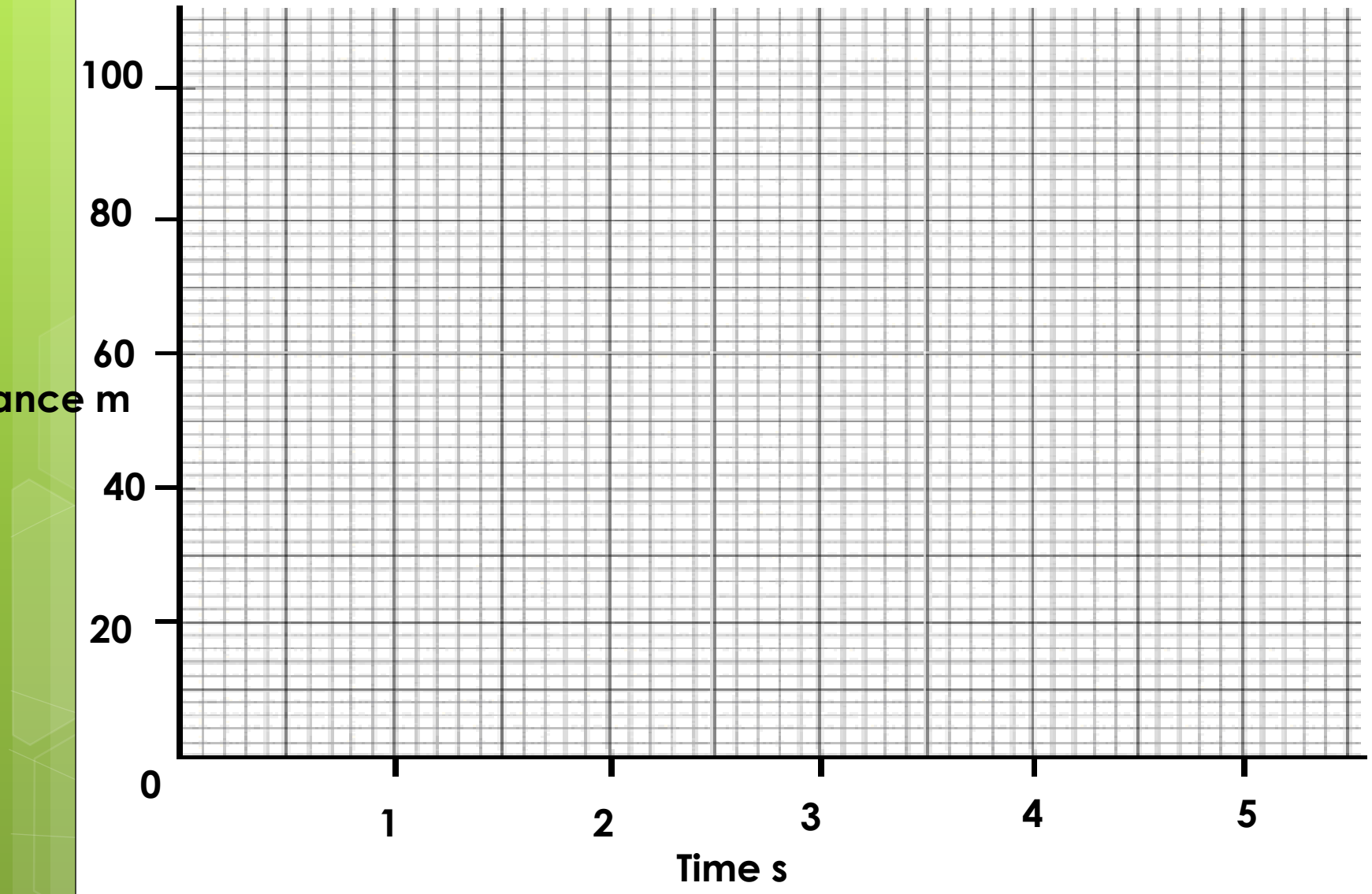
Speed, Velocity and Acceleration – exam questions

2011 - Higher

- A stone is dropped from the top of a cliff and the distance it fell was recorded at intervals of time in the table

Distance m	0	5	20	45	80	100
Time s	0	1	2	3	4	4.5

- Draw a graph of distance against time in the grid below.
- A smooth curve through the plotted points is required


100
80
60
ance m
40
20
0
1
2
3
4
5
Time s

- Use the graph to find how far the stone had fallen in 3.5 s
- Calculate the average speed of the falling stone between the second and the fourth second. Give the unit with your answer.
- In this experiment is distance fallen directly proportional to time? Justify your answer.

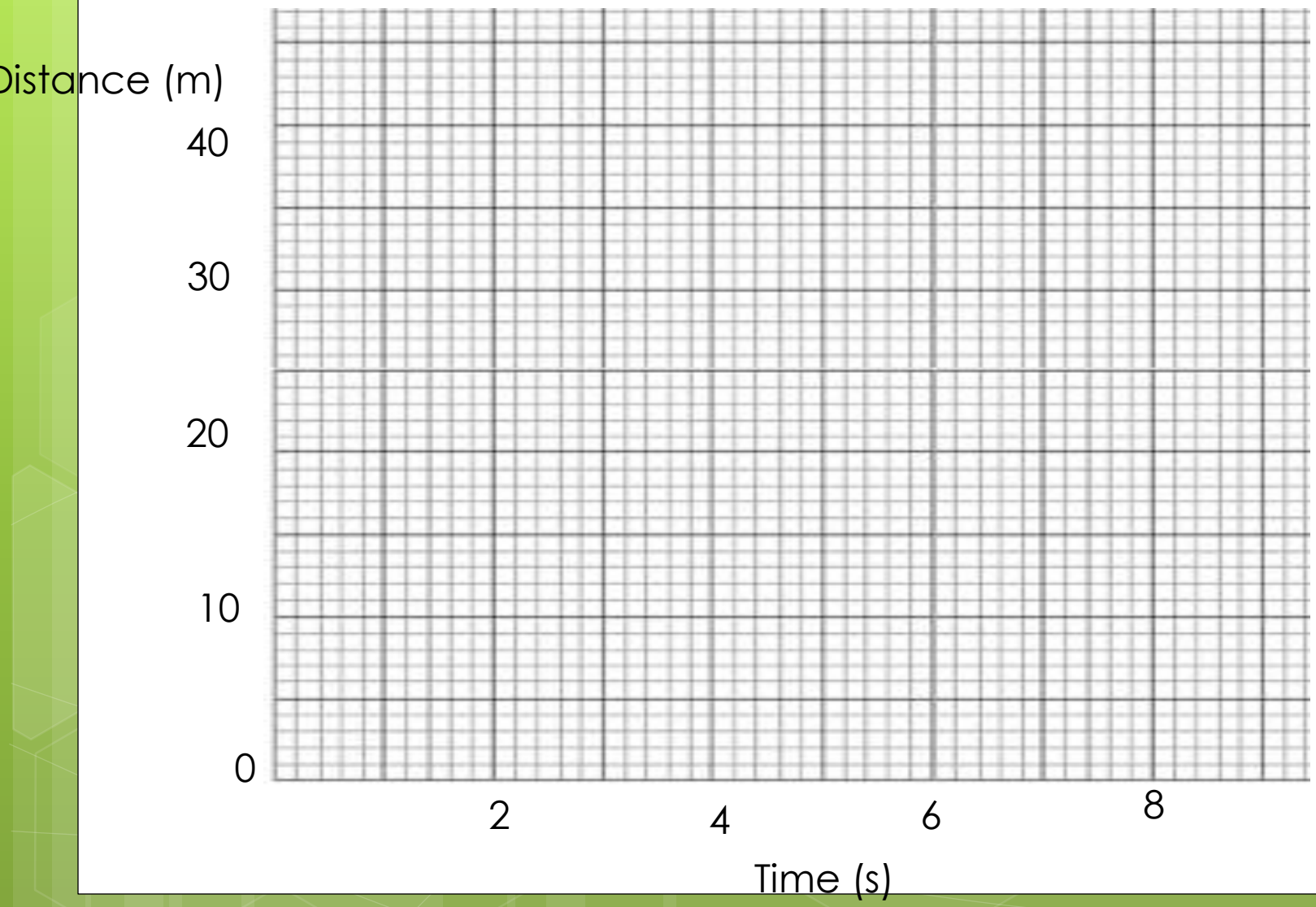
2011 - Ordinary

A cyclist moved along a straight track. A student measured the time taken by the cyclist to travel various distances.

The data collected is shown in the table.

The student then drew the graph shown below.

Distance m	0	10	20	30	40
Time s	0	2	4	6	8


Distance (m)
40
30
20
10
0
2
4
6
8
Time (s)

Name an instrument used to measure the **distance** in this investigation

Name an instrument used to measure the **time** in this investigation

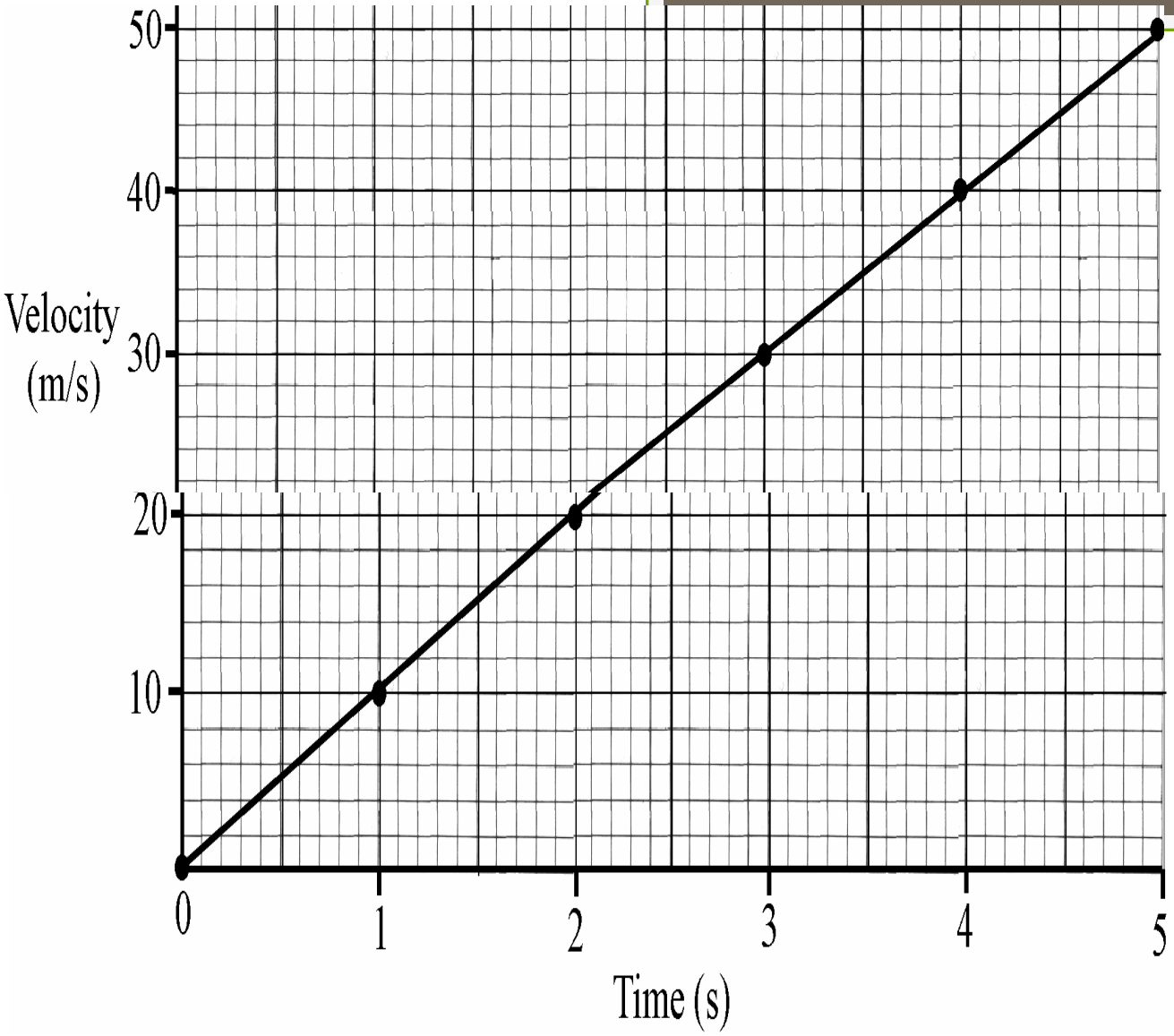
Use the graph to estimate the distance travelled by the cyclist in 5 seconds

Calculate the **speed** of the cyclist in m s–1 (m / s).

Is the cyclist **accelerating**? Give a reason for your answer.

2009 - Higher

A stone was dropped from the top of a tall cliff. The stones approximate velocity was measured each second as it fell. The data collected during this experiment is given in the graph.


Velocity (m/s)
50
40
30
20
10
0
1
2
3
4
5
Time (s)

Define ***velocity***.

Use data from the graph to ***estimate the acceleration of the stone*** as it fell. Give the ***units of acceleration*** with your answer.

Name the ***force*** that caused the stone to fall.

The stone had a mass of 2 kg. What was the ***weight*** of the stone on earth? Give the unit.

2009 - Ordinary

A cyclist moves **20 metres** along a track in **4 seconds**.

In the table write the letter **S** beside the **speed** of the cyclist.

Write the letter **D** beside the **distance** the cyclist will travel in 2 seconds.

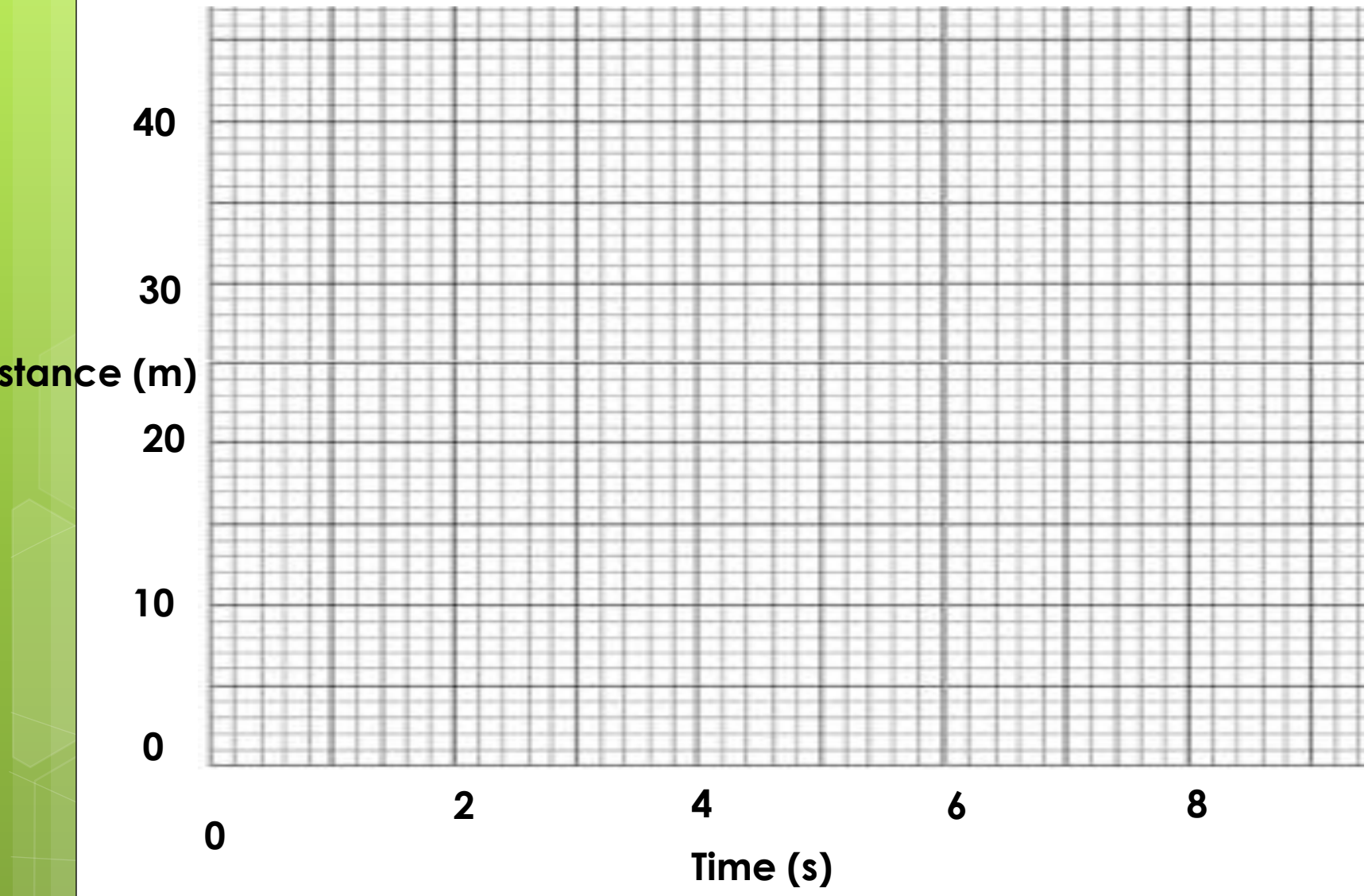
	5 m/s
	80 m/s
	10 m
	40 m

2008 - Ordinary

A cyclist moved along a track. The distance travelled by the cyclist was measured every 2 seconds. The data collected is presented in the table below.

Distance m	0	10	20	30	40
Time s	0	2	4	6	8

Use this data to draw a graph of distance travelled (*y*-axis) against time (x-axis) using the grid provided below.


40
30
stance (m)
20
10
0
0
2
4
6
8
Time (s)

Use the graph to estimate the distance travelled by the cyclist in 5 seconds.

Calculate the speed of the cyclist in m s–1 (m / s).

2007 - Ordinary

The speed of a car is 15 m s–1

In the table write the letter **D** beside the **distance** the car will travel in 5 seconds.

Write the letter **F** beside the word that describes what happens when the **speed of a car increases**.

	3 m
	75 m
	Acceleration
	Force