

2023 Ph H1 Q5

Section: Our Dynamic Universe

Topic: Motion – Components of Velocity

Question Summary

A golf ball leaves the club with speed 74 m s^{-1} at an angle of 31° to the horizontal.

Which row in the table shows the horizontal and vertical components of the initial velocity?



Final Answer:

D. 63 m s^{-1} (horizontal), 38 m s^{-1} (vertical)

Working

• Horizontal:

$$u_h = u \cos \theta = 74 \cos 31 \approx 74 \times 0.857 = 63 \text{ ms}^{-1}.$$

• Vertical:

$$u_v = u \sin \theta = 74 \sin 31 \approx 74 \times 0.515 = 38 \text{ ms}^{-1}.$$

Option **D** matches these.

Quick Tips

- Use $u \cos \theta$ for **horizontal** and $u \sin \theta$ for **vertical**.
- Check your calculator is in **degrees** mode!

