Speed, Distance & Time Difficulty: Hard

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Algebra and graphs
Sub-Topic	Speed, Distance & Time
Paper	Paper 2
Difficulty	Hard
Booklet	Question Paper 1

Time allowed: **54 minutes**

Score: **/42**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

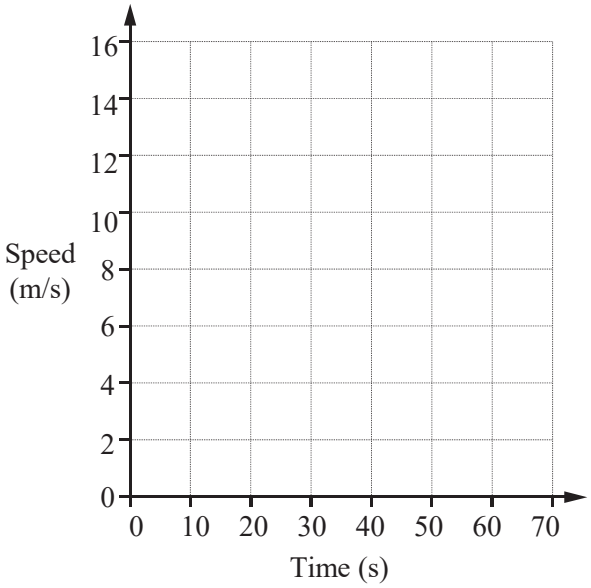
CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1

Petra begins a journey in her car.
She accelerates from rest at a constant rate of 0.4 m/s^2 for 30 seconds.
She then travels at a constant speed for 40 seconds.

On the grid, draw the speed-time graph for the first 70 seconds of Petra's journey.



[2]

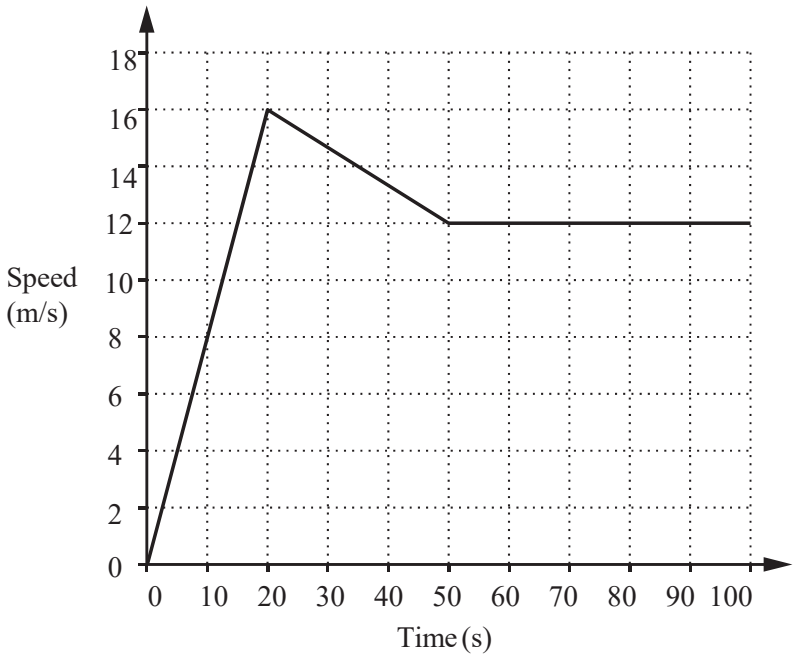
Question 2

Amar cycles at a speed of 18 km/h.
It takes him 55 minutes to cycle between two villages.

Calculate the distance between the two villages. [2]

Question 3

The diagram shows information about the first 100 seconds of a car journey.



(a) Calculate the acceleration during the first 20 seconds of the journey. [1]

(b) Work out the total distance travelled by the car in the 100 seconds. [3]

Question 4

A train travels for m minutes at a speed of x metres per second.

(a) Find the distance travelled, in **kilometres**, in terms of m and x.
Give your answer in its simplest form.

[2]

(b) When $m = 5$, the train travels 10.5 km.

[2]

Find the value of x.

Question 5

A car of length 4.3 m is travelling at 105 km/h.
It passes over a bridge of length 36 m. [3]

Calculate the time, in seconds, it takes to pass over the bridge **completely**.

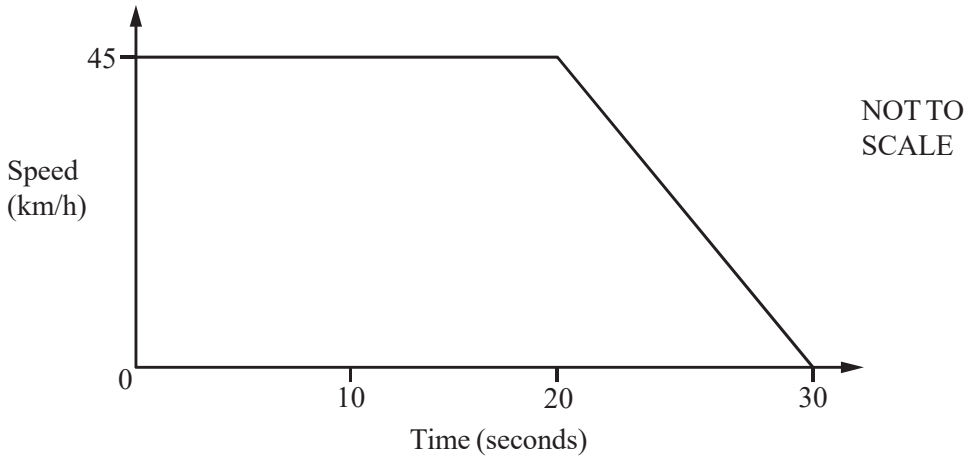
Question 6

A car travels at 56km/h.

Find the time it takes to travel 300 metres.
Give your answer in seconds correct to the nearest second.

s [4]

Question 7



The diagram shows the speed-time graph of a car.
The car travels at 45 km/h for 20 seconds.
The car then decelerates for 10 seconds until it stops.

(a) Change 45 km/h into m/s.

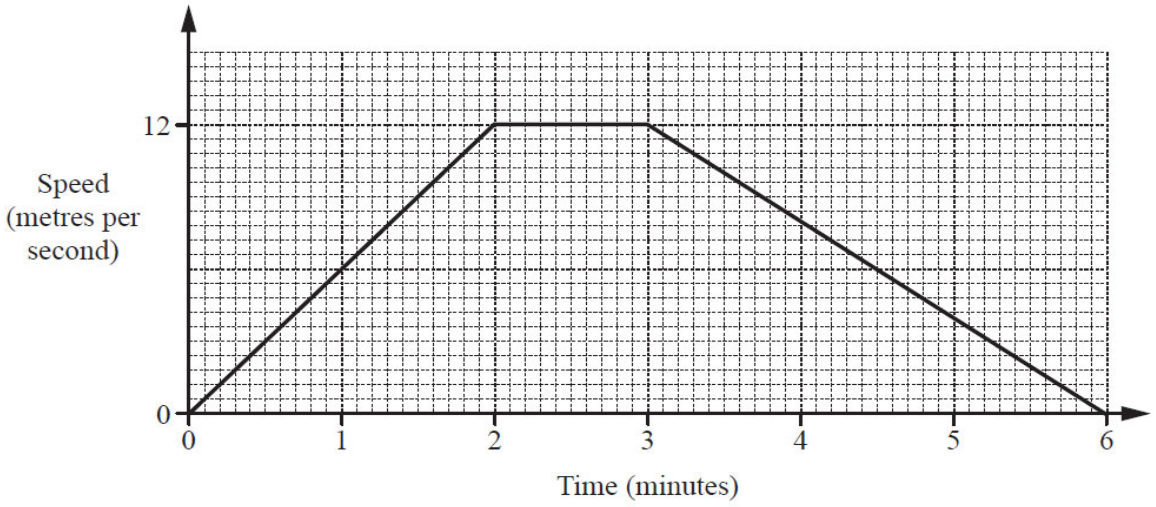
[2]

(b) Find the deceleration of the car, giving your answer in m/s^2.

[1]

(c) Find the distance travelled by the car during the 30 seconds, giving your answer in metres.

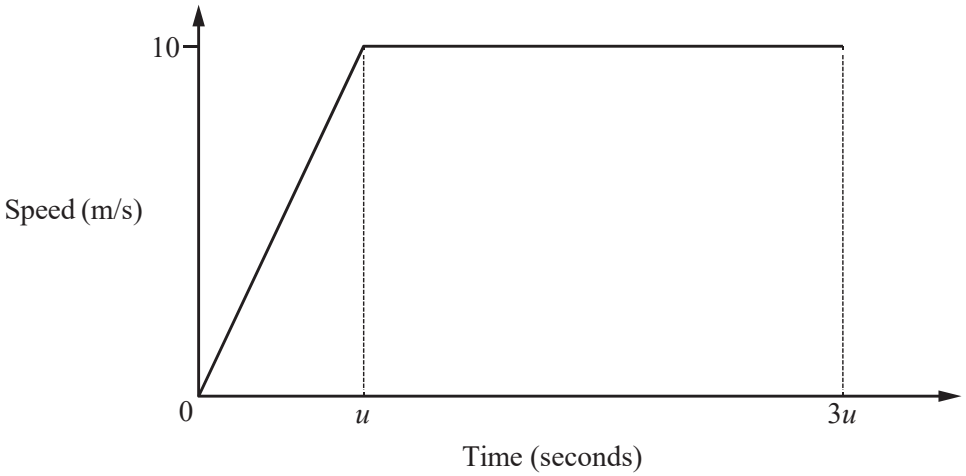
[3]



A tram leaves a station and accelerates for 2 **minutes** until it reaches a speed of 12 metres per second. It continues at this speed for 1 minute.
It then decelerates for 3 minutes until it stops at the next station.
The diagram shows the speed-time graph for this journey.

Calculate the distance, in metres, between the two stations.

[3]



NOT TO SCALE

A car starts from rest and accelerates for u seconds until it reaches a speed of 10 m/s.
The car then travels at 10 m/s for $2u$ seconds.
The diagram shows the speed-time graph for this journey.

The distance travelled by the car in the first $3u$ seconds is 125 m.

(a) Find the value of u.

[3]

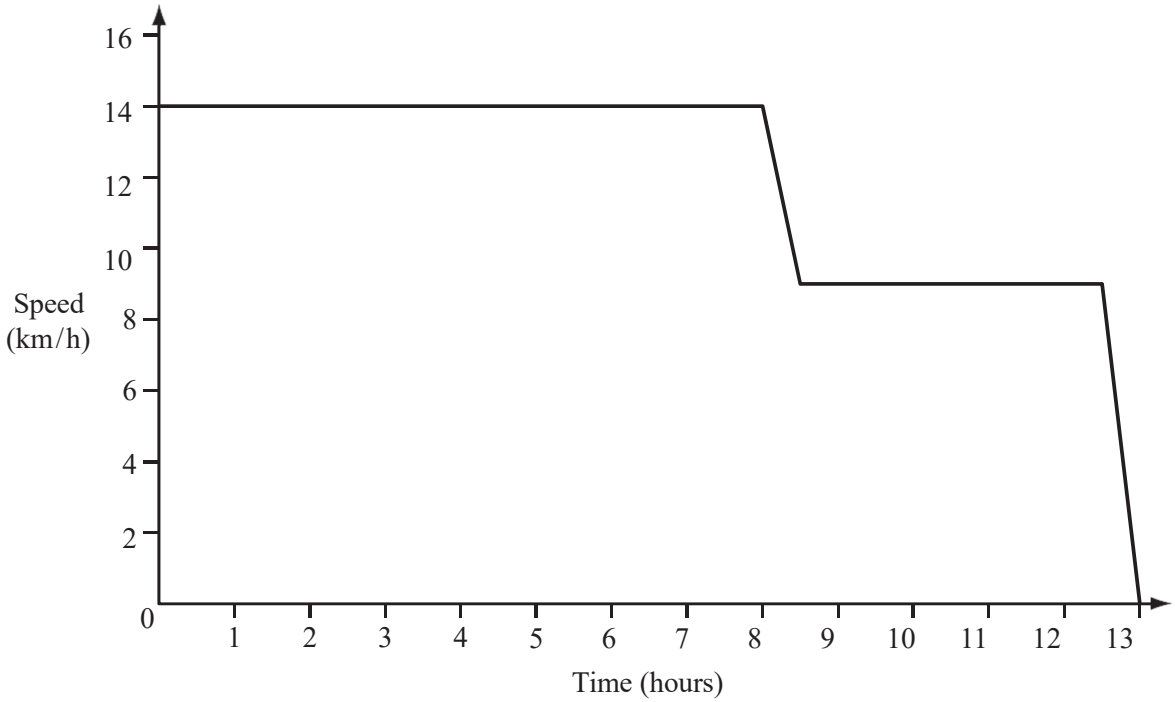
(b) Find the acceleration in the first u seconds.

[1]

A container ship travelled at 14 km/h for 8 hours and then slowed down to 9 km/h over a period of 30 minutes.

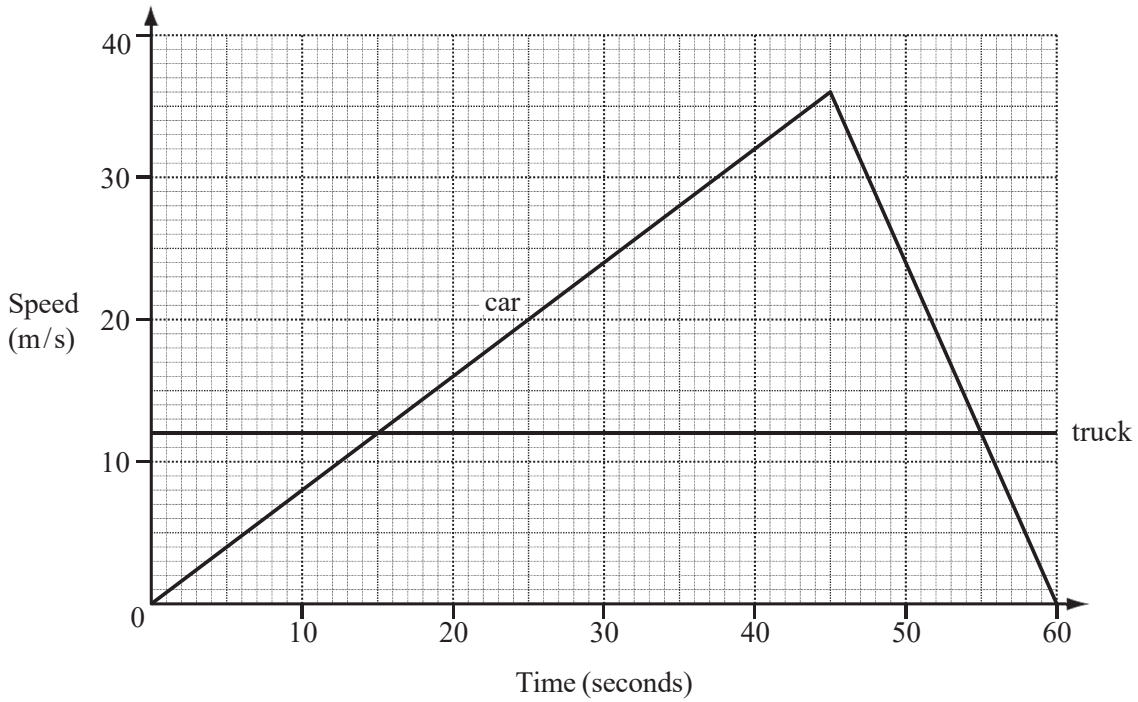
It travelled at this speed for another 4 hours and then slowed to a stop over 30 minutes.

The speed-time graph shows this voyage.



(a) Calculate the total distance travelled by the ship. [4]

(b) Calculate the average speed of the ship for the whole voyage. [1]



The graph shows the speed of a truck and a car over 60 seconds.

(a) Calculate the acceleration of the car over the first 45 seconds.

[2]

(b) Calculate the distance travelled by the car while it was travelling faster than the truck.

[3]