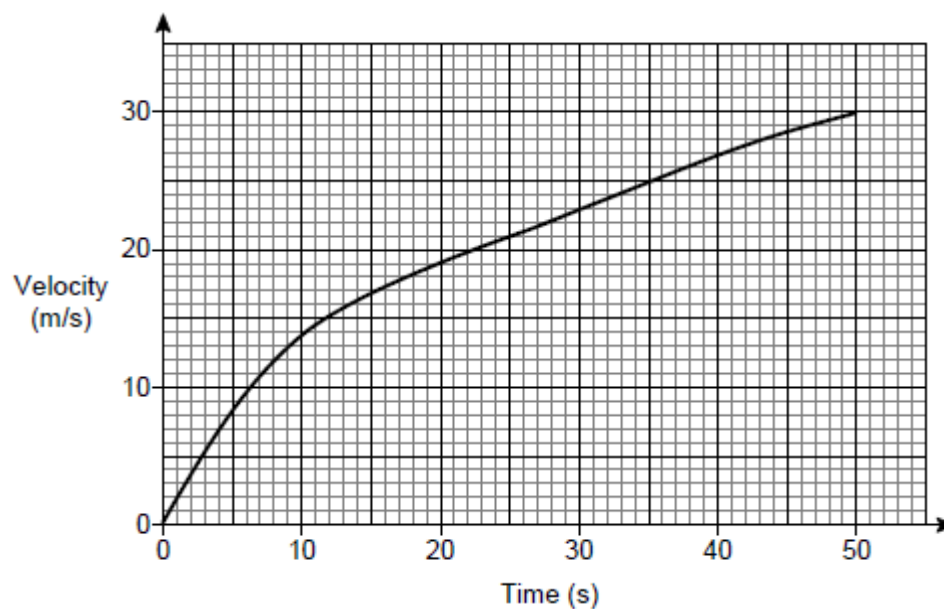### Non-Calculator

Q1.

Here is the velocity-time graph of a car for 50 seconds.

(a)   Work out the average acceleration during the 50 seconds.

Give the units of your answer.

_____

_____

_____

Answer _____

(2)

(b)   Estimate the time during the 50 seconds when

the instantaneous acceleration = the average acceleration
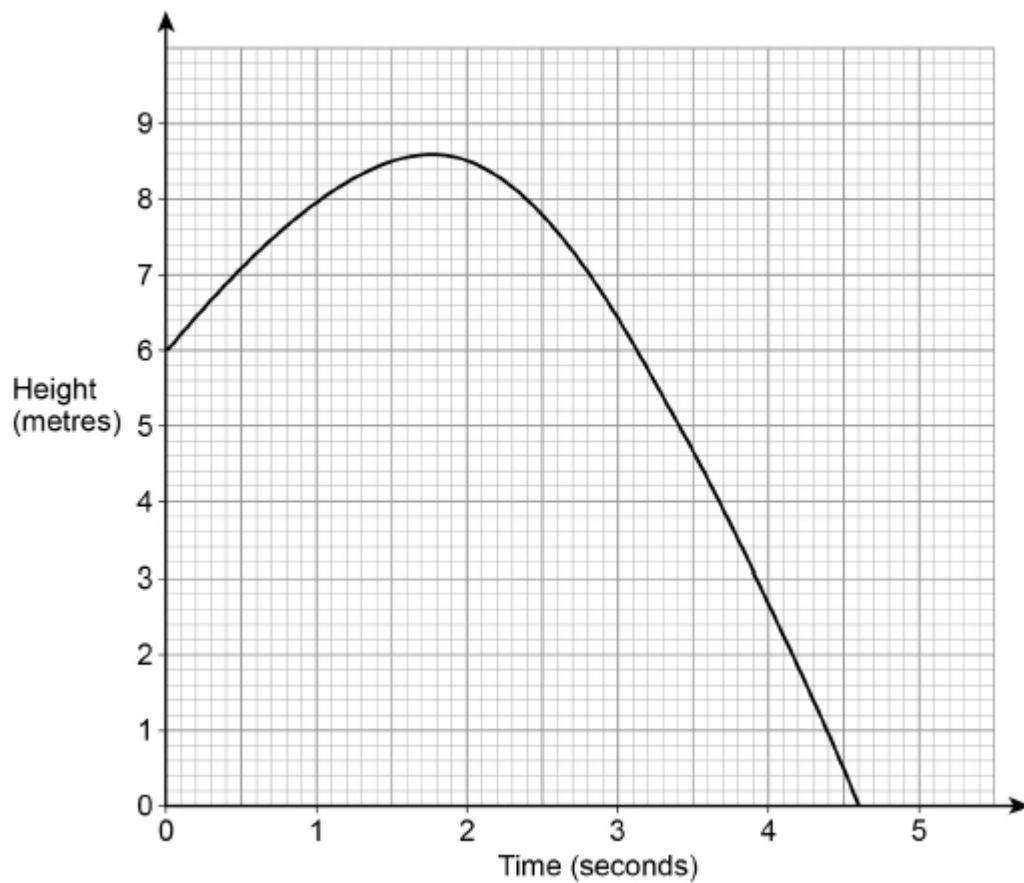
You **must** show your working on the graph.

_____

Answer _____

(2)
(Total 4 marks)

AQA GCSE Maths - Gradients and Rate of Change (H)   *PhysicsAndMathsTutor.com*

Q2.

A ball is thrown from a point 6 metres above the ground.

The graph shows the height of the ball above the ground, in metres.

Estimate the speed of the ball, in m/s, after 1 second.

You **must** show your working.

_____

_____

_____

_____

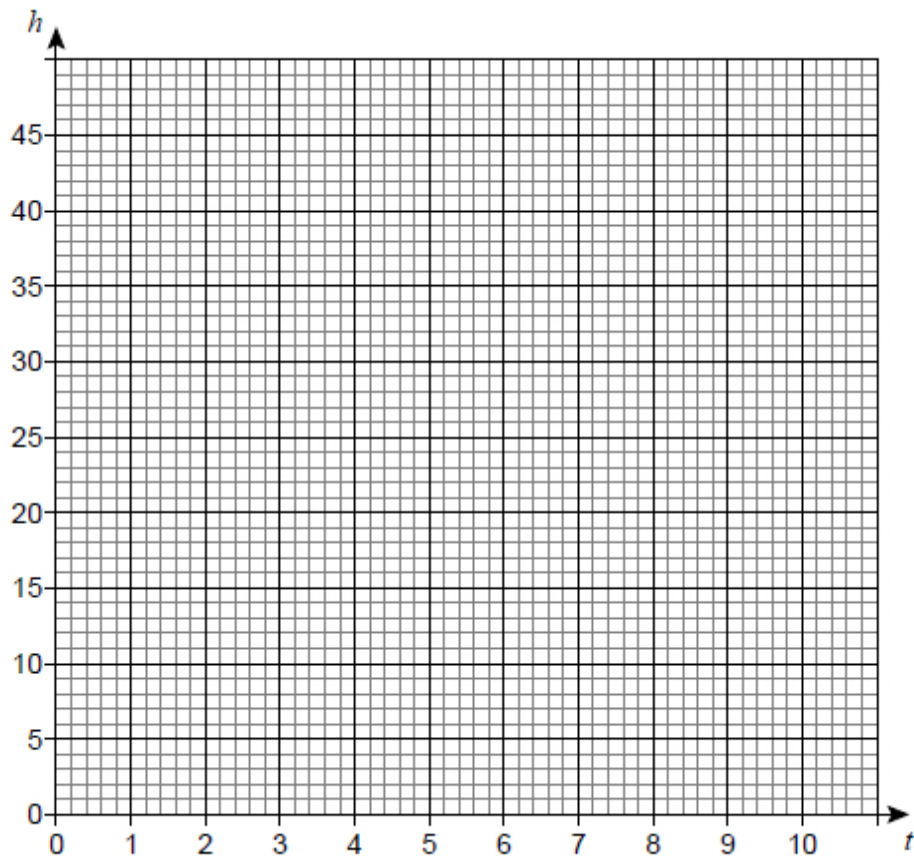Answer _____ m/s

(Total 2 marks)

Q3.

The height, h metres, of a particle at time, t seconds, is given by the function

$$h = 0 \qquad\qquad 0 \le t < 2$$

$$h = (14 - t)(t - 2) \qquad 2 \le t \le 10$$

(a) Draw a graph to show the height of the particle in the first 10 seconds.

(3)

(b) By joining the points on the graph where $t = 3$ and $t = 7$ with a straight line, work out the average rate of change of height between 3 and 7 seconds.

_____

_____
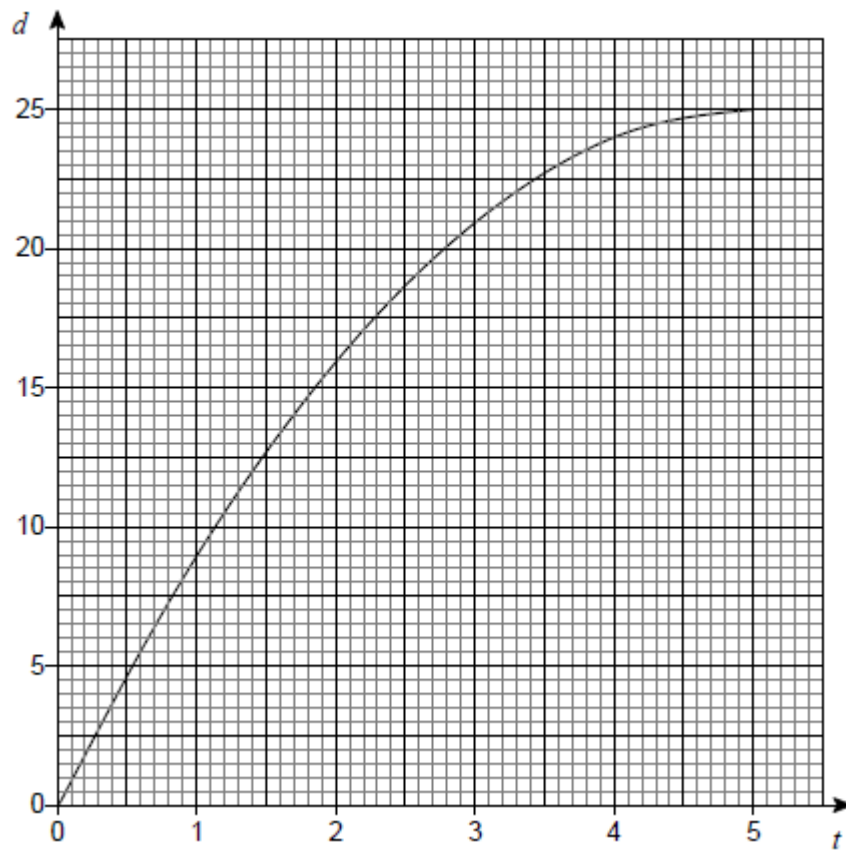
Answer .... m/s

(2)
(Total 5 marks)

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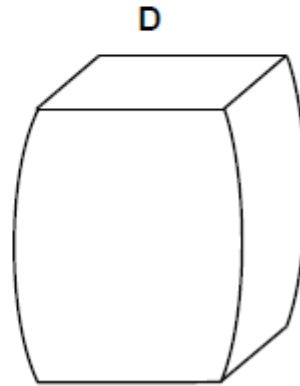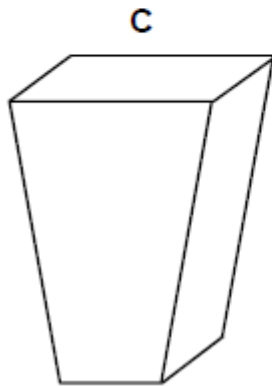
Q4.

A container is filled with water in 5 seconds.

The graph shows the depth of water, d cm, at time t seconds.

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(a)   The water flows into the container at a constant rate.

Which diagram represents the container?
Circle the correct letter.

A

B

C

D
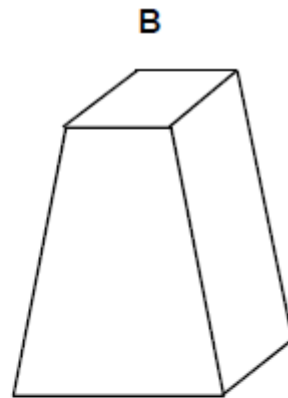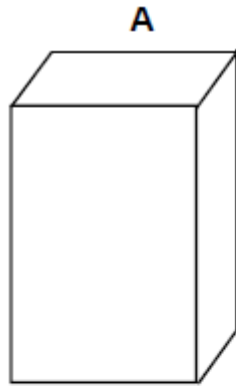
(1)

(b)   Use the graph to estimate the rate at which the depth of water is increasing at 3 seconds.

You **must** show your working.

_____

_____

_____

_____

Answer _____ cm/s

(2)
(Total 3 marks)