = 0,5 \text{ m. s}^{-2}$. (3)

2.3)

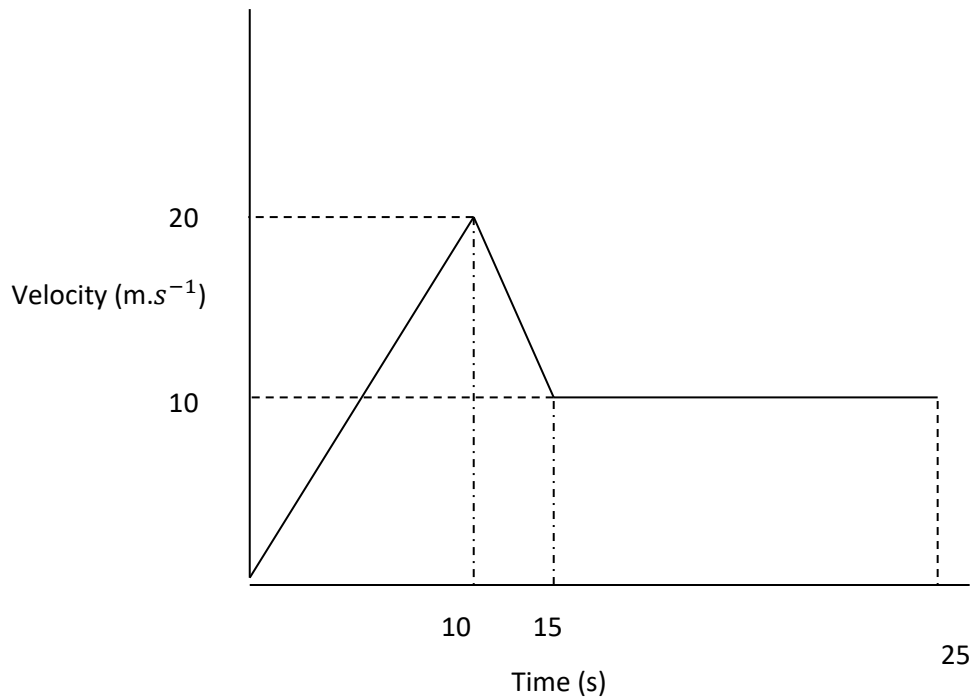
Displacement = Area

1st Area (Triangle) = $\frac{1}{2} b h = \frac{1}{2} (15)(30) = 225\text{m}$.

2nd Area (Square) = $l.b = (15)(20) = 300\text{m}$.

Totale distance = 525m . The car will travel 525m. (5)

QUESTION 3:



The graph shows how a driver is accelerating for the first 10 seconds. The driver puts his foot on the break to slow down as illustrated.

- 3.1) How far did the car travel after 25 seconds? (5)
- 3.2) What is the motorcar's change in velocity after 25s? (3)
- 3.3) Calculate the acceleration for the first 10 seconds. (2)

QUESTION 3:

3.1)

$$\begin{aligned} 10\text{s: Displacement} &= \text{area}(t=0 \text{ tot } t=10\text{s}) \\ &= \frac{1}{2}bh \\ &= \frac{1}{2}(200)(2)=100\text{m.} \end{aligned}$$

$$\begin{aligned} 15\text{s: Displacement} &= \text{area}(t=10 \text{ tot } t=15\text{s}) \\ &= \frac{1}{2}bh \\ &= \frac{1}{2}(5)(10) \\ &= 25\text{m.} \end{aligned}$$

$$\begin{aligned}
 25\text{s: Displacement} &= \text{area}(t=15 \text{ tot } t=25) \\
 &= l.b \\
 &= (10)(10) \\
 &= 100 \text{ m.}
 \end{aligned}$$

Totale Distance : 225m. (5)

$$\begin{aligned}
 3.2) \Delta V &= V_f - V_i \\
 &= (10 - 20) \\
 &= -10 \text{ m.s}^{-1}
 \end{aligned}$$

thus 10m.s^{-1} in the opposite direction. (3)

3.3) Acceleration for first 10s:

$$\begin{aligned}
 a &= \text{slope } (t=0 \text{ tot } t=10\text{s}) \\
 &= \frac{\Delta v}{\Delta t} = 20/10 = 2\text{m.s}^{-2}.
 \end{aligned}
 \tag{3}$$