

QQQ – Mechanics Year 1 – Chapter 9 – SUVAT Equations (Version 2)

Total Marks: 23

(23 = Platinum, 21 = Gold, 18 = Silver, 16 = Bronze)

1. In this question use $g = 9.8 \text{ m s}^{-2}$

A ball, initially at rest, is dropped from a height of 40 m above the ground.

Calculate the speed of the ball when it reaches the ground.

Circle your answer.

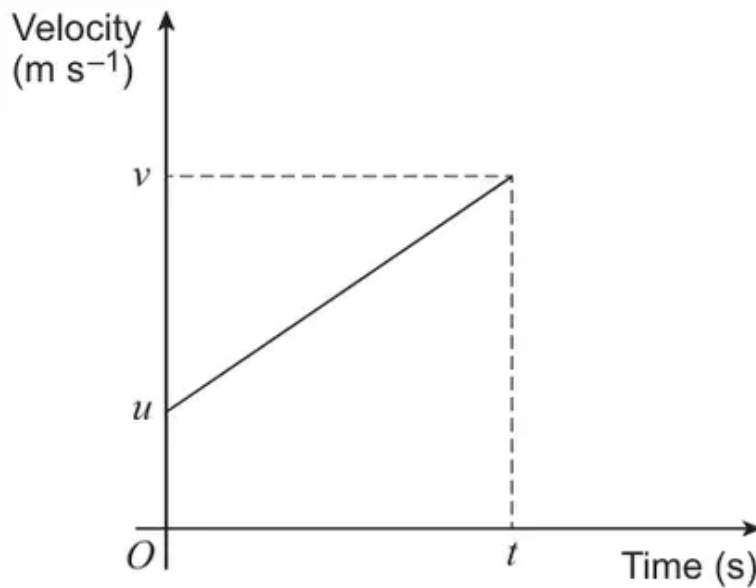
[1 mark]

- -28 m s^{-1}
- 28 m s^{-1}
- -780 m s^{-1}
- 780 m s^{-1}

(Total 1 marks)

2. An object is moving in a straight line, with constant acceleration $a \text{ m s}^{-2}$, over a time period of t seconds.

It has an initial velocity u and final velocity v as shown in the graph below.



Use the graph to show that

$$v = u + at$$

[3 marks]

(Total 3 marks)

AQA June 2020 Paper 1 Q13

3. In this question use $g = 10 \text{ m s}^{-2}$

A ball is thrown vertically upwards from a height of 1.8 metres above the ground.

The initial velocity of the ball is 12 m s^{-1}

The greatest height reached by the ball above the ground is h metres.

Find the value of h

[3 marks]

(Total 3 marks)

AQA June 2025 Paper 1 Q18

4. A small ball B is projected vertically upwards from a point 2 m above horizontal ground. B is projected with initial speed 3.5 m s^{-1} , and takes t seconds to reach the ground.

Find the value of t .

[3]

(Total 3 marks)

OCR A June 2022 Paper 2 Q10

5. A ball, initially at rest, is dropped from a vertical height of h metres above the Earth's surface.

After 4 seconds the ball's height above the Earth's surface is $0.2h$ metres.

(a) Assuming air resistance can be ignored, show that

$$h = 10g$$

[3 marks]

(b) Assuming air resistance cannot be ignored, explain the effect that this would have on the value of h in part (a).

[1 mark]

(Total 4 marks)

AQA June 2023 Paper 1 Q14

6. A lorry is moving along a straight horizontal road with constant acceleration. The lorry passes a point A with speed $u \text{ m s}^{-1}$, ($u < 34$), and 10 seconds later passes a point B with speed 34 m s^{-1} . Given that $AB = 240 \text{ m}$, find

(a) the value of u ,

(3)

(b) the time taken for the lorry to move from A to the mid-point of AB .

(6)

(Total 9 marks)

Edexcel M1 June 2013 Q4