

DATE:

NAME:

CLASS:

CHAPTER 11
SCIENCE INQUIRY

Velocity-Time Graphs

BLM 11-10

Goal • Examine the relationships between velocity-time graphs and acceleration.

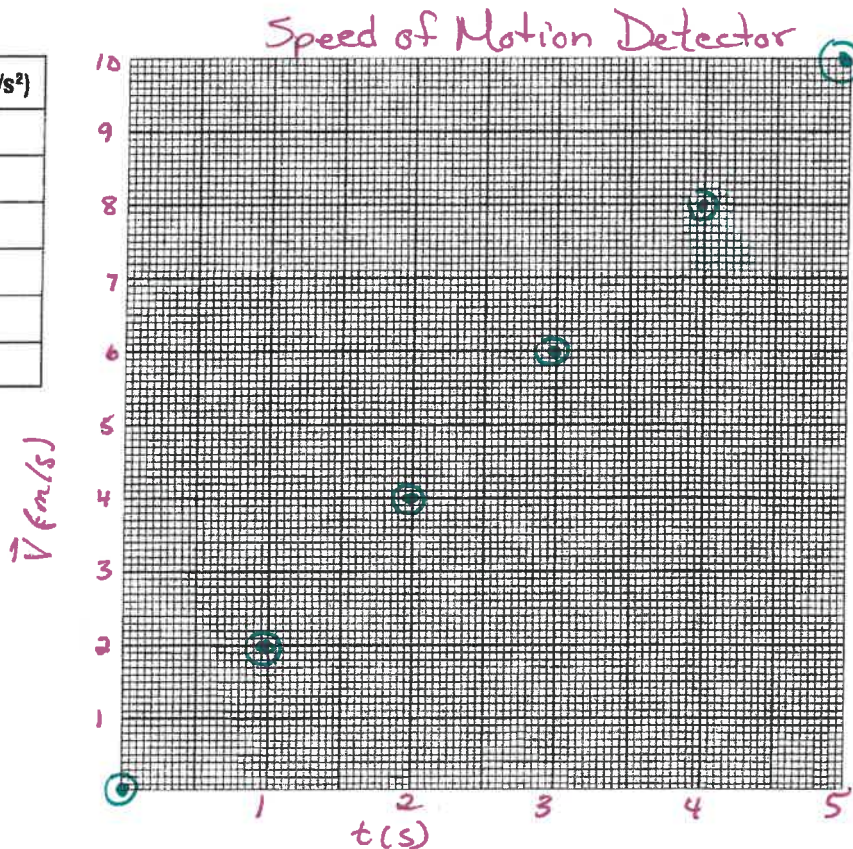
What to Do

Answer each question in the space provided. A motion detector was used to gather all the data in the tables.

1. Use the data in each table to draw a velocity-time graph. Then calculate the slope of the graph.

(a)

t (s)	\vec{v} (m/s)	\vec{a} (m/s ²)
0	0	2
1	2	2
2	4	2
3	6	2
4	8	2
5	10	2



Slope of velocity-time graph =

$$\begin{aligned} \text{slope} &= \frac{\Delta y}{\Delta x} = \frac{10-0}{5-0} \\ &= 10/5 = 2 \text{ m/s}^2 \end{aligned}$$

How does the slope of the line compare with the acceleration of the object?

It is the same.

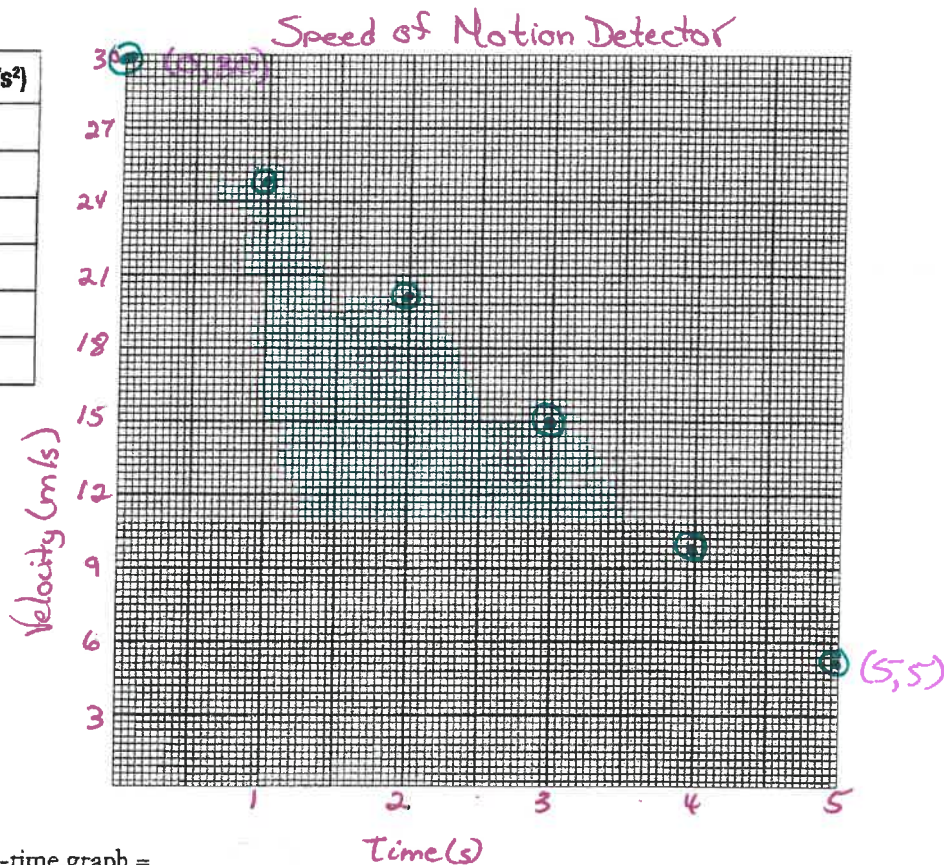
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Velocity-Time Graphs (continued)

(b)

t (s)	\vec{v} (m/s)	\vec{a} (m/s ²)
0	30	-5
1	25	-5
2	20	-5
3	15	-5
4	10	-5
5	5	-5



Slope of velocity-time graph =

$$\begin{aligned} \text{slope} &= \frac{\Delta y}{\Delta x} = \frac{5-30}{5-0} \\ &= -\frac{25}{5} = -5 \text{ m/s}^2 \end{aligned}$$

How does the slope of the line compare with the acceleration of the object?

The same.