Question Number	Answer	Mark
18(a)	Use of appropriate trigonometry **(1)** v_x =32 m s^{-1} **and** v_y =15 m s^{-1} **(1)** <u>Example of calculation</u> v_x =35 m s^{-1} × cos 25° = 31.7 m s^{-1} v_y =35 m s^{-1} × sin 25° = 14.8 m s^{-1}	**2**

18(b)	Use of $s = u_x t$ to find time taken to travel 100 m horizontally **(1)** Use of $s = u_y t + ½ a t^2$ with $a = -g$ to find distance fallen in time t Accept other correct SUVAT methods **(1)** Distance fallen = 2.1 m **(1)** Conclusion consistent with comparison of student's values, e.g. 2.1 m < 3.0 m so rider lands on other side of river **(1)** **Or** Use of correct SUVAT method with $a = -g$ to find time to descend by 3 m. **(1)** Use of $s = u_x t$ to find horizontal distance travelled in time t. **(1)** Distance travelled = 102 m **(1)** Conclusion consistent with comparison of student's values **(1)** **Or** Use of $s = u_x t$ to find time taken to travel 100 m horizontally **(1)** Use of correct SUVAT method with $a = -g$ to find time to descend by 3 m. **(1)** Time = 3.21 s **(1)** Conclusion consistent with comparison of student's values, e.g. 3.15 s < 3.21 s so rider lands on other side of river **(1)** <u>Example of calculation</u> time taken to travel 100 m = 100 m ÷ 31.7 m s^{-1} = 3.15 s vertical displacent = 14.8 × 3.15 − 0.5 × 9.81 × 3.15^2 = − 2.12 m 2.1 m < 3.0 m, so rider lands on other side of river	**4**